PINE GROVE

COMMUNITY CONSERVATION AND WILDFIRE PROTECTION PLAN

Amador Fire Safe Council | 2013

EXECUTIVE SUMMARY

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I. EXECUTIVE SUMMARY

In 2003, the Amador Fire Safe Council contracted with EIP Associates[1] to prepare a Community Wildfire Protection Plan (CWPP) for Amador County. EIP Associates hired a local Registered Professional Forester (RPF), Ron Monk, to gather data and write the plan. The plan divided the county into nine planning units. Each planning unit represents a distinctly different wildfire environment. The Amador County Fire Hazard Reduction Plan (CWPP) was approved by CAL FIRE and all local fire agencies. It was adopted by the Amador County Board of Supervisors in 2005.

Following the completion of EIP's plan, the council prepared an addendum titled "Steps to Implementation" which is a five-year action plan to implement the Amador County CWPP. These two documents are collectively referred to as the Amador County Generic Community Wildfire Protection Plan.

In 2006, all fuel reduction projects (wildfire mitigations) proposed in the CWPP were incorporated into the Amador County Multi-hazard Mitigation Plan (MHMP). The purpose of the MHMP is to reduce or eliminate long-term risk to people and property from natural hazards and their effects in Amador County. This plan was prepared to meet the Disaster Mitigation Act of 2000 (DMA 2000) requirements in order to maintain Amador County's eligibility for the Federal Emergency Management Agency's (FEMA) Pre-disaster Mitigation (PDM) and Hazard Mitigation Grant Programs (HMGP).

Amador Fire Safe Council recognized the need to reevaluate the recommendations in the Amador County CWPP within five years from its adoption. Instead of reevaluating all nine planning units simultaneously, the council decided to revisit each of the units separately starting with the most at risk areas. The Pine Grove Planning Unit is the second most at risk planning unit in the county.

Amador Fire Safe Council obtained funding from the Sierra Nevada Conservancy to update the Pine Grove Planning Unit section of the 2005 CWPP. This update is written as a Community Conservation and Wildfire Protection Plan (CCWPP). The difference between a CWPP and CCWPP is that the latter recognizes the impact of post European settlement on forest health and composition; and how these have influenced wildfire in the Sierra.

This document summarizes the process and information developed for the Pine Grove Planning Unit update. Detailed information for this plan can be found in the relevant appendices, which are referenced for additional information.

This plan identifies wildfire risks and hazards in the Planning Unit and the mitigations needed to reduce them. It also provides residents with a systematic guide on how to fire-safe their homes, businesses, and community and how to best prepare for the threat of wildfire. The appendices and reference sections can be copied or removed for reference.

This document and all its associated appendixes, maps, and supporting documentation are written for multiple audiences. Audiences that include homeowners, policy makers, public and private land managers, and fire agencies. Readers will note that at times the writing style will be formal and somewhat technical. Other parts are written in an informal style that is more informative than technical. These different styles are intentional and represent the broad audience this plan is intended to inform and influence.

I.A. PLAN GOALS, INTRODUCTION, AND BACKGROUND

I.A.1 OVERALL PLAN PURPOSE

The purpose of this plan is several-fold:

- To identify priority projects that reduce risks and hazards to the Pine Grove Planning Unit from wildfire while protecting conservation values. Goals are to be achieved principally through prioritization and implementation of fuel hazard reduction, community education, and fire-suppression projects and activities.
- To provide community priorities for conservation-based fuel reduction on public lands
- To provide conservation-based fire safety educational information to residents of the Pine Grove Planning Unit
- To provide a positive balance among fire prevention, conservation, and wildlife protection
- To provide a guidance document for future actions of the Amador Fire Safe Council, County of Amador, CAL FIRE, Bureau of Land Management, Pacific Gas & Electric Company and local emergency service providers.
- To coordinate fire protection strategies and investments across property and administrative boundaries to achieve landscape scale wildfire defenses.
- To integrate private land management goals with community needs and expectations for fire safety.
- To create ecologically sustainable biomass utilization and removal projects within Pine Grove Planning Unit.
- To provide tools to emergency response agencies that improves response capabilities.
- To reduce damage from wildfire by recreating a pre-European settlement *fire adaptive ecosystem*[2].
- To reduce the potential of large scale damage from the historic large fire scenario in the foothill and mountain regions of Amador County

- Finally, this document is being written as a Community Wildfire Protection Plan, in order to meet the requirements for future National Fire Plan and other government funding sources, and to provide community direction for federal lands management within the planning area.

I.A.2. CONSERVATION PRINCIPLES FOR COMMUNITY WILDFIRE PROTECTION IN CALIFORNIA'S SIERRA NEVADA

This document is based on the following Conservation Principles.

REMEMBER THE VEGETATION (NATIVE TREES AND OTHER PLANTS)

1. Discover and monitor forest and vegetation's dynamic changes.
2. Act conservatively.
3. Protect native species
4. Keep, favor, and retain the largest, most fire-resilient, and healthiest trees adapted to the location.

REMEMBER THE WILDLIFE

1. Provide local wildlife a place to live.
2. Provide access to food and water.
3. Protect future generations of wildlife.
4. Value the standing dead trees.
5. Conserve rare and endangered species.

REMEMBER THE SOIL

1. Maintain the life in the soil.
2. Ensure the soil cover is fire safe.
3. Minimize erosion.
4. Protect soil after a fire.

REMEMBER THE PEOPLE

1. Plan actions with neighbors
2. Find experienced workers and treat them well.
3. Work with the local fire department.

I.A.3. FIRE SAFE OBJECTIVES

The objectives for fire safety will drive the development of the assessment and eventual solutions. These objectives reflect the particular characteristics of Greater Pine Grove Planning Unit. The overall objectives for this plan are to decrease the intensity of fire behavior and minimize ignitions, while increasing *permeability*[3] and *resiliency*[4] of landscapes—e.g. a fire-resistant landscape—to decrease damage from wildfires.

These objectives reflect the particular wildfire characteristics facing Amador County.

1. Prevent damage to the environment and structures caused by the historic large wildfire scenario[5] in Amador County.
2. Prevent damage to the environment and infrastructure caused by wildfires occurring during "average bad[6]" fire weather.
3. Provide safe evacuation of citizens during wildfires
4. Assist fire and other emergency agencies to respond to emergencies
5. Obtain compliance with the defensible space requirements[7]
6. Educate the citizens of Amador County about the importance of re-establishing a pre-European forest landscape and its importance on fire safety and forest health.

I.A.4. GREATER PINE GROVE PLANNING UNIT PROFILE

The Greater Pine Grove Planning Unit is located in the midsection of Amador County. The plan area contains 4,562 parcels of land totaling 32,725.62 acres. The estimated population is approximately 8,418. There are no incorporated towns within the planning unit. The community of Pine Grove contains most of the commercial development. However, small enclaves of commercial development exist outside of Pine Grove proper. Most of the area is zoned R1, R1A, R2, R2A, R3, and RE.[8] *(See Plate 1-General Plan Zoning).*

Amador County is currently updating its General Plan. All versions of zoning for the new plan increase the residential zoning within the Pine Grove Planning Unit. Increased residential development with a corresponding increase in commercial development is expected. The large number of residential parcels intermixed with highly flammable forest fuels places the residents of the planning unit at risk of large damaging wildfires.

The Bureau of Land Management owns approximately eight percent of the land within the planning unit. The parcels owned by the Bureau of Land Management are scattered throughout. Most of the land within the planning unit is privately owned by individuals and used for residential purposes. Some of the land is devoted to timber production and other agricultural uses. The entire area is unincorporated.

Several large drainages are within or adjacent to the planning unit. Most significant of these are the Mokelumne River, Consumnes River, and Sutter Creek. The influence of these drainages on potential wildfire damage is related to their east/west orientation, fuel load, and the historic large fire weather events. *See Chapter 3, Topography for more information.*

Much of the planning unit contains an abundance of forest fuels capable of supporting intense fire behavior, including crowning. Intermingled with the forest are many homes and businesses. Many of these structures were constructed before the adoption of modern fire safe building and development standards and would not be permitted today.

I.A.5. COMMUNITIES AT RISK

On January 4, 2001, for the purposes of the National Fire Plan, the Department of Interior (DOI) published in the *Federal Register* a "Notice of Urban-Wildland Interface (WUI) Communities within the Vicinity of Federal Lands That Are at High Risk from Wildfire." In Amador County, Pine Grove was among the first communities to be designated as a Community at Risk.

After the 2000 fire season, the California Department of Forestry and Fire Protection (CAL FIRE), working with the California Fire Alliance, developed a list and associated map of communities at risk from wildfire using 1990 Census and USGS Geographic Names Information System data to identify populated places, and CAL FIRE's Fire and Resource Assessment Program (FRAP) fuel hazard data.[9] This data describes relative risk to areas of significant population density from wildfire by combining residential housing unit density with the proximate fire threat to give a relative measure of the potential loss of structures and threats to public safety from wildfire. CAL FIRE's designation of the Pine Grove WUI encompasses all of the Pine Grove Planning Unit and thus, no further proposals for areas within the planning unit to be designated as Communities at Risk are required.

FIGURE 1. COMMUNITIES AT RISK IN PINE GROVE PLANNING UNIT

Community at Risk	Threat Level[10]	Federal Adjacency[11]	Source of Designation
Pine Grove	3-Very High	✓	California Fire Alliance and Cal Fire (FRAP)

I.B. FIRE PLANNING PROCESS OVERVIEW

I.B.1. FIRE PLANNING AREA BOUNDARIES

This CCWPP update covers the entirety of Pine Grove Planning Unit. This area is described as starting from the intersection of Highway 88 and Molfino Road on the western extent of Planning Unit and moving east to Highway 26 encompassing all lands between. The northern boundary is Shake Ridge Road and the southern boundary is the Mokelumne River. *(See Plate 2 – Pine Grove Base Map)*

I.B.2. PLANNING PROCESS SUMMARY

The planning unit is comprised of numerous small and large subdivisions, several mercantile areas, and ranches. The planning group discussed the best way to reach this diverse community to explain the planning process and obtain input regarding community concerns. To this end, the Core Working Group prepared a PowerPoint presentation explaining the wildfire threat and the Conservation and Community Wildfire Plan development process. This PowerPoint presentation was used at all group meetings and was posted on the council's website.

The Pine Grove Planning unit is a large area. How to reach residents of this area became an issue of discussion. It was decided to hold several town meetings. While these meetings were advertized through several media sources, they were not well attended. However, the steering committee that oversaw the development of this plan and the core-working group, which did the basic research, included numerous residents of the area.

One of the major outreach efforts involved the risk assessments. This process systematically assessed the risk from wildfire for individual subdivisions. This risk assessment provided a beginning point for discussing the wildfire threat to a particular community

To allow all stakeholders to comment on the plan each section of the plan was posted on the Amador Fire Safe Council's website. This posting started in mid-March 2012. A final draft with all displays was posted in October 2012. Hard copies of the final draft were provided to CAL FIRE, the Amador County Board of Supervisors, the boards of Lockwood and Amador Fire Protection Districts, Folsom Bureau of Land Management, and the Sierra Nevada Conservancy.

I.B.3. STAKEHOLDERS

The following stakeholders participated in this process:

- Lockwood Fire Protection District
- Amador Fire Protection District
- Bureau of Land Management
- Business owners
- Residents of the planning Unit
- Pacific Gas and Electric Company

I.C. FIRE SAFETY AND DEFENSIBLE SPACE

When residents in the wildland-urban interface understand what steps they can take to make their homes and properties more fire safe, they are generally interested in doing it. Appendix B begins with a broad description of what is necessary for a fire to begin and how communities can defend themselves when faced with a wildfire. Wildfire behavior depends on *fuel,*[12] *weather*, and *topography*. Clearly, fuel is the one factor that communities have some capacity to control. This plan focuses on how fuel can be mitigated to enhance community safety while protecting conservation values. It outlines necessary steps to ensure local fire protection efforts are successful (e.g. residence addressing, adequate roads, proper turnarounds, secondary access, water supply, etc.).

One of the most important concepts introduced in the plan is that of defensible space. In short, this means creating a space around residences/structures to enhance the chances of structural and human survivability. Thus, one of the priority goals of the plan is to document the various elements that make up defensible space and to do so in clear, action-oriented terms. The Plan lists various additional ways that a community can enhance its chances of surviving a fire, including the use of fire ignition-resistant building materials and construction methods, water availability, escape plans, landscaping, and fuel hazard reduction. Recent evidence indicates that a structure has a greater than 80% chance of surviving a wildfire if it has adequate brush clearance and is made of ignition-resistant materials.[13]

This Plan outlines various actions that community members should take when a wildfire threatens. These include actions such as evacuation; keeping friends and family members informed of their plans and whereabouts; gas/propane shut-off; water preparation and use; closing of all interior and exterior doors; and emergency communication.

Beyond the home, fuel reduction in the wildland-urban interface is critical for fire-permeable and fire-resilient landscapes. Fuel reduction methodologies can be consistent with conservation goals to restore *fire-adapted ecosystems.* In fact, they ultimately must be if they are to be effective. Fuel reduction methods are described in Appendix C, with practices identified that are consistent with the Conservation Principles.

I.D. WILDFIRE ENVIRONMENT

It is generally believed today that fires in the Sierra Nevada landscape are less frequent and more severe compared to the wildfire patterns present before Europeans settled in the area. The absence of fire combined with historic logging practices has led to a build-up of *surface fuels*[14] and *ladder fuels.*[15] In many cases, small trees and shrubs have become a fire hazard to both the natural environment as well as to the human communities who live there.

The Pine Grove Planning Unit is no exception to the increasingly common problem of ~~large~~ significant structure and resource loss from wildfire. Fuel loads have been accumulating to abnormal levels throughout the Sierra due to decades of fire suppression and timber harvesting. Annually, state and federal agencies respond to more than 600 fires in Amador and Eldorado Counties[16], not including fires responded to by local fire departments. One of the largest recent fires was the Power Fire (2004), which burned a total of 16,800 acres in eastern Amador County. Condition Class level III is present in this planning unit. *For an explanation of Condition Class, see Chapter 3 Fire Behavior.*

FIGURE 1 - RESOURCE DAMAGE FROM POWER FIRE

The historic large damaging wildfires in Amador County occur during a relatively rare weather event known as foehn wind[17]. Foehn winds occur when a High-pressure system exits east of the Sierras and Low-pressure system exist west of the Sierras. Foehn winds flow over and down the Sierras in a westerly direction. These winds can reach speeds in excess of sixty miles per hour. Because these winds are caused by subsiding air masses, foehn winds heat and dry as they flow down slope.

The affect of foehn winds is greatest east of Highway 49. The most recent examples of foehn wind driven wildfires are the Power Fire (2004) and the Rancheria Creek Fire (1961). Both fires exhibit the same burn pattern of all large wildfires, in mid to upper Amador County, since 1900.

Chapter 4 – Fire Ecology and Management of Sierra Nevada Vegetation describes the present condition of the planning area; the vegetation that occurs there; and considers how wildfire might change the area. The features and conditions of the planning area are used to develop management prescriptions that:

a) are consistent with the natural disturbance expected for each type

b) promote the Conservation Principles identified in *Appendix A*, and

c) improve the fire resiliency of the vegetation type

Three fuel types are the primary drivers of wildfire in the planning unit. These are Ponderosa Pine/Mixed Conifer (fuel model 10), Montane Meadow (fuel model 1), Open Pine with oak or shrub understory (fuel model 2), and Foothill and Montane Chaparral (fuel models 5 and 6). The dominate fuel type in the most populated areas is fuel model 2, Open Pine with oak or shrub understory.

The historic (pre-European settlement) occurrence of wildfire suggest low intensity wildfires were common and replaced less than 75% of the dominate overstory. Today, because of over 100 years of fire exclusion from the landscape, wildfires exhibit dramatic increase in fire behavior, intensity, severity, and size. Forest stand replacement wildfires are to be expected. In the Planning Unit, stand replacement wildfires are most likely to occur in the pine mixed/conifer fuels (fuel model 10). Where wildland urban interfaces exist, significant loss of structures and loss of life is likely. Most areas zoned for residential developments are in fuel model 2 and fuel model10.

I.E. FIRE PROTECTION ORGANIZATIONS

In Pine Grove Planning Unit there are two local fire departments:

- Amador Fire Protection District
- Lockwood Fire Protection District

There are also state and fire agencies:

- California Department of Forestry and Fire Protection, Amador Eldorado Unit, (CAL FIRE)
- US Bureau of Land Management, Mother Lode District

For more information about fire protection agencies, see Chapter 6, Fire Protection.

I.F. PINE GROVE PLANNING UNIT ASSETS AT RISK

I.F.1. PINE GROVE PLANNING UNIT ASSETS AT RISK

Assets at risk are all the values, human made and natural, that exists in the Pine Grove Planning Unit. These values include such diverse things as view shed and power plants. Knowing what values are at risk allows land managers, public officials, and the public to devise and prioritize mitigations that will reduce or eliminate the risks.

The risk assessment process rated each road within the planning unit. Factors rated included slope, fuel type, fuel concentration, road length, roadside fuels, turnouts, signing, road width, road quality, cul-de-sacs, structure density, and surface fuels. Risk ratings are provided for each road.

Four level of risk were developed to describe each areas relative risk from wildfire. These ratings are:

- **Low risk**: strict compliance with defensible space will protect most homes from wildfires occurring during the normal summer weather pattern and foehn wind events. (Note: urban structure density can be reached if placement of structures on parcels regardless of parcel size creates an urban density because of the proximity of structures to each other.)

- **Moderate risk**: Strict compliance with defensible space will protect most homes from wildfires occurring during the normal summer weather patterns. There is a greater risk of home loss during foehn wind conditions. Where structure density is urban, structures may be lost from radiant heat generated from nearby burning structures. (Note: urban structure density can be reached if placement of structures on parcels regardless of parcel size creates an urban density because of the proximity of structures to each other.)
- **High risk**: There is significant risk of structure loss during normal weather patterns and foehn wind events. Risk increases significantly as structure density increases. Where structures density is urban, the structure fuel load invalidates the fire model. These areas need additional protection beyond homeowner defensible space. (Note: urban structure density can be reached if placement of structures on parcels regardless of parcel size creates an urban density because of the proximity of structures to each other.)
- **Very High**: Combinations of structure density, slope, fuels, fuel load, and/or life safety issues create this rating. Where structures density is urban, the structure fuel load invalidates the fire model. Multiple structure loss can occur regardless of weather patterns. Life safety issues relating to evacuation also can create this rating. These areas need additional protection beyond homeowner defensible space. (Note: urban structure density can be reached if placement of structures on parcels regardless of parcel size creates an urban density because of the proximity of structures to each other.

I.G PINE GROVE PLANNING UNIT FIRE SAFE ACTION PLAN

This plan identifies several actions to reduce hazards and risks from wildfire and decrease structural ignitability. The following sections and tables summarize these actions. They were identified through a collaborative public process.

I.G.1. PROPOSED PROJECTS AND ACTIONS

The proposed projects and actions designed to mitigate the wildfire threat fall into three categories.

1. Community and Homeowner Projects – projects and actions homeowners and community organizations can take without government financial assistance.
2. Existing Projects – fuel reduction projects created by government and other organizations that need continued maintenance to remain viable.
3. New Projects – proposed fuel reduction projects designed to increase protection from large wildfire and Foehn wind driven wildfires.

COMMUNITY AND HOMEOWNER ACTIONS

1- COMMUNITY AND HOMEOWNER PROJECTS			
Community, Structure, or Area at Risk	**Type of Treatment**	**Method of Treatment/implementation**	**Overall Priority**
Greater Pine Grove Planning Unit	Strict compliance with defensible space regulations	Individual property owners	Very High
Greater Pine Grove Planning Unit	Roadside fuel reduction	Reduce fuel along selected public and private roads a minimum of 20 feet from each road edge. Clearance of greater than 20 feet (up to 40 feet) on downslope side when slopes exceed 10%.	Very high
Greater Pine Grove Planning Unit	Street address signs	Replace wooden and other street address signs with a county standard street sign	Very High
Greater Pine Grove Planning Unit roads where Scotch Broom is present	Roadside Scotch Broom Eradication	Herbicides and/or hand removal. Amador Fire Safe Council has tools for this purpose available for loan at no cost.	Very High
Toyon Road Area	Alternate egress for Toyon road to Highway 88	Open existing alternate access	Very High
Toyon Road Area	Alternate egress for Penrose Way to Climax Road	Create an escape route along existing right-away	Very High
Greater Pine Grove Planning Unit	Identify with a standard sign all locations private water tanks and swimming pools.	Install reflective roadside sign near water sources. Residents should contact their local fire department for information about the appropriate sign.	High
Greater Pine Grove Planning Unit (private roads)	Street signs	Replace wooden and other street signs not meeting current county standards with a county standard road sign	High

EXISTING LARGE-SCALE FUEL REDUCTION PROJECTS

2 - EXISTING FUEL REDUCTION PROJECTS						
Community, Structure, or Area at Risk	**Project Name**	**Method of Treatment**	**Funding Needs**	**Acres**	**Priority**	**Expected Completion Date**
Shake Ridge Road Area	Stone Jug	Mastication, tractor, and/or hand crews	$73,172	55	5	In progress using CAL FIRE CAG funding. Project sponsor is the Amador Resource Conservation District, scheduled to be completed 2012-2013
Greater Pine Grove Planning Unit, Pine Acres (north and	AFSC FMZ 1	Mastication with herbicide maintenance	$9,848 every 5 to 7 years	55	On going	Completed in maintenance mode – AFSC project

south)						
Greater Pine Grove Planning Unit, Pine Acres (north and south)	AFSC FMZ 2	Mastication with herbicide maintenance	$11,252every 5 to 7 years	66	On going	Completed in maintenance mode = AFSC project
Greater Pine Grove Planning Unit, Pine Acres (north and south)	AFSC FMZ 3	Mastication with herbicide maintenance	$5503 every 5 to 7 years	20	On going	Completed in maintenance mode = AFSC project
Greater Pine Grove Planning Unit, Pine Acres (north and south)	Mt Zion Fuelbreak	Mastication with herbicide maintenance	$9,511 every 5 to 7 years	52	On going	Completed in maintenance mode – AFSC project
Greater Pine Grove Planning Unit, Pine Acres (north and south)	Newsom FMZ	Hand crew with herbicide maintenance	$5,141 every 5 to 7 years	17	On going	Completed in maintenance mode - AFSC project
Greater Pine Grove Planning Unit, Pine Acres (north and south)	PG&E RW between Aqueduct Road and Tabeaud Road	Multiple	$5,936	24	On going	Completed in maintenance mode – PG&E project currently in need of rehab to reduce surface fuels
Greater Pine Grove Planning Unit, Pine Acres (north and south)	Pine Acres FMZ	Hand crew with herbicide maintenance	$12,987 every 5 to 7 years	80	On going	Completed (2011) - in maintenance mode. CAL FIRE and AFSC project
Greater Pine Grove Planning Unit private roads	Roadside fuel reduction	Roadside chipping (estimated 30 miles @ $1000/mile)	$146,000 additional	146 ac est.	On going	In progress needs refunding

The following table lists additional large-scale fuel reduction projects proposed to improve protection from wildfire.

PROPOSED LARGE-SCALE FUEL REDUCTION PROJECTS

3 - PROPOSED FUEL REDUCTION PROJECTS						
Community, Structure, or Area at Risk	**Project Name**	**Method of Treatment**	**Funding Needs**	**Acres**	**Priority**	**Expected Completion Date**
Jackson Pines Area	BLM FMZ	Mastication and/or hand crews	$96,012	83	(4a)	Proposed –pending funding, To be completed as part of the Mt Zion extension
Greater Pine Grove Planning Unit, Pine Acres (north and south)	Pine Acres Hwy 88 link (extension of Pine Acres Project)	Mastication and/or hand crews	$30,358	17	1	Proposed –pending funding
Greater Pine Grove Planning Unit, Pine Acres (north and south)	Pine Acres Wildwood link (extension of Pine Acres Project)	Mastication and/or hand crews	$53,410	40	1	Proposed –pending funding
Greater Pine Grove Planning Unit, Pine Acres (north and south)	Pine Acres PG&E link (extension of Pine Acres Project	Mastication and/or hand crews	$45,392	32	1	Proposed –pending funding
Toyon Road Area	Toyon FB	Mastication and/or hand crews	$55,945	43	2	Proposed –pending funding
Greater Pine Grove Planning Unit	Mitchell Mine FB	Mastication and/or hand crews	$252,635	242	3	Proposed –pending funding
Jackson Pines Area	Mt. Zion extension	Mastication and/or hand crews	$63,797	51	4	Proposed –pending funding
Volcano Road Area	BLM FMZ	Mastication and/or hand crews	Unknown	Unknown	(3a)	Proposed –pending funding, to be completed as part of the Mitchell Mine FB. This is a retreatment of an existing BLM fuels project.
Shake Ridge Road Area	Stone Jug	Mastication, tractor, and/or hand crews	$73,172	55	5	In progress using CAL FIRE CAG funding. Project sponsor is the Amador Resource Conservation District, scheduled to be completed 2012-2013

Sutter Creek Road and Sutter Highlands Areas	Rancho	Mastication and/or hand crews	$106,742	94	6	Proposed –pending funding

I.G.2 ACTION PLAN SUMMARY

This plan purposes a combination of community/individual actions combined with large-scale fuel reduction actions designed to protect structures and the environment from damaging wildfires. Defensible space is the keynote of this plan. No other activity can accomplish more protection for individual property owners and communities at risk. Studies show that homes with adequate defensible space have an 80% survivability potential during wildfires.

For more information on the fire-safe action plan, please see Chapter 4.

I.H FACILITATING UNIT FIRE SAFETY IN THE LONG TERM

I.H.1. MONITORING AND MAINTENANCE

The Amador Fire Safe Council hosts an annual meeting of all public and private entities that manage fuels to improve forest health and reduce damage from wildfire. This meeting is intended to coordinate efforts of all agencies and private industrial land managers. While this meeting has a countywide focus, projects relating to this plan are also discussed.

With regard to landscape scale projects designed to reduce damage from wildfires that are not within the planning unit but have a direct affect on wildfires threatening values within the planning unit, these projects are ongoing as part of an overarching fuel modification scheme (referred to in this document as the Cooperative Fire Defense System).

The CAL FIRE is in the process of designing a Geographical Information System (GIS) database that will catalog all existing and proposed fuel reduction projects. This database will include projects regardless of location or responsible agency.

The design and function of this database is currently being developed. The minimum criteria for this database are:

1. The ability to retrieve maps of projects on demand by type, agency, year, treatment, etc
2. Identified safety islands along with size and potential capacity
3. Color coded maps that estimate fuels projects current effectiveness against wildfire
4. Polygons representing identified fire defense systems
5. Projects within fire defense systems. Fire defense systems are differentiated from projects in that projects are used to create a system (i.e. Antelope Fuelbreak is a fire defense system while projects are the building blocks of a system.) This can be used to determine the completeness of a fire defense system and to identify key parcels needed to complete the system.

6. Recent wildfire polygons (wildfires are fuel reduction projects albeit not of the planned or desired kind).

I.H.2. UPDATING THIS PLAN

No plan is ever permanent. This plan was written in 2012 based on current conditions and best available information. The field of fire safety is rapidly changing. It is likely that new developments will occur in the coming years. Therefore, it will be important to review this plan at least every five years and update it as needed. Copies of this plan will be available for public review at Amador County libraries, Amador County Office of Emergency Services website www/co.amador.ca.us and on the Amador County Fire Safe Council's website www/amadorfiresafe.org.

Progress on the plan's implementation and other projects affecting the planning unit will be reviewed at least annually at the Upcountry Community Council or similar meeting hosted by the Amador Fire Safe Council. Since not all projects are public agency projects, community associations and citizens can provide input on progress towards meeting fire safety goals in local neighborhoods at this meeting.

The Amador Fire Safe Council will continue its outreach efforts to community and neighborhood groups. Concerns and community desires expressed at these meeting will be considered for inclusion in the next update.

I.H.2. NEEDED RESOURCES

The agencies (CAL FIRE, USFS, PG&E, and BLM) along with the Amador Fire Safe Council and Sierra Pacific Industries are the primary developers of large fuel reduction projects. The agencies have ongoing programs to create and maintain these projects.

The Amador Fire Safe Council is a non-profit corporation that is funded through grants and the 15% administrative fees charged to specific grant projects. Originally funded by Federal Title III grants to the County of Amador, this funding source is no longer available for general operating expenses. Currently the council is solely dependent on administrative fees and specific projects such as this plan. The annual operating expenses of the council are $50,000.

If the council is unable to obtain enough grants on an annual basis to generate its operating expenses, it will go out of business. To remain in business, the council needs to generate between $300,000 and $500,000 in new grant awards annually. Ideally, these projects need to be spread over eighteen months to allow for two burning seasons and to level out operational income over multiple fiscal years.

I.I ACKNOWLEDGMENTS

An extensive collaborative project such as this requires contribution, dedication, and commitment from a number of people. We would like to give a special thank you to the following people, without whom this project would have never succeeded.

The following people contributed to the successful creation of this Conservation Community Wildfire Protection Plan. We thank them for their participation.

I.I.1 CORE PLANNING TEAM

- Cathy Koos Breazeal, Amador Fire Safe Council, Executive Director
- Charlie Blankenheim, Californai Department of Forestry, Battalion Chief
- Jim Simmons, Amador Fire Safe Council, Consultant/forester
- Keith Brizzi, Amador Fire Protection District, Captain
- Craig Ostergaard, Sierra Pacific Industries, Forester
- Brian Mulholland, Fuels Management Specialist, Mother Lode Office, Bureau of Land Management

I.I.2 STEERING COMMITTEE MEMBERS

The steering committee was comprised of all members of the Amador Fire Safe Council Board of Directors and several at-large members of the community. This board is comprised of a diverse group of citizens representing many organizations.

- John Hofmann, Consultant to Amador County Board of Supervisors
- Lola Blevins, Vice-chairperson of Amador Fire Safe Council and rancher
- Jim McCart, Chairperson of the Amador Fire Safe Council and Chief of Amador Fire Protection District
- Dick Hess, retired forester and member of Amador Fire Safe Council
- Elaine Knox, homeowner and member of Amador Fire Safe Council
- Ingrid Barnes, California State Automobile Association Manager and member of Amador Fire Safe Council
- Kristina Agustin, Realtor and member of the Amador Fire Safe Council
- John Romena, Licensed Professional Forester for Buena Vista Biomass and member of the Amador Fire Safe Council
- Kristina Agustin, Realtor and member of Amador Fire Safe Council

- Paul Maben, Licensed Professional Forester for Pacific Gas and Electric; and member of the Amador Fire Safe Council
- Steve Bonner, homeowner and member of Amador Fire Safe Council
- Tony Migliaccio, Pharmacist and member of Amador Fire Safe Council
- Amy Rocha, USDA/NRCS District Conservationist and member of Amador Fire Safe Council
- Thomas Tinsley, CAL FIRE
- Debbie Dunn, Pine Grove resident and member at large

This document is based on the Sierra Nevada Community Conservation and Wildfire Protection Plan Guidebook, written by Tracy Katelman, Marko Bey, Susan Britting, and Carol Rice. Some text in this document is taken directly from the Guidebook. For more information on the Guidebook, see forevergreenforestry.com /SierraCo[18]nservationCWPP.html

[1] EIP was recognized for its reputation as a leading provider of environmental, urban planning, water resources planning, and natural resources services throughout California. Now, as PBS&J,

[2] Fire-Adapted Ecosystem: A local mix of mature natural vegetation (ideally native species but often found in combination with exotic species) that maintains its ability to survive and regenerate, and perhaps even to thrive, with regular disturbance from wildfire. Some species may actually require fire to trigger seed maturation, such as the giant sequoia. Opportunistic species benefit from fire and the openings it can create in a woodland; this is part of their adaptation.

[3] Permeability: In this case, a condition in which fire can spread through a community with minimal negative impact.

[4] Resiliency: The inherent ability of organisms and/or ecosystems to deal with disturbances such as fire in a way that permits or enhances healthy survival.

[5] Foehn wind driven wildfires

[6] Fires occurring during normal summer weather. Does not include foehn wind driven fires.

[7] Public resources Code 4291

[8] R1 Single family residential district; R1A Single family residential and agricultural district; R2 Low density multiple family residential district; R2A Single family (2 acre minimum) residential district; R3 High density multiple family residential district; RE residential estates district

[9] California Fire Alliance. "Communities At Risk History." cafirealliance.org/communities_at_risk/communities_at_risk_history.

[10] The Threat Level Code designates a community's fire threat level, with 1 indicating the least threat, 3 indicating the highest threat.

[11] Lands adjacent to federal lands are indicated as such with a mark in this column.

[12] Fuel: All burnable materials including but not limited to living or dead vegetation, structures, and chemicals that feed a fire.

[13] Ethan Foote, "Wildland-Urban Interface Ignition-Resistant Building Construction Recommendations from the 2004 Community Wildfire Protection Plan Workshops, the California Fire Alliance and the California Fire Safe Council," August 2004.

[14] Surface Fuels: Materials on the ground like needles or low-growing shrubs that provide the fuel for fires to spread on the ground. Surface fuels are generally considered all fuels within six feet of the ground.

[15] Ladder Fuels: Materials such as shrubs or small trees connecting the ground to the tree canopy or uppermost vegetation layer. In forests, this allows fire to climb upward into trees.

[16] The Eldorado National Forest and the Cal Fire Amador Eldorado Unit include these two counties.

[17] Chapter 5 contains a detailed description of foehn winds and their unique impact on large wildfires in Amador County

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APPENDIX A – CONSERVATION PRINCIPLES

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SOME BASIC CONCEPTS TO REMEMBER FOR LIVING WITH FIRE IN THE SIERRA NEVADA

"Fire always has been and always will be an ecological force in the Sierra Nevada. Decades of fire suppression have changed this role, allowing stands to thicken and fuels to accumulate, especially in the foothills and lower montane[i] zone, where developments are increasing. We either manage fire and live with fire on our terms or let fire dictate the terms. The choice is ours."

~ Jan W. van Wagtendonk, *Wildfire* (2006)

Most Sierra Nevada residents choose to live here because of the natural beauty. What many of us do not realize is that living within these forests and *wildlands*[ii] carries a responsibility. We need to be good stewards of the land, learning to live in balance with the natural world, of which fire is a significant part. This document summarizes what residents can do to coexist with fire in the Sierra. It will show you how to provide a positive balance among *fire prevention*[iii], conservation, and wildlife protection at your Sierra Nevada home. You have chosen to live here, and with your choice come a stewardship responsibility.

For more information on fire safety in general, please contact your local Fire Safe Council, or go to www.fire.ca.gov/education_homeowner.php www.firesafecouncil.org/homeowner/index.cfm firewise.org/resources/homeowner.htm

- **Fire is a dynamic element of the Sierra.** Your property has likely burned before and will burn again. The landscape where you live today may seem "natural." In fact, it has changed drastically over the last 150 years as we have attempted to manage fire. In preparing your property for fire, you can help restore it to a more ecologically appropriate state. In doing so, you will learn how to be prepared for wildfire—it is not only possible, it is smart. While it is rarely practical to completely "fire proof" your property. However, there are many steps you can take to survive a wildfire. For more information, see *http://www.fire.ca.gov/education_content/downloads/ live_w_fire.pdf*.

- **One size does not fit all in terms of homeowner fire safety.** Every place is unique. Work with your local *Fire Safe Council*[iv], fire department, Cooperative *Extension Agent*[v], *Registered Professional Forester*[vi], and/or contractors to design the appropriate *fire-safe practices*[vii] and *defensible space*[viii] for your property. *See www.fire. ca.gov/education_100foot.php and www.firesafecouncil.org/homeowner/index.cfm for more information.*

- **Your home exists within a larger watershed[ix].** It is located in the midst of a much larger landscape. Think about where your property is on the *slope*[x]. Are you on top of a ridge, where fire will easily burn toward your home? Is your slope steep or gentle? Fire moves quickly up steeper slopes, which means that you may need to treat a larger area to create your defensible space. What is below and above you? What direction, or "*aspect,*"[xi] does your property face? Generally, south-facing properties are hotter and drier; they can therefore be more susceptible to fire. Are there any natural *firebreaks*[xii] around you such as streams, rivers, or rocky outcrops where a fire might naturally go out? Do wildlife use or move through your property to get to food, shelter, or water? In what watershed are you located? Do the roads in and out of your property follow ridges or rivers? Look beyond your property lines to understand the ecological perspective of your place. *See www.audubon.org/bird/at_home/ Explore.html for more information.*

- **Fire can behave both predictably and unpredictably.** We can generally predict fire direction and behavior; it will go the way the wind is blowing and burn as much *fuel*[xiii] as is available. Predicting the exact time and place where fire will burn is less obvious. As fire moves across the landscape, it can climb up into your trees. A key fire safety objective is to prevent that spread. Dead leaves and branches on the ground *(surface fuels*[xiv]*)* act as a *wick*[xv] to move fire horizontally across the land. Shrubs, small trees, and live branches *(ladder fuels*[xvi]*)* can carry fire vertically into the larger trees. Too much of these surface and ladder fuels can cause the *overstory*[xvii] trees to burn up in what is called a "crown fire"—when fire spreads from tree to tree in the forest canopy (or tree tops). One of the main principles in creating defensible space and reducing hazardous fuel conditions is to create physical space between vegetation layers (both vertically and horizontally) so a fire cannot climb easily from the ground into the trees or to your home. *See* *www.for.gov.bc.ca/protect/suppression/behaviour.htm#Behaviour for more information.*

- **Timing is everything.** There are appropriate times for different actions on your property, much as there are different seasons of work in your garden. Do your defensible space and fuel reduction work well before fire season, to avoid having sparks from equipment start fires in dry vegetation. Avoid *ground-disturbing*[xviii] activities in your forest or wildland when the ground is too wet or when birds and animals are nesting. Do not try to do everything at once. Think about your fire safety seasonally. Plan your activities in the winter and spring. Start clearing when the ground begins to dry (when it is not *saturated*[xix]) or when there is snow on the ground. Finish treatments by early summer before the vegetation is dry. Do your defensible space maintenance around and inside your home in the fall and burn your piles after the rains begin in the winter.

- **Your house is likely a fuel source.** Many Sierra homes are located in places where a fire can start and spread into surrounding vegetation. The more you prepare your house and other structures, the less you will have to treat the surrounding vegetation. The biggest improvement you can make to reduce your fire risk is to build or remodel your house to resist the millions of tiny *embers*[xx] created by *ember-attack*[xxi] from wildfires. When wildfires burn in extreme conditions they send burning firebrands (embers) ahead of them; these firebrands ignite new fires. Using *fire-resistant building materials*[xxii] and appropriately designed structures will give you the best chance to survive wildfire. Replace wood shake roofs with fire-resistant materials. Do not let your home be part of the problem. An interactive source of information to reduce homeowner risk in the wildland-urban interface is provided by the University of California Center for Fire Research and Outreach; it is called the Fire Information Engine Toolkit. *See firecenter.berkeley.edu/toolkit/homeowners.html for details on how this web based program can help you make better decisions to reduce your fire risk, and the related UC Extension's Homeowner's Wildfire Mitigation Guide groups.ucanr.org/HWMG/index.cfm. Consult your local fire marshal or see firewise.org/resources/files/wildfr2.pdf for more information.* If you are building a new home, consider slope, aspect, surrounding fuels, and your potential environmental impacts before deciding where to site your home. This may be more important than the view in the long term. Talk to your local planning department to learn about local fire-safe building regulations, or see *osfm.fire.ca.gov/WUIBS.html, or cdfdata.fire.ca.gov/pub/fireplan/fpupload/fppguidepdf99.pdf* for *more information about state regulations*.

- **Know your legal obligations.** Learn the legal requirements regarding defensible space and fire-safe building and construction. Discover how to balance these with the ecological needs of your place.

- **Firefighters need your help to protect your home**. Make it safe for them and their equipment to get to and from your house. Be sure they can find you with visible road and address signs. Remember that fire-safe landscaping and construction greatly improves firefighters' ability to protect your home. *See principle 4C below, and www.livingwithfire.info/beforethefire/accesszone/index.php for more information.*

CONSERVATION PRINCIPLES

Consider the Conservation Principles below in how you approach your fire safety and defensible space. It is all about balance. It is possible to have an aesthetically pleasing landscape that is fire-safe, supports local plant and animal species, and still provides you with privacy and plantings.

1. REMEMBER THE VEGETATION (NATIVE TREES AND OTHER PLANTS)

a. Discover and monitor your forest and vegetation's dynamic changes.
Plan for the future of your forest. Because you are the conservation steward of your land, your work in the forest will be ongoing. Watch the wild areas on your property and learn from them as they grow and change with your stewardship. Think both in the short term (what will happen this year) and in the long term (what will happen over time). Document those changes as the years go by; keep notes and records. Learn how to *monitor*[xxiii] the ecological changes on your property and use that information for *adaptive management*[xxiv] of your wildlands. To live with wildfire we need to take the responsibility to manage, adapt, and guide the vegetation around our homes. *For more information, see* Www.dnr.state.mi.us/publications/pdfs/huntingwildlifehabitat/Landowners_Guide/Habitat_Mgmt/Planning/Evaluating_Land.htm.

b. Act conservatively.
We are manually recreating a more *fire-resilient landscape*[xxv]. In doing this, we need to apply the general concepts of the *precautionary principle*[xxvi] while implementing *fuel treatments*[xxvii]*:* you can always remove more trees and vegetation at a later time, but you cannot immediately replace what you have cut. The vegetation you leave is ultimately most important. Be sure that what you remove is done with careful planning and consideration to ensure that what you leave standing is healthy and *resilient*[xxviii]. *See* www.mindfully.org/ Precaution/Precautionary-Principle-Common-Sense.htm *for more information.*

c. Protect native species that share your home.
Look at the native vegetation around your property—or ask a local plant or forestry specialist for help—to see what different plants share your home. There may be rare plants. If so, protect them by providing defensible space (while keeping in mind their needs, such as shade). Find out if those plants exist in other areas within your watershed and how they are being managed there. Watch for *invasive weeds*[xxix]. Follow vegetation treatments with invasive weed removal. Minimize the introduction of exotic plant species near your home, especially those that can spread into adjacent wildland areas. Invasive species can change your fire hazard very quickly and be difficult to manage. Avoid unnecessarily introducing water into your landscape, as water will generally help non-native plants outcompete native plants. *See* www.cnps.org/activities/natives.htm and www.cal-ipc.org, and www.ipm.ucdavis.edu/PMG/weeds_common.html *for more information.*

d. Favor and retain the largest, most fire-resilient, and healthiest trees adapted to the location.
Generally, most of the oldest trees in the forest are no longer present. If you have old or very large trees, create defensible space around them so they will survive wildfire. This may include raking away thick *duff*[xxx] at the base of the trees. Notice that these trees often have thick bark so they are generally fire-resistant (they have evolved with fire). Think about their protection in terms of building a fire in your woodstove: A big log will not start burning without a lot of smaller kindling (e.g. small trees, shrubs, branches, etc.). In your forest, make sure that the smaller kindling is not around the bottom of your big trees, and generally, the trees will make it through a wildfire on their own. In some cases, you will need to remove smaller trees that touch the crown of the tallest trees. At the same time, you do not want to remove all of the small trees in your forest. Small trees are the next generation of large trees. Keep enough *regeneration*[xxxi], possibly in small patches, to provide for the future forest, while still providing adequate space between all the trees you keep standing. An additional benefit of keeping your biggest trees is that they can break up the wind as it's moving through, which can slow down fire spread. *See* www.eri.nau.edu/cms/content/view/544/740/ *for more information.*

2. REMEMBER THE WILDLIFE

a. Provide local wildlife a place to live.
Become familiar with the animals sharing your property. Talk to local wildlife experts and/or bird watchers. Learn what wildlife need in terms of shelter, food, water, and reproduction. Remember that your property is their home too. Find ways to balance your land management activities with their needs, and leave some areas *untreated*[xxxii] for the birds and wildlife using them. Protect them as you would your home by creating defensible space while still considering their needs for *cover*[xxxiii]. If you watch quietly, you may see animals using those areas. *For more information, see* www.fs.fed.us/psw/rsl/projects/wild/verner/psw_37.html, and cetuolumne.ucdavis.edu/newsletterfiles/Master_Gardener_Articles_20044858.doc.
b. Provide access to food and water.
Protect and retain trees with nests and cavities. This is particularly important where obvious wildlife feeding or nesting activities are occurring. Leave some plants that have berries or other fruit or *mast*[xxxiv] used by wildlife. Act especially carefully and leave cover around streams, *seeps*[xxxv], or other wet areas to keep those areas cool and wet; this will provide wildlife the protective cover they need when they are using those places or moving to and from them. Make sure all natural water supplies are clean by keeping any poisons and *sediment*[xxxvi] away from any water that could drain into them. *For more information, see* www.dnr.state.mi.us/publications/pdfs/huntingwildlifehabitat/Landowners_Guide/Habitat_Mgmt/Backyard/Backyard_Intro.htm.

c. Protect future generations of wildlife.
Find out when local species are nesting and/or breeding and avoid working in and around your wildlands during those times. Learn what kind of habitat local species might use for nesting and breeding, and be sure to protect those areas during your management activities. *See* www.paws.org/about/emailnetwork/archive/wildagain/ wild_2004_06_02.html *and* www.audubon.org/bird/at_home/SafeMisc.html *for more information.*
d. Value the standing dead trees.
Standing dead trees—or *snags*[xxxvii]—are especially important for wildlife. They provide both shelter and food to many birds and other animals. However, they can also be a wildfire hazard if they are near enough to fall on your home or fall and block an evacuation road during a fire. Balance the needs of wildlife with your need for fire safety. Think about your home within the landscape; if you have snags in the area, you do not need them next to the house. Take the time to find the most appropriate actions for your unique place. *See* www.nwf.org/backyard/ snags.cfm *for more information*.
e. Conserve rare and endangered species.
One of the bonuses—and responsibilities—of living in the Sierra is living with the many rare and endangered species with which you share habitat. Find out if there are rare or endangered species in your area by talking to your local Cooperative Extension Agent or Forest Service wildlife biologist. Plan your fuel reduction actions around the needs of these species. Often by a minor refinement of your activities, such as timing, technique, or extent, you can protect species while realizing your fuel reduction goals. *For more information, see* www.dfg.ca.gov/hcpb/species/t_e_spp/tespp.shtm and www.dfg.ca.gov/habitats/wdp/region-sierra_nevadacascades/ overview.html.

3. REMEMBER THE SOIL

a. Maintain the life in your soil.
There is as much or more activity below the ground on your property as there is above the ground. Keep this in mind in terms of what you do above ground. Talk to your Cooperative Extension Agent or local gardeners to find out what *soil types*[xxxviii] are on your property. Some soil types can tolerate much more *disturbance*[xxxix] than others can. Minimize activities that could *compact,*[xl] flood, or poison your soil. The health of your land is directly dependent on the health of your soil. As such, the soil is one of the most valuable assets of your property. *See* managingwholes.com/new-topsoil.htm *for more information.*
b. Ensure that your soil cover is fire safe.

Replace cover that burns easily (such as dry or dead vegetation) with cover that is less *flammable*[xli] (e.g. gravel, fleshy green plants, etc.). The objective is to ensure that when a fire comes through, it is not so hot that it kills the life in your soil. Rather, it should move through without a lot of fuel to consume in its path. For example, a very light layer of pine needles can help with soil erosion *(see below),* but too much can be a fuel problem. *See* http://www.laspilitas.com/classes/fire_burn_times.html *for more information.*

c. Minimize erosion.
Protect your soil by keeping it covered. Cover helps to prevent *erosion,*[xlii] especially on ground that is not flat; it keeps the soil in place. Do not let soil move across your property, most importantly not into streams or other natural water sources. Keep ground-disturbing activities away from *unstable*[xliii] areas and *riparian*[xliv] areas. Pay special attention on steep slopes. The steeper the slope, the faster the soil can move downhill if it's disturbed, and the faster a fire can climb uphill under the right (or wrong!) conditions. *See* http://www.uri.edu/ce/ healthylandscapes/tips/6.html *and* http://www.pfmt.org/fire/topos_effect.htm *for more information.*

d. Protect your soil after a fire.
Soil can be most fragile after a wildfire. This is often exacerbated when winter rains come soon after a fire. The potential for erosion and loss of soil is huge with this combination of conditions. If you have experienced fire on your property, get cover onto your soil as soon as you can to prevent erosion. Remember, your soil is alive, so help it grow. *See* www.ext.colostate.edu/PUBS/NATRES/06308.html and www.cnr.uidaho.edu/extforest/ AftertheBurnFINAL.pdf *for more information.*

4. REMEMBER THE PEOPLE

a. Plan your actions with your neighbors.
Talk to your neighbors. Find out what they are doing on their land. Find ways to cooperate in your land management actions. Your defensible space will likely impact your neighbor's chances of surviving a wildfire and vice-versa. Talk about what to do in an emergency and how to evacuate safely. Find out if there is a Fire Safe Council (FSC) in your community, and if so, get involved. Help make your community a Firewise community. Coordinated work amongst neighbors will have a greater impact on your individual fire safety. *For more information, see www.firesafecouncil.org,* www.fire.ca.gov/about_content/downloads/Evacuation2006. pdf *and* www.firewise.org.

b. Find experienced workers and treat them well.
Forestry workers with chainsaws in hand are the actual decision-makers as to what stays or goes—what lives or dies—in your forest. If your objective is to reduce fuels while still maintaining ecological integrity and diversity on a site, your workers must have the knowledge and experience to help you achieve this. Involve the workforce in the design, planning, and monitoring of projects. Talk to your local FSC or neighbors and check references to find reputable contractors. Pay workers well and maybe even bring them chocolate chip cookies; this will achieve better ecological outcomes on the ground. Happy, respected people do the best work. *See* ewp.uoregon. edu/programs.html *for more information.*

c. Work with your local fire department.
Talk to your local firefighters. Find out what they need to safely get to your house and back out. Make sure that your *access roads*[xlv] are safe; maintain your fuel treatments along all roads, both for firefighter safety in protecting your home and your safety in case of evacuation. Let firefighters know where you live and what is on your property; invite them out to see it. Have street and address signs visible so out-of-town firefighters can find you if there is a big fire. Make sure you have a water supply they can find and use. Know where and how to turn off any fuel sources such as natural gas or propane. *See* www.projecttahs.org/pdf/firedepartment.doc *for more information.*

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For more information, *see* *forevergreenforestry.com/SierraConservationCWPP.html. Katelman, Tracy, et al.* Conservation Principles for Community Wildfire Protection in California's Sierra Nevada. *2007. 8 pp.*

[i] Montane: A mountainous region of moist cool upland slopes that occurs below the tree line and is predominantly composed of evergreen trees. It is also described as the lower vegetation belt on mountains that is composed of montane plants and animals.
[ii] Wildlands: An area of land that is uncultivated and relatively free of human interference. Plants and animals exist in a natural state, thus wildlands help to maintain biodiversity and to preserve other natural values.
[iii] Fire Prevention: Actions taken by homeowners and community members to lessen wildfires and damage caused by wildfires. Includes education, enforcement, and land management practices.
[iv] Fire Safe Council: Public and private organizations that comprise a council intended to minimize the potential for wildfire damage to communities and homeowners, while also protecting the health of natural resources. Goals are achieved by distributing fire prevention materials, organizing fire safety programs, implementing fuel reduction projects, and more.
[v] Extension Agent: An employee from the government or a university who provides information to rural communities about agriculture, land management and/or resource management. In California, the University of California Cooperative Extension (UCCE) provides this service. For more information on UCCE, see: http://ucanr.org/.
[vi] Registered Professional Forester (RPF): A person licensed in California to manage state or private forestlands and advise landowners on management of their forests. For more information, see: www.bof.fire.ca.gov/licensing/licensing_current_docs.aspx.
[vii] Fire Safe Practices: Activities such as creating defensible space, firebreaks, access to your home, fire-resistant landscapes, changes to your home in terms of material and design, etc., that make your home/property safer in wildfire situations.
[viii] Defensible Space: An area around a home/structure that has been cleared of flammable materials to act as a barrier between wildfires and property, thereby decreasing the risk of damage or loss. This space is now defined as 100 feet around a structure in California.
[ix] Watershed: All of the land that drains water runoff into a specific body of water. Watersheds may be referred to as drainage areas or drainage basins. Ridges of higher elevation usually form the boundaries between watersheds by directing the water to one side of the ridge or the other. The water then flows to the low point of the watershed.
[x] Slope: A percentage or degree change in elevation over a defined distance that measures the steepness of a landscape.
[xi] Aspect: The direction that a slope faces—north, south, east, west, etc.
[xii] Firebreak: A strip of land that has been cleared of vegetation to help slow or stop the spread of wildfire. It may be a road, trail, or path cleared of vegetation or other burnable materials. A firebreak could also be a stream.
[xiii] Fuel: All burnable materials including but not limited to living or dead vegetation, structures, and chemicals that feed a fire.
[xiv] Surface Fuels: Materials on the ground like needles or low-growing shrubs that provide the fuel for fires to spread on the ground. Surface fuels are generally considered all fuels within six feet of the ground.
[xv] Wick: A combustible material that allows fire to travel along a confined path to larger fuel sources. An example would be a wooden fence connected to your home.
[xvi] Ladder Fuels: Materials such as shrubs or small trees connecting the ground to the tree canopy or uppermost vegetation layer. In forests, this allows fire to climb upward into trees.
[xvii] Overstory: The topmost trees in a forest which compose the upper canopy layer; compared to the understory, which is the lower woody or herbaceous layer underneath treetops.
[xviii] Ground-Disturbing Activities: Actions that interrupt the natural condition of the ground, such as digging and compaction from heavy equipment.
[xix] Saturated: The broad meaning is “full.” Saturated soil refers to the point at which the soil is so full of water that no more water can get into (be absorbed by) the soil, and therefore must run off.
[xx] Embers: Small glowing or smoldering pieces of wood or other organic debris, often airborne in a fire.
[xxi] Ember Attack: Embers blown by the wind during a firestorm that accumulate at intersections between horizontal and vertical members on the outside of your house, igniting debris and combustible materials. Embers can also enter into openings (e.g., attic vents and other wall openings), igniting debris on the inside of your home.
[xxii] Fire-Resistant Building Materials: Materials used in the construction of a house that are resistant to ignition when exposed to radiant heat or flames. Examples include clay tile roofs, metal roofs, and stucco siding.
[xxiii] Monitor: To watch, keep track of, or check regularly for changes—in this case, to the environment.
[xxiv] Adaptive Management: An approach to managing the environment/property that is based on a “learn by doing” technique that adjusts to changing conditions. Adjustments in management change over time as new information is learned.

[xxv] Fire-Resilient Landscape: A natural landscape featuring plants that have adapted to local wildfire conditions, or a domestic outdoor space where appropriate actions have been taken to make it less vulnerable to wildfire and certainly less prone to causing one.
[xxvi] Precautionary Principle: A concept that promotes a cautious approach to development and managing the environment when information is uncertain or unreliable. Erring on the side of caution and conservation is encouraged, along with a "Better safe than sorry" attitude
[xxvii] Fuel Treatment: The act of removing burnable materials to lower the risk of fires igniting and to lessen the likelihood of damage to property and communities. Treatments may include creating a defensible space, developing fuelbreaks, initiating prescribed burns, and thinning vegetation.
[xxviii] Resilient, Resiliency: The ability of an ecosystem to return to its balanced state after a disturbance.

[xxix] Invasive Weeds: Undesirable plants that are not native and have been introduced to an area by humans. These plants generally have no natural enemies and are able to spread rapidly throughout the new location. Some examples include Himalayan Blackberries, English Ivy, and Scotch Broom.
[xxx] Duff: A layer on the forest floor that is made up of decomposing organic matter such as leaves, needles, and small branches.
[xxxi] Regeneration: The renewal of trees or forests by planting seedlings, or the direct seeding by humans, wind, birds, or animals after large disturbances like fire. "Regeneration" also refers to the young trees that were naturally seeded or planted.
[xxxii] Untreated: Not altered from a natural or original state; e.g. no fuel reduction or defensible space activities.
[xxxiii] Cover: Any plants or organic matter that holds soil in place or grows over and creates shade that provides wildlife with an area to reproduce and find protection from predators and weather.
[xxxiv] Mast: Nuts or fruits of trees and shrubs such as acorns, walnuts, or berries that collect on the forest floor and are a food source for animals.
[xxxv] Seep: An area where water rises from an underground source to the surface and creates a wet area.
[xxxvi] Sediment: Particles of topsoil, sand, and minerals that come from soil erosion or decomposing plants and animals. Wind, water, and ice carry these particles; when the sediment collects in waterways it can destroy fish and wildlife habitat.
[xxxvii] Snag: A standing dead tree that has usually lost most of its branches. Snags offer essential food and cover for a host of wildlife species.
[xxxviii] Soil Type: Refers to the different combinations of soil particles and soil composition. Soil can vary greatly within short distances.
[xxxix] Disturbance: Various activities that disrupt the normal state of the soil such as digging, erosion, compaction by heavy equipment, etc.
[xl] Compact: To pack closely or tightly together, as in the fragments of soil being compacted from heavy equipment, thereby limiting the ability of oxygen or water to pass freely.
[xli] Flammable: A quality of a substance that makes it likely to catch fire, be easily ignited, burn quickly and/or have a fast rate of spreading flames.
[xlii] Erosion: The removal of soil over time by weather, wind and/or water such as rain or water runoff from roads
[xliii] Unstable: Land that is lacking stability, or liable to change with activity, such as in the case of step slopes or crumbly soils.
[xliv] Riparian: A strip of land along the bank of a natural freshwater stream, river, creek, or lake that provides vast diversity and productivity of plants and animals.
[xlv] Access Roads: Roads that allow entrance into and out of a property.

APPENDIX B – HOME FIRE SAFETY

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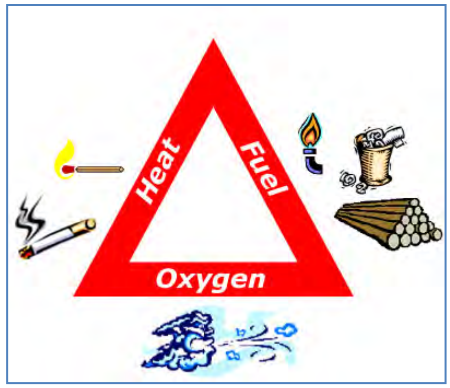
B WILDLAND FIRE SAFETY AT HOME[1]

The general principle behind making an area fire safe (making it as safe as possible for when a fire might pass through) is to reduce the *amount* of fuel and modify the *arrangement* of fuel that a fire could consume. Three factors are required for fire, and are known as the fire triangle: fuel, oxygen, and heat. If any one of these elements is missing, a fire will not start or, should it start, it won't spread. In a wildland situation, the three factors that dictate the extent and severity of fire behavior are fuel, weather, and topography. Fuel is the one element of the three that we can significantly modify. When there is a lot of fuel, a fire can burn very hot and move very quickly. When there is little fuel present, fires tend to slow down and burn cooler. Cooler fires are much easier to control.



For example, in a forest environment, fires that stay on the forest floor—surface fires—tend to be cooler, and hence easier to put out. Ladder fuel (understory trees and brush) connect the *surface fuel*[2] to the *canopy*[3] and, once ignited, this combination can support a *crown fire*[4]. Crown fires can move very quickly, burn very hot, and are much harder to put out. They also generate the most *embers*,[5] and can create *spot fires*[6] from a few feet to miles away depending on conditions. Embers and spot fires are often why homes burn and fires are difficult to control. One of the main objectives of being fire safe and creating defensible space is to minimize the chance of a fire becoming a crown fire, which will threaten your home, neighborhood, and community. Clearly, it is in your best interest to reduce the amount, type, and arrangement of fuel near your home to reduce the risk of a wildfire consuming it.

B.1. BEFORE THE FIRE

B.1.1. DEFENSIBLE SPACE AND HOME SURVIVABILITY

Defensible space means creating a space around your structure to defend it from a wildfire. The US Forest Service defines defensible space as "an area either natural or manmade where material capable of causing a fire to spread has been treated, cleared, reduced, or changed to act as a barrier between an advancing wildland fire and the loss of life, property, or resources. In practice, defensible space is defined (in California) as an area a minimum of (100) feet[7] around a structure that is cleared of flammable brush or vegetation."[8]

Firefighters sometimes use the terms "winners" and "losers" (preferable terms are "defendable" and "not defendable") to distinguish between those houses with defensible space versus those that do not have it. In a larger emergency situation (where many homes are threatened), homes without defensible space may get passed over in favor of protecting those with defensible space, which have a greater chance of survival and offer firefighters a safer environment. (The safety of firefighters is critical in structure protection. Homeowners should provide an inviting condition, especially in the Sierra where many fire departments are volunteer based; firefighters may be your friends, neighbors, or family members.) If it is too dangerous for firefighters to get in and out of an area, they are instructed not to risk their lives and equipment to save a home that is not defensible.

The Amador Fire Safe Council promotes the concept of home "survivability."[9] It is not just about "defending" your space or home, but being fire safe in such a way as to ensure its survivability from fire. This is the ultimate goal for conservation-based fuel reduction and fire safety efforts; living with wildfire.

DEFENSIBLE SPACE AND FIRE-RESISTANT LANDSCAPING BASICS

There are many simple steps to create defensible space. Homes ignite because of the little things—things that are easily ignited by embers, even when the fire has not arrived, or has already passed. The basics include:

- Providing a minimum of thirty to one hundred feet of clearance of flammable materials around your home. As you'll see later in this document, clearance does not mean dirt or gravel, it's about flammability. If you live on a hill, you should extend this up to two hundred feet, depending upon the steepness of the slope and the presence of surrounding fuel. *See Page 4, Zones Practices Table, for more information.*

- Landscape your defensible space zone with fire-safe plants. While no plant is immune to fire, certain plants do exhibit traits that can slow or reduce the spread of fire. Most deciduous trees and shrubs are fire resistant. They generally look green (not brown), healthy, and vibrant. In addition, fire-resistant plants have:

    - leaves that are moist and supple;

    - little dead wood, and they tend not to accumulate dry, dead material within the plant; sap that is water-like (versus thicker or stickier) and does not have a strong odor.[10]
    For more information on fire safe landscaping, please see "Fire-Resistant Plants for Your Landscape"[11] and "El Dorado County Fire Resistant Landscaping"[12] in Appendix D.

- Keep your gutters and roofs clean of vegetation and debris, especially pine needles.

- Move all flammable materials—especially firewood, propane tanks, etc.—at least thirty feet away from your home and any structures.

- Think about your home in terms of flammability. When you start a fire in a wood stove, small pieces of wood and paper are required to ignite the logs. The same is true for your home. Anything around your home that will ignite easily will threaten your home. It can serve as kindling for your house in the event of a fire. Look at your home and surrounding land with a new perspective. Shortly after removing dead vegetation and other flammable materials that may be adjacent to your home, you will begin to view the area with a different perspective. Objects that you didn't notice before as being a threat to your home will jump out at you. Think about if you would be comfortable if someone threw a match at your house.

- Remember the other critters who share the land. Leave a vegetation buffer around streams and other wildlife corridors. *(See the Conservation Principles, Appendix A for more information.)*

- Spend a few hours reviewing your home and property with the Homeowner's Checklist (Appendix D*)*. Identify where you are safe and what other steps you need to take to protect your home and family. You can get free help with identifying fire safety and defensible space issues around your home. Contact your local fire department, CAL FIRE, US Forest Service, US Bureau of Land Management, or the Amador Fire Safe Council. Any of these groups will gladly help you obtain a free fire-safety inspection for your home.

Appendix D contains more detailed information on defensible space and fire safety, including resources for further reading, and Public Resources Codes 4290 and 4291, which are explained below.

B.1.1.1. THE HOME IGNITION ZONE

The ***Home Ignition Zone***[13] is a concept introduced by Dr. Jack Cohen of the US Forest Service Rocky Mountain Research Station. Dr. Cohen's research of fires from the 1960s to the present has revealed that more than eighty percent of homes with at least thirty feet of defensible space and a fire-resistant roof have survived wildfires.[14] His research indicates that:

> The potential for home ignitions during wildfires including those of high intensity principally depends on a home's fuel characteristics and the heat sources within 100 to 200 feet adjacent to a home. This relatively limited area determines a home's ignition potential and is the home ignition zone.
>
> During a wildland-urban fire, a home ignites from two possible sources: directly from flames (radiation and convection heating) and/or from firebrands accumulating directly on the home. *Even the large flames of high-intensity crown fires do not directly ignite homes at distances beyond 200 feet*. Given that fires adjacent to a home do not ignite it, firebrands can only ignite a home through contact. Thus, the home ignition zone becomes the focus for activities to reduce potential wildland-urban fire destruction. This has implications for reducing home ignition potential before a wildfire as well as implications for emergency wildland-urban fire response strategy and tactics.…
>
> Because of time constraints, most preparation has to come before a wildfire occurs. Major changes to the home ignition zone (the home and its immediate surroundings) such as replacing a flammable roof and removal of vegetation … cannot occur during the approach of a wildfire. Removal of firewood piles, dead leaves, conifer needles, dead grass, etc., from on and next to the home should also occur seasonally before severe fire conditions. The ignition potential of the home ignition zone largely influences the effectiveness of protection during a wildfire. Given low ignition potential and enough time, homeowners and/or wildland-urban suppression resources can make significant reductions in the little things that influence ignition potential before wildfire encroachment. Then, if possible, homeowners and/or wildland-urban firefighting resources can suppress small fires that threaten the structure during and after the wildfire approach.[15]

The concepts forwarded by Dr. Cohen about the Home Ignition Zone are important to keep in mind when designing your defensible space and fuel reduction prescriptions.

B.1.1.2. FIRE SAFETY ZONES FOR YOUR PROPERTY

We can take the Home Ignition Zone and break it into four sub-zones. You can think of your property in terms of this set of zones. Use them to help you develop the appropriate treatment for each area around your property. See the table that follows this section for sample treatments organized by the Conservation Principles.

The concept of zones around your home has become popular recently. Several organizations have developed their own set of zones, such as: the California Fire Safe Council (firesafecouncil.org/education/attachments/landscapingtimberland.pdf), Firewise (www.firewise.org/resources/files/fw_brochure.pdf), and the California Board of Forestry (www.bof.fire.ca.gov/pdfs/Copyof4291finalguidelines9_29_06.pdf). All of the these and the zones identified below follow the same basic concept of increasing the intensity of your fuel reduction efforts the closer you get to the home or other buildings. The following zones were developed to implement practices consistent with the Conservation Principles identified in Appendix A.

The **Fire-Free Zone** is your home and five feet beyond. This is the zone immediately surrounding your home and should be made of concrete, gravel, or some other non-flammable surface. It can include irrigated plants if they are low growing, well watered, and not touching your house. Remove all flammable materials in this zone. Paramount objectives of this zone are homesite protection and thorough fuel reduction activities.

The **Structural Protection Zone** extends from the Fire-Free Zone out to thirty feet. This is what CAL FIRE calls the “lean and green” zone. Remove flammable materials here as well. Keep all vegetation healthy and green. The objective in this zone is to keep all flammable fuels away from your home to facilitate fire protection. Similar to the Fire-Free zone, the paramount objective is to reduce or remove all fuels that could threaten your home.

The **Defensible Space Zone** extends from the Structural Protection Zone out to a distance of one hundred feet or more, or to your property line, whichever is greater. In this zone you will encounter more wildland characteristics and will need to begin to balance your fire safety and conservation goals. This area is the secondary fuel reduction zone. Both fuel reduction and forest health are objectives for this zone. Practices for this zone include: mowing grasses to three inches or less, keeping shrubs low and widely spaced (eighteen inches or less in height), and removing lower limbs at least ten feet off the ground or one-third the height of the tree (use the latter measure if the tree is less than thirty feet tall).

Finally, the **Wildland Fuel-Reduction Zone** is the last zone, extending from the Defensible Space Zone out an additional one hundred to two hundred feet or even much further. This is the zone where you will carry out wildland fuel treatments; the objective is to aid in the health and productivity of your wildland while conserving natural values. Within this zone, forest restoration work can be coupled with fuel reduction efforts for the long-term health, resiliency, and productivity of the more remote areas of your property.

See the Sierra Nevada Conservation Fire Zones Table on the following pages for a list of practices to apply to each zone based on the Conservation Principles. See Appendix C: Wildland Fuel Reduction for more details on the prescriptions for the areas further away from you home.

B.1.1.3. SIERRA NEVADA CONSERVATION FIRE ZONES TABLE

Once you learn some of the basic fire safe practices, you are ready to expand them to include the Conservation Principles. The table below will help you apply these principles to each of the four zones on your property as identified above. *See the following sections, and Appendix C: Wildland Fuel Hazard Reduction for more information on techniques and terminology.*

FIGURE 1. SIERRA NEVADA CONSERVATION FIRE ZONES PRACTICES

0. Conservation Principle	**Conservation Practices and Considerations for Each Zone**			
	Fire-Free Zone ***House + 5 feet***	**Structural Protection Zone** ***5-30 feet***	**Defensible Space Zone** ***30-100 feet***	**Wildland Fuel-Reduction Zone** ***100 feet to property boundary***
1. Remember the Native Trees and Other Plants				
1A. Discover and monitor your forest and vegetation's dynamic changes.			- Assess native tree and plant species types on site. - Identify plant community types within your defensible space zone. - Prior to treatments document the condition of the plant community. - Identify natural fire breaks within this zone.	- Learn the name and boundaries of your watershed. - Identify natural firebreaks on and nearby your property.

<table>
<tr><td>1B. Act conservatively.</td><td>- Rake leaves, clear roofs and gutters after windy days.</td><td>- Continually prune dead branches and leaves from all plants.</td><td>- Clear dead branches and leaves on the ground, especially after windy days.

- Limb up or prune lower branches 1-2 times/year before fire season.

- Perform regular or annual maintenance on stump-sprouting species, and invasive noxious weeds that may move into the site.</td><td>- Return to previously treated areas every spring and repeat treatments as necessary.

- Monitor and observe the previous work you have performed and evaluate the health and conditions of the forest.

- Use the information you have learned and apply the lessons to other locations you may treat on your property.

- Calculate the slope of your property to identify your recommended treatment area. For moderate slopes of 20-40% treat 100-200 feet, for steeper slopes treat to 200 feet or beyond.</td></tr>
<tr><td rowspan="2">1C. Protect native species that share your home.</td><td rowspan="2"></td><td rowspan="2">- Plant fire-resistant and drought-resistant native species.

- Make sure there is plenty of space between plants so fire cannot move from one plant to another.</td><td>- Learn what plants are on your property and how they would respond to fire.</td><td>- Learn what plants are in your watershed.</td></tr>
<tr><td colspan="2">- Inventory and identify the different types of native plants and trees on your property.

- Look for and protect areas where native plant diversity is abundant and isolate these areas during thinning, while still reducing fire hazards.</td></tr>
</table>

			- Retain a diversity and representation of all native species, including herbaceous patches. - Design your fuel reduction work to take into consideration the plant and forest types where you are working. - Favor leaving the species that are best suited for each location. - Enhance or maintain productivity of understory shrub and herbaceous vegetation. - Promote a high ratio of native grasses to forbs, and a high ratio of native forbs and ferns to shrubs. - Retain lichen and moss species variety, some mistletoe-infected trees, and some live trees with heart rot (conks). - Retain a significant component of hardwoods. - Generally favor early seral hardwood and softwood.
1D. Favor and retain the largest, most fire-resilient, and healthiest trees adapted to the location.	- Remove all flammable objects from this zone, including brooms, woodpiles, garbage, etc.	- Clear most understory vegetation nearest to your home (ladder fuels). - Retain the healthiest and biggest trees in this zone. Thin under these trees very thoroughly to reduce ladder fuels.	- Start by removing the least healthy trees and shrubs. Create space around the healthiest ones. Don't do too much too quickly. - Initial Treatment Entry: Begin work by removing the smaller trees and shrubs. - Retain a diversity of types of trees and plants. - Treat a small section of your property. Then assess the work you have done; evaluate the untreated areas and compare that to the work you have done. - Following the initial light-touch entry, select more plants and trees that may need to come out and mark them for removal. Follow up

			with a second entry to remove those.	
2. Remember the Wildlife				
2A. Provide local wildlife a place to live.		- Initiate fuel reduction treatments with sensitivity to the needs of wildlife. - Remove more fuels closer to the homesite. As you move further away wildlife considerations will be more paramount. - Isolate patches of live vegetation into clumps while still greatly reducing fuel hazards. - Following fuels treatment in this zone, bird and bat houses can be put on leave-trees or other locations to increase habitat and wildlife use.	- Balance the needs for wildlife and homesite defensible space through a site-specific evaluation of both. If certain wildlife habitat is abundant throughout your property, favor defensible space. If wildlife habitat is rarer, protect that area and reduce the fuel in a circumference around it. - Identify some wildlife habitat areas and treat them as mini islands, maintaining their cover and protection. - Provide defensible space around any known wildlife habitat.	- Identify wildlife habitat areas and treat them as mini islands, maintaining the cover and protection they need. - Leave clumps of vegetation for wildlife, especially in brushy areas. - Retain vegetation with evidence of use by wildlife (e.g. bird or woodrat nests, burrows, cavities, and hollows, etc.). - Leave green islands of tree or shrub thickets (e.g. doghair conifer patches) for wildlife habitat throughout the stand. - Create repeating gaps of varying sizes and shapes to retain and create a diversity of habitat types for wildlife. This is in line with the Precautionary Principle.
2B. Provide access to food and water.		- Keep food and other wildlife attractants away from your house.	- Provide pure, clean water in ponds or fountains. Don't add any chemicals that could injure	- Leave forest cover around riparian areas for 50-100 feet from the water.

			birds or wildlife.	- Retain as much canopy closure and vegetative cover as possible for ephemeral and perennial stream gulches. - Leave healthy hardwood trees and fruit-producing shrubs for food for local wildlife. - Retain sheltered connectivity and major game trails between selected vegetation retention areas.
2C. Protect future generations of wildlife.		- Keep pets away from nests and other wildlife habitat.	- Avoid defensible space treatments during the nesting or breeding season of local birds and other wildlife. - Avoid the use of herbicides that are lethal to wildlife. - We recommend non-chemical methods for managing plants, but if you are to use herbicides, hire a certified professional who understands application ratios that may minimize impacts on newborn or young wildlife. (This may be suited for all zones.)	
2D. Value the standing dead trees.		- Do not leave snags within 30 feet of a structure.	- If you have snags beyond 30' from your home reduce the height of these standing dead trees by removing all dead branches, leave the main trunk intact, and top the tree down to 10 ft. above the ground. - Look at the size and	- Identify where snags are in the surrounding landscape to help you decide whether to keep or remove snags closer to your home. If there, is an abundance of snags, remove the smallest, most decayed ones. For those you leave,

			proximity of snags to your home or other structures that you want to protect (such as large, old, live trees or wildlife nesting areas). Generally, the bigger the snag, the less likely it will ignite. If the snag were to fall, where would it land? If it would land on your house, you may need to remove it. - For those snags you will leave, create defensible space around them so they have a less likely chance to ignite during a wildfire.	create defensible space around them. - Around certain snags, retain live trees and shrubs in a circle surrounding the snag to provide cover and protection around them. In such areas, thin away from your leave trees by separating the fuel connectivity between patches. - Retain a wide variety of age, size, and decay classes, including dead and dying vegetation; retain some deformed, non-commercial trees (e.g., pistol butts, forked tops, poor live crown percentage, etc.) for genetic diversity and wildlife. - In areas where there are few snags, consider creating them by girdling trees. - Retain a diversity of different species of snags throughout treatment areas. - Within the snag retention areas, leave vegetative cover to shelter habitat zones. This should be done in relationship to location and site-specific
		- Snag heights can be reduced to 10 feet by topping and retaining them. Short snags can still have a habitat benefit for some wildlife. The risk of a larger snag falling on your home or throwing sparks can be greatly reduced by this method.		

			factors, (e.g. 50% of snags are thinned around the snag, and 50% are left with vegetative cover around them). - Retain groupings of snags for wildlife habitat complexity.
2E. Conserve rare and endangered species.		- Find out if there are rare or endangered species on your property and what precautions you need to take to protect them and their habitat.	
3. Remember the Soil			
3A. Maintain the life in your soil.	- Keep water drainage away from your house. Don't concentrate water flow in any one place. - Impervious surfaces (such as concrete) are great for fire but not great for water flow and erosion.	- Don't use pesticides or other poisons that will kill soil life.	- When burning to dispose of slash, leave unburned areas. Protect soil resources by retaining some leaf litter, needles, and organic materials. - Retain scattered areas of ground fuels. - Retain coarse woody debris in selected locations. - Retain the large, downed-wood component. - Follow burning with the sowing of native grasses in the mineral-rich ashes and disturbed soils to reduce colonization by non-native species.

3B. Ensure that your soil cover is fire safe.		- Encourage the growth of native perennial grasses over tall annual grasses.	- Retain large down woody debris for moisture retention, mychorrizal inoculation sites, and wildlife habitat. If there is no large down wood within your treatment location, combine and group smaller logs that you have cut. - Larger downed wood is very important. It can be buffered and protected by reducing surface and ground fuels around it. In wildland fire fighting, downed wood can be a safety zone because it absorbs water. It is also critical for soils, slope stability, and minimizing erosion. - Use the “kick test”–if it falls apart when you kick it, spread it out and away from your leave-trees, as it could ignite easily.
3C. Minimize erosion.	- Construct terraced log-crib planting areas to hold soils in place. - Plant fire-friendly landscaping, preferably native plants that are low-growing, to help prevent erosion. - Plant shorter-needled native bunch	- Design treatments and removal based on aspect, elevation, and how steep your slope is. They will vary depending on the exposure, moisture, and vegetation due to aspect, elevation, and slope. - Burning should be kept off slopes greater than 55%, especially around draws, headwalls, or where loose boulders may be found. Coarse woody debris can be lopped and scattered in these	

	grasses, which are good for holding the soil.	locations to protect soil and enhance slope stability. - On steep slopes, thin conservatively to retain root mass for slope and soil stability. - When thinning on steep areas, leave stumps high to use as stakes or anchors for contour-felled logs that will be left on the slope and assist in stability. - Retain the majority of the live trees along the toe of steep slopes. - On head slumps, contour-fall some dead trees to serve as down wood and soil anchors. - In snag field areas where there is severe conifer die-off due to disease, reduce snags and contour-fall the trees to serve as future nurse logs, as well as stabilization anchors.
3D. Protect your soil after a fire.		- Sow native grass seeds into burned soils - Use bark-chipped, native species organic mulch to cover disturbed soil - Limit the use of non-native straw as it will introduce invasive annual grasses which over the long term will create a fire hazard. - Place coarse woody debris on the ground to protect soil. Small logs from 4 "– 8" diameter are best suited. - Use erosion control fabric (Jute cloth) to capture soil movement. - Plant native low growing creeping plants to anchor soils.
4. Remember the People		
4A. Plan your actions with your	- Let your neighbors know about the locations of water and gas shut offs, and the	- Cooperate on roadside fuels treatments where multiple

<table>
<tr><td>neighbors.</td><td>location of any domestic animals, in case of a wildfire.</td><td colspan="2">neighbors share easement access routes.

- Collaborate and plan contiguous strategic fuels treatments with your neighbors that will benefit multiple residences during a fire.

- Collaborate with your neighbors on ecological considerations and conservation issues that cross property ownerships. As an example, you may share a stream course or animal trail, or sensitive habitat for plants or animals on multiple properties. Communicate about these issues and work together to perform responsible fuels management.

- Plan actions with your neighbors who may be located above or below you on a steep slope. Consider erosion that may be caused and affect your neighbors from your fuels work. Work together for solutions.</td></tr>
<tr><td>4B. Find experienced workers and treat them well.</td><td colspan="3">- Research forestry contractors before hiring them. Ask your neighbors who they have used and like. Talk to local resource professional for references. Make sure the contractors know the site-specific ecological considerations for the vegetation type on your property.

- When hiring a forestry contractor, some questions you might ask are: Do the workers have workers compensation insurance in the event of injury on the job? What are the wages they earn? Do the workers get the legal on-the-clock breaks they are due? Do the workers have safety gear? Has the contractor ever been cited for workforce abuse issues?

- One method is to hire a crew for a one-day trial period to evaluate their work performance. Following the one-day contract, evaluate how they implemented the treatment. Did they leave enough vegetation? Was the thinning too heavy or too light? Were they sensitive to retaining diversity and conservation priorities?

- There are many forestry contractors; only some understand both fuel reduction and ecology. Be selective about who you hire.</td></tr>
<tr><td>4C. Work with your local fire</td><td>- Make sure local fire fighters know where your water and gas shut-offs are located.</td><td>- Let fire fighters know about the location of any domestic</td><td>- Inform the fire department of the layout of your property.</td></tr>
</table>

department.	Take the time to show fire fighters around your property outside of fire season, when there is little to no threat of wildfire. - Keep important information such as emergency phone numbers and your location (latitude and longitude or township, range, section if you do not have a physical address), near the phone in case of wildfire.	animals and other important locations in this zone.	Highlight fire-suppression anchor points, spur roads, skid trails, snag locations. If you have the capability, you can use a GPS to outline this, and then overlay it onto a map of your property. Keep this map near the phone in case of wildfire. - Inform the local fire department about any completed fuel reduction work.

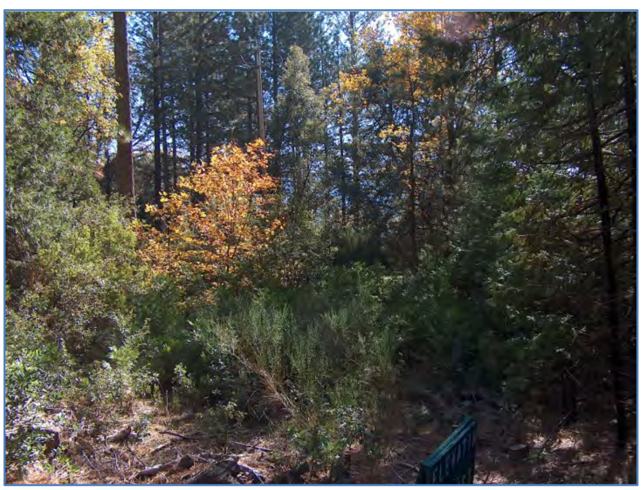
B.1.1.4. CREATING DEFENSIBLE SPACE

The Fire-Free Zone, Structural Protection Zone, and Defensible Space Zone comprise the immediate one-hundred-foot buffer around the homesite. While ecological considerations regarding vegetation types will be considered, ***fuel reduction*** will be the paramount management objective here. The intention regarding treatment in these zones is to create a defensible perimeter around the home where a fire would decrease in intensity. These zones provide better opportunities for fire-suppression activities, thus maximizing the chances for protecting the home. Fuel treatments begin by reducing both live and dead fuels closest to the homesite and gradually *feathering*[16] the treatment, by thinning less vegetation as you move away from the homesite. The reduction in surface and ground fuels is a key objective for this area. This can be accomplished by seasonal rotations of isolated *patch under-burns.*[17] *(See Appendix C.2.1 for more information on burning.)*

Much of what you need to do comes down to common sense and an awareness of your physical surroundings. An important thing to know about fire in forested rural areas is the concept of *fuel ladder*s,[18] defined as a continuous line of vegetation from the forest floor into the canopy (or upper branches) of the trees. The concept of *fuel continuity*[19] is similar and includes both vertical and horizontal directions. Vertical continuity is the fuel ladder concept; horizontal fuel continuity thus means a continuous horizontal line of fuel (usually on the ground). In the latter case, the fuel extends from something—like your house—continuously out into the forest. A good example of this is seen with decks on steep slopes, where the edge of the deck is next to the crowns or tops of the trees (forest canopy). If a fire started either at the house or in the forest, it would have a continuous line of fuel to spread from one to the other via the deck.

An example of a fuel ladder (and vertical continuity) in a forested setting is grass and/or brush on the ground climbing up or leading into smaller trees, especially via the dead limbs, which reach up into the canopy of the taller or dominant trees. With this continuous ladder of fuel into the forest canopy, it is easier for a fire to climb into the trees and spread quickly. To avoid this—especially near buildings and along roads—reduce or remove the fuel ladder. The same is true for non-forested landscapes; the main difference is the height of the different vegetation layers.

FIGURE 2 LADDER FUELS



To reduce forest-type ladder fuels, start in the forests within one-hundred feet of your home and along your roads. Remove brush on the forest floor (but don't scrape it clean or you could have erosion problems when it rains). Removing ground fuels does not mean removing everything growing on the ground. Rather, you can leave clumps of vegetation. The objective is to leave vertical and horizontal space between fuels (in this case, plants). *Limb up*[20] or prune young trees (remove the lower limbs to create open space between the tree canopy and the forest floor) to a minimum of fifteen to thirty feet above ground, or at least six to ten feet above the nearest vegetation.

Young, short trees should be pruned higher incrementally to reduce the chance of shock. A rule of thumb when *limbing*[21] trees is to leave at least one-half to two-thirds of the tree's height in live canopy so you do not harm the tree's ability to grow. You can remove more later, do it in stages so the tree has a chance to adapt. If you leave clumps of shrubs, create at least three times the shrub height in space before the bottom branches of the trees. For example, if you have a three-foot-high bush, leave nine feet of open, clear space (no vegetation) below the bottom branches of the nearby trees. The table below shows how much space you need to have between your trees in your defensible-space area. The clearance suggested in this table is often too much canopy opening for wildland areas (because it will likely increase the amount of sun on the ground and encourage more shrub and herbaceous understory growth, increasing these fuels). See Appendix C for more information on appropriate practices in the Wildland Fuel-Reduction Zone.

FIGURE 3: PLANT SPACING GUIDELINES FOR STRUCTURAL PROTECTION AND DEFENSIBLE SPACE ZONES[22]

Plant Spacing Guidelines

Guidelines are designed to break the continuity of fuels and be used as a "rule of thumb" for achieving compliance with Regulation 14 CCR 1299.

Trees	**Minimum horizontal space from edge of one tree canopy to the edge of the next**	
	Slope	Spacing
	0% to 20 %	10 feet
	20% to 40%	20 feet
	Greater than 40%	30 feet
Shrubs	**Minimum horizontal space between edges of shrub**	
	Slope	Spacing
	0% to 20 %	2 times the height of the shrub
	20% to 40%	4 times the height of the shrub
	Greater than 40%	6 times the height of the shrub
Vertical Space	**Minimum vertical space between top of shrub and bottom of lower tree branches:** 3 times the height of the shrub	

Adapted from: Gilmer, M. 1994. California Wildfire Landscaping

In some places, it is adequate to only *brush*[23] or clear or clean up an area. *Brushing*[24] entails removing brush alongside a road or structure to keep the ground relatively open. Removal of all dead materials—shrubbery, branches, etc.—is especially important. The idea is to remove anything that is particularly flammable from anywhere near an ignition source, such as you, your kids, your car, or your house. When brushing or removing fuel ladders, you should focus on the fine or *flashy fuel*[25] such as small sticks that will burn quickly.

If you remove the "kindling" around your larger fuel sources, chances are much greater those fuels will not ignite. When you are in your forest, make sure there are no concentrations of small sticks or brush right up against the trunks of trees.

Remember, defensible space and clearing does not mean that you denude or clear cut your property. Rather, your goal is to remove the most flammable materials. Balance your fire safety actions with general ecosystem health. Do not disturb the ground around streams or you will cause erosion that will harm fish. If you have the good fortune to live along a stream or river with fish in it, make sure you stay at least 25 feet away from the stream in your clearing activities within these zones, further in the wildland zone. It is OK to remove some or most dead vegetation there (like pruning in your garden). Do not take out live vegetation, especially trees, near streams and rivers. Always maintain a dense shade canopy for the fish. Finally, many species of wildlife—such as bear, fox, bobcat, songbirds, and others—use streams as corridors in which to move from one area to another. Leave them some cover to be able to do this without disturbing you, or vice versa.

Defensible Space Fuel-Modification Treatment Prescription

- Increase the distance between the ground and the live crown of trees by limbing branches (both dead and live) on all *leave-trees*[26] (i.e. "leave this tree") within the circumference of the one-hundred foot defensible zone. For larger trees, limb the branches at least ten to fifteen feet up the tree. For smaller trees, do not remove more than 1/3 of the live crown.

- When limbing larger branches, cut the limb in half, and then continue by cutting the remaining portion of the limb closer to the tree. Be cautious not to damage the tree trunk by cutting into the cambium layer. It is OK to leave branch stubs out from the tree. In some cases where aesthetics are not an issue, it is OK to leave portions of the branches sticking out as perches for birds. *See pruning diagram in Appendix C.*
- Reduce fuel connectivity and density in between individual shrubs and smaller trees by a minimum of ten feet. Thin from below within the *drip-line*[27] areas of desired leave-trees to reduce ladder fuels.
- Reduce ground and surface fuels.
- In following all these steps, retain ecological integrity, and perform treatments in a manner that is sensitive to the landscape.

Much has been written on fire safety and defensible space issues. The guidelines for creating defensible space are contained in Appendix D.

. Remember, these treatments are for closer to your home. As you move further away from your home, your management objectives and actions will change. *See Appendix C for more information on appropriate actions in the wildland.*

B.1.1.5. LEGAL REQUIREMENTS

There are many legal regulations relating to fire safety and defensible space. Following are some of the most relevant and current state regulations.

Public Resources Code 4290

Public Resources Code (PRC) 4290 is a good summary of the basics of roads, driveway width, clearance, turnouts, turnarounds, signing, and water regulations related to fire safety. 4290 is usually enacted in legislation at the county level. Amador County has a good summary of 4290 regulations at www.co.amador.ca.us/ . The following summarizes important actions for residents to take to meet 4290 requirements:

a. Have proper identification of your home (street names and addresses) readable from a vehicle on the road.

b. Maintain good access to your house for fire apparatus (wide enough for two vehicles to pass, built to carry at least 40,000 lbs., less than 15% grade, room to turn around, etc.).

c. Provide adequate and reliable water storage (at least 2,500 gallons) with access for fire equipment.

d. Use fire-resistant materials (metal, tile, or composition) for roofing.

e. Enclose the underside of decks and balconies with fire resistive materials.[28]

Public Resources Code 4291

The State enforces basic fire prevention principles through PRC 4291. “4291” as it is referred to, regulates the amount of fuel you can have around your property. It is a good summary of the basics of fire-safety. It is the law that requires a minimum of 30 feet of defensible space. It was updated in September 2004 to expand some of the 30-foot defensible requirements to 100 feet. It states:

a. Maintain around and adjacent to the building or structure a firebreak made by removing and clearing away, for a distance of not less than 30 feet on each side of the building or structure or to the property line, whichever is nearer, all flammable vegetation or other combustible growth.

b. Maintain around and adjacent to the building or structure additional fire protection or firebreak made by removing all brush, flammable vegetation, or combustible growth that is located within 100 feet from the building or structure or to the property line or at a greater distance if required by state law, or local ordinance, rule, or regulation.[29]

CAL FIRE is the agency that enforces 4290 and 4291. They have the legal authority to require you to meet these minimum standards. If you refuse to do so, they can do it for you and charge you for it. For many reasons, it is to your advantage to meet these minimum standards set forth in 4290 and 4291.

Government Code 51175

This code defines Very High Fire Hazard Severity Zones and discusses its implementation. This was a result of the 1991 Oakland Hills fire and the resultant "Bates Bill" (AB 337).

> *"The purpose of this chapter is to classify lands in the state in accordance with whether a very high fire hazard is present so that public officials are able to identify measures that will retard the rate of spread, and reduce the potential intensity, of uncontrolled fires that threaten to destroy resources, life, or property, and to require that those measures be taken.[30]"*

CAL FIRE's FRAP is now using this information to:

> *"provide updated map zones, based on new data, science, and technology that will create more accurate zone designations such that mitigation strategies are implemented in areas where hazards warrant these investments. The zones will provide specific designation for application of defensible space and building standards consistent with known mechanisms of fire risk to people, property, and natural resources."[31]*

Government Code 51189

This code is a result of AB 1216 (Vargas) and directs the Office of the State Fire Marshal to create building standards for wildland fire resistance.

> (a) *The Legislature finds and declares that space and structure defensibility is essential to effective fire prevention. This defensibility extends beyond the vegetation management practices required by this chapter, and includes but is not limited to, measures that increase the likelihood of a structure to withstand intrusion by fire, such as building design and construction requirements that use fire-resistant building materials, and provide protection of structure projections, including, but not limited to, porches, decks, balconies and eaves, and structure openings, including, but not limited to, attic and eave vents and windows.*[32]

Information about Chapter 7A of the California Building Code (the WUI Building Standards) can be found at osfm.fire.ca.gov/WUIBS.html.

Board of Forestry Regulations

The Board of Forestry sets forestry and fire policy (overseeing CAL FIRE) for the State. In 2006, they adopted new defensible space guidelines.[33] These guidelines implement PRC 4291. These guidelines are titled *"General Guidelines for Creating Defensible Space."*[34] A link to this document is found in Appendix F.

The Forest Fire Prevention Exemption (from AB 2420) allows exemption from Timber Harvesting Plans and other related permits for logging of *merchantable*[35] trees for purposes of fire safety when several conditions are met, including potential projects identified in this plan. The link to this regulation is also found in Appendix F.

The harvesting of trees in compliance with PRC **§**4584(k), Forest Fire Prevention Exemption, is limited to those trees that eliminate the vertical continuity of vegetative fuels and the horizontal continuity of tree crowns, for the purpose of reducing the rate of fire spread, duration and intensity, fuel ignitability, or ignition of tree crowns….[36]

> *CCR 1038(c) - REMOVAL OF FIRE HAZARD TREES WITHIN 150' OF STRUCTURE EXEMPTION - allows harvesting of trees in order to eliminate the vertical continuity of vegetative fuels and the horizontal continuity of tree crowns for the purpose of reducing flammable materials and maintaining a fuelbreak to reduce fire spread, duration, and intensity.*
>
> *CCR 1038(g) - WOODY DEBRIS AND SLASH REMOVAL EXEMPTION - allows the removal of woody slash that is delivered as combustion fuel for the production of energy.*
>
> *CCR 1038(b) - DEAD, DYING OR DISEASED; FIRE WOOD OR SPLIT PRODUCTS EXEMPTION - allows the harvesting of dead, dying or diseased trees, firewood or split products in amounts less than 10% of the average volume per acre.*

Before removing trees for fire safety, contact CAL FIREs Forest Practice Forester at 530-644-2345 to avoid violations of the California Forest Practice Act.

Local and County Regulations

The county of Amador's ***Fire and Life Safety Ordinance (15.30)*** establishes requirements for new developments that mirror or exceed the requirements of the Public resources Code 4290.

B.1.1.6. FIRE SAFE BUILDING AND REDUCING STRUCTURAL IGNITABILITY

How your house is constructed is equally important to creating defensible space. The law now requires fire-safe construction for new construction in communities in the wildland-urban interface.[37] If you have a shake roof, your house is more likely to burn down from embers even if they have fire retardant; thus, one of your first actions is to replace your roof. The roof is the most vulnerable part of your home to wildfires, during which *firebrands*[38] can land in your roof's nooks and crannies and easily start a fire there. Once your roof covering ignites, chances are very good that the rest of your home will follow.[39] Listed below are key issues of fire-safe structures:

- Shake siding on your house is much more prone to ignite than stucco or fiber or cement siding.
- Decks sticking out from your house act as kindling to your house for fires. If you have a deck, enclose the underside of it and your house (if it is a post-and-pier foundation, but leaving screened ventilation). Do this either with solid building materials or with lattice and tight ¼" screen with green, fleshy, well-maintained plants. This will give you much more storage space as well, since it is unsafe to store anything (especially firewood or cardboard boxes) under your house if it is open to the outside.
- If you have vents in your attic, make sure they are screened with ¼ non-corrosive metals (not vinyl). Enclose eaves, fascia, and soffits with screens. If these areas are not screened, embers can get enter them and burn your house down from the inside out.

- Make sure you have a ¼-inch mesh screen on all chimneys.
- Use double-pane or safety (tempered) glass on all windows.

For more information on making your home safe from wildfire, check out the University of California's *"Homeowners Wildfire Mitigation Guide"* at groups.ucanr.org/HWMG/index.cfm, the new WUI regulations osfm.fire.ca.gov/WUIBS.html, and *"Is Your Home Protected from Wildfire Disaster? A Homeowner's Guide to Wildfire Retrofit"* at www.firewise.org/pubs/is_your_home/WILDFR2.PDF.

The following information is taken directly from "Wildland-Urban Interface Ignition-Resistant Building Construction Recommendations," generated by the 2004 Community Wildfire Protection Plan Workshops, the California Fire Alliance, and the California Fire Safe Council, compiled by Ethan Foote of CAL FIRE.

> *"One of the major objectives of wildfire control in general, and pre-fire management hazard reduction in particular, is to reduce the loss of life and property. The historical pattern of building loss during Interface fires indicates that vegetation fuel management must go hand-in-glove with ignition-resistant building construction to maximize the effectiveness of fire loss mitigation measures.*
>
> *"Building loss and survival in the 1961 Bel Air fire, which destroyed 505 houses, was well documented. The report 'Decision Analysis of Fire Protection Strategy for the Santa Monica Mountains' found that 71% of the buildings with 26-50 feet of brush clearance survived the fire. However, the survival rate of buildings exposed to the fire increased to 95% for houses that had both brush clearance and ignition-resistant building construction (in this case non-wood roof covering). A similar pattern was seen on the 1990 Santa Barbara Paint fire…."* - (Source: California's I-Zone: Urban-Wildland Fire Prevention & Mitigation, p. 120).
>
> *"On the Paint fire, which destroyed 479 houses and major buildings, the survival rate was 86% for houses with both non-flammable roofing and 30 feet of brush clearance. Only 4% of the 438 houses surveyed in the Paint fire survived where non-flammable roofing and 30 feet of brush clearance were absent. The modeling of structure loss and survival on the Paint fire revealed that brush clearance alone only 'explained' or accounted for 11% of the variation seen in the structure survival patterns. When brush clearance was combined with roof type in the model, and the effect of defensive actions was accounted for, the model explained 59% of the variability in structure loss.*
>
> *"This is strong evidence that vegetation management alone will not be able to fully explain, nor mitigate, building loss on wildfires - hence the need for the comprehensive approach in this plan, using a combination of vegetation management and addressing recommendations for ignition-resistant building construction. There is also strong evidence that this comprehensive approach will work to significantly reduce Interface losses. The Los Angeles Times (1 April 2004) reporting on the Southern California conflagrations of October 2003 clearly revealed the need for, and effectiveness of, combining vegetation management and ignition-resistant building construction for reducing building loss in wildfires:*
>
>> *"Amid the ashes of the most costly wildfires in California's history lies evidence of a crucial lesson: Fire-resistant construction and vigilant removal of flammable vegetation significantly improved the odds of a home's survival, according to a Times analysis of fire records from more than 2,300 destroyed structures.*

The impression left by an out-of-control fire racing through communities can be one of random destruction, with one house, or a whole block, burned to the ground and the next one spared for no apparent reason.

In fact, according to the Times analysis—which covered homes destroyed by the deadliest of the blazes, San Diego County's Cedar fire—houses built since 1990 were far less likely to burn than those constructed in any previous decade. Houses built during the 1990s were damaged or destroyed at less than half the rate of houses built earlier.'

The communities and homeowners covered by this plan have, for the past 40 years, had recommendations that can be (and have been) taken to reduce the ignitability of structures. An outcome of the 1961 Bel Air fire was publication of the 'Fire Safety Guides for California Watersheds' by the County Supervisors Association of California in 1965. These recommendations have been updated through the years. The current version of these 'Fire Safe Guides' is 'Structural Fire Prevention Field Guide for Mitigation of Wildfires" This guide can be found at osfm.fire.ca.gov/structural.html.

These recommendations for ignition-resistant building construction include:

- Roofing
- Eaves and Balconies
- Exterior Walls
- Rafters
- Windows
- Doors
- Attic Ventilation Openings
- Underfloor Areas

In response to the persistent loss of life and property in wildfires, the most important of the recommendations is now a requirement. All new buildings, and significant re-roofing of existing buildings, in the communities covered by this plan are required to have ignition-resistant roofing (California Building Code §1503). The State of California is also in the process of promulgating changes to the state building code expanding the interface roof requirements and including new requirements addressing exterior wall construction, vents, and ancillary structures.[40]

These recommendations became law in 2003, work on the related Wildland-Urban Interface Building Standards have been completed and have recently been adopted by the California Building Standards Commission. For the latest information on these Standards, see osfm.fire.ca.gov/WUIBS.html.

B.1.2. WATER SUPPLY

The amount of water you have stored will have a significant impact on the ability to fight a fire at your home. 2,500 gallons of water storage for firefighting is the minimum required for new construction. Storing water in the winter for use in the summer and fall and conserving water are both critical in this Mediterranean climate. There are many options available in terms of water tanks. Ideally, you should have a dedicated fire-fighting water tank, with a fire-ready standpipe, and a separate tank for domestic use. If you cannot do this, put your domestic water line out of your water tank in the middle of the tank, so you do not accidentally drain your tank into the garden or elsewhere, keeping the bottom half for emergency use. Combined water storage is allowed as long as the minimum 2,500 gallons for fire department use is always maintained. Typically, this requires plumbing the domestic water flow line above the 2,500-gallon mark of your tank.

Your fire water line should be a two- or four-inch line, buried 12-18 inches below ground. An aboveground plastic water line will likely burn in a fire, but a full plastic water tank probably will not. Put a metal standpipe at the end of the water line with a 2 ½-inch fire hose threaded adapter so firefighters can quickly attach to your water source. Fire hose thread is known as national thread, national standard, NST, NSFH, NH, or FHT. The fire agencies prefer 2 ½-inch fire hose.

Your water tank can be located anywhere on your property. However, the fire department connection must be located no closer than four feet and no further than twelve feet from the roadway. Make sure that your standpipe is somewhere a fire truck can *access it and turn around to leave*. If it is not accessible, it is not going to be very useful. The roadway must be wide enough to accommodate the fire apparatus without blocking it. Fire engines generally need 12 feet wide by 15 feet high clearance, and a 60-foot T or 40-foot circle to turn around for safe retreat. Finally, make sure your local firefighters know where your tank is exactly located, before any fires. Talk to your local fire department about what kind of water source signage they recommend.

In an emergency, swimming pools and ponds provide a great source of water. Firefighters can *draft*[41] directly from these sources if they can get close to them. If you are going to depend on this water as your first response to a fire, you will need a pump and a generator for back up. Often during a large fire, the power will go out. Therefore, the generator will be needed to pump water from your pool or pond.

While ponds are ideal for storing large amounts of water for fire fighting, they must be properly sited to avoid erosion. Ponds built on unstable ground can give way, leading to large washouts and gullying, choking streams with sedimentation, in turn harming fish habitat. Ponds should be built on stable ground and have adequate overflow protection. Ponds should not be built across seasonal or perennial creeks. Also, please remember that ponds can breed nuisance species such as bullfrogs, mosquitoes, and non-native fish that can harm native salmon and steelhead.

There are more and more options for inexpensively storing water. Cisterns are catchments to collect rainwater and are becoming increasingly popular. Several websites describe how to make one yourself—start with a search for "cistern." Low-cost water tanks are also available. The easily transported Pioneer Tanks from Australia are now seen throughout the US (www.pioneertanks.com.au).

B.1.3. ROADS AND ACCESS

Roads are critical components in the fire equation. They are a great place for a *fuelbreak*.[42] They are also critical for evacuation and for firefighters to reach your home. As mentioned above, *minimum clearance requirements along your roads for a fire engine to safely pass are 12 feet wide by 15 feet high,* in addition to fuel reduction treatments of at least 15 feet on both sides of the road. You also need plenty of places on the road where vehicles can pass each other, i.e., adequate turnouts properly designed and spaced along your access road or driveway. If a wildfire is threatening and a fire engine is trying to get to your residence or business while you are trying to evacuate, there need to be areas in the road wide enough to accommodate traffic from both directions. Remember, when a wildfire is threatening, chances are it will be very dark and smoky, thus very disorienting. Take the time now to make it easier on yourself should that event actually occur.

A fire engine needs to be able to turn around to leave. If they cannot safely get the engine in and out, your home will be less defensible. Firefighters will not and should not risk their equipment or lives to protect your property. For safety and quick escape, firefighters will usually turn around immediately when they arrive at a structure.

This is good advice for you too. Get in the habit of parking your vehicle(s) facing out at home so you can leave quickly if necessary. If you have locked gates, they will very likely be cut by firefighters. If you do not want that to happen, make sure you leave your gates unlocked. If you have electric gates, make sure they have a back-up power source or other way to open when the power is out, which is likely during a large wildfire. To avoid damage to locked gates from forced entry by emergency personnel, locked gates should have an emergency service rapid entry system installed.

Additionally, bridges need to be evaluated for safe fire truck passage as per PRC 4290. Generally, if propane or other fuel or water truck can make it across the bridge, then a fire truck can. If you have a bridge that will not safely carry a fire engine, you must contact your local fire department and let them know. Do not make their job any more dangerous than it already is. Instead, help them to help you.

Finally, many private dirt roads can become nearly impassable after a rough winter. Maintaining your dirt and gravel roads is important for many reasons, including not only keeping dirt out of streams, but also ensuring a safe evacuation in an emergency. If several households share the same road, consider rotating the responsibility for coordinating road maintenance every few years. The identified coordinator can collect an agreed-upon annual assessment from all those who regularly use the road, and organize the maintenance.

Fuel Treatments along Roads and Driveways

Fuel treatments along driveways and road systems should be considered a strategic high priority. While ecological concerns regarding vegetation types will be considered, fuel reduction will be the primary management objective. The main objective for *ingress-egress*[43] corridors is to create a defensible perimeter along and adjacent to all roads and driveways. Once treated, fire intensity is decreased along the roadside providing safer ingress and egress for firefighters and homeowners.

Roads can be a potential ignition source for wildfires (from vehicles and people). When treated, they serve important functions as natural fuelbreaks and *anchor points*[44] for tactical fire-suppression activities. Thus, treatment of these areas is a top priority in any fuel management strategy. Treatments along these driveways and road corridors will also benefit multiple landowners in the event of a wildfire; thus, they provide an opportunity for community planning and collaboration. The neighbors who use these travel routes to access their homes can also be educated on the importance of fuel-reduction activities in the event of a wildfire evacuation scenario.

Roads and Driveways Fuel Modification Treatment Prescription

- Retain larger trees while aggressively thinning understory vegetation in the area 100 feet from roads and driveways.
- *High-Prune*[45] all branches that are hanging over the road up to 15 feet above the ground.
- Reduce standing dead trees (snags) directly along roadways. Some dead standing trees may be retained by reducing the height of the snag to 10 feet, through tree surgery work; accomplished by climbing, topping, and chunking-down sections.

B.1.3.1. SIGNAGE AND ADDRESSING

Chances are firefighters are not going to know where you live, especially in the case of a large fire where out-of-town firefighters are present. *Make sure you have a visible road and address sign that meet the Amador County Fire and Life Safety Ordinance (15.30)*. If you have a visible address sign on your house and/or driveway and a road sign at the street, emergency service personnel (fire, ambulance, and police) will likely find it. If not, they may not. Work with your local fire department if you have specific questions regarding how to do this most effectively and to their standards. Your sign should be of reflective material so that it is visible at night and non-flammable (metal on metal post). If you want emergency personnel to be able to find you, do your part. In a medical emergency a few minutes may be the difference between life and death.

Not only is this a smart practice, it is the law. In the California Code of Regulations, Section 1270 Title 14: SRA Fire Safe Regulations, Subsection 1274 states:

To facilitate locating a fire and to avoid delays in response, all newly constructed or approved roads, streets, and buildings shall be designated by names or numbers, posted on signs clearly visible and legible from the roadway. This section shall not restrict the size of letters or numbers appearing on street signs for other purposes.

It goes on to further say that the letters must be at least 3" high and 3/8 stroke, reflective, and of a contrasting color to the sign background. Additionally, they need to be visible from both directions for at least 100 feet.[46]

A number of Sierra communities have already accomplished this easy, inexpensive, task to fix an existing problem. Often local fire departments buy the supplies and make the signs to sell to homeowners.

B.2. DURING THE FIRE

Fire can be extremely frightening. However, taking steps now to prepare you, your family, and your home will make it easier to survive a fire, and it will likely reduce panic and help you to effectively deal with the situation. Even the most organized of us will forget something when a crisis moment arrives. Create easy-to-follow checklists for your family to use to safely survive a wildfire. Figure 3 on the following page, from "Living with Wildfire," Pacific Northwest Wildfire Consulting Group (**htpp://www.fs.fed.us** ***/r33/publications/documents/living with fire.pdf***), can be copied and posted somewhere prominent in your home or with your emergency preparedness kit. It is a great summary of what to do when fire strikes.

FIGURE 4 WHEN WILDFIRE APPROACHES CHECK LIST[47]

WHEN WILDFIRE APPROACHES

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 fire-fighting 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 as well.
- ☐ Contact a friend or relative and relay your plans.
- ☐ Make sure family members are aware of a prearranged meeting place.
- ☐ Tune into a local radio station and listen for instructions.
- ☐ Place vehicles in the garage, have them pointing out, and roll up windows.
- ☐ Place valuable papers and mementos 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, and boots. Carry gloves, a handkerchief to cover face, water to drink, and goggles.

☐ Close all exterior vents.

☐ Place a ladder near[48] the house so firefighters 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 available 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!

Conserve your water. Save it for when the fire is at your house, or the fire has passed. This is when you may need it to put out any embers or sparks. Remember that if the power goes out and you use a well system with a pump, you won't have water unless you have a backup generator. Therefore, fill bathtubs and any available containers to store water. Make sure that all backup generators have an approved crossover switch, installed by a Licensed Electrician so that when the power company is fixing downed lines, you don't kill a lineman with your generator.

If you have any experience or training in fighting fire, create a fire-fighting tool area that is easily accessible. Keep this in a non-flammable structure, such as a metal shed or your garage. Your collection should include tools such as shovels, hoes, Pulaskis, McLeods, etc. Keep a set of fire-fighting clothes there as well, including heavy cotton or wool clothing and leather boots and gloves. Put a fire hose at your water source and mark it well so you, your neighbors, and/or firefighters can easily find and use it.

Another very important thing you can do to protect your property in the case of a fire is to be fully prepared for the eventuality of fighting a fire at your home.

Create a map of your property that shows where the most valuable structures and other resources are. Mark on your map the location of your water sources, where your gas/propane/diesel tanks and shut-offs are located and any other highly flammable or explosive materials. Include locations of any locked gates and the combinations to those gates. Also, include locations of any pets or livestock. Put your name, phone number, CB handle, street address, and parcel number or *GPS*[49] coordinates on this map. Put a copy on the wall by a phone (or CB radio), with the number of your local fire department so you can use it in case of an emergency. If you desire, put it up somewhere near the entrance to your property where firefighters can see it, perhaps with your visible fire-fighting tools.

Check with your local fire department to see if they want a copy. Better yet, invite them out to your property (not during fire season) to review this and show them where everything is. This will help them effectively protect your property in case of fire. If you are concerned about security issues, you can talk to your local fire department to work out a compromise that will meet your confidentiality needs while making their job easier to defend your property when the day comes.

Remember to call 911. In the midst of the excitement and panic of a fire, and attempts to extinguish it, it is possible to forget to call 911, which alerts firefighters. Should the time come that you do have to call 911, give your address (which must be visibly marked on the road so firefighters can find your home) or GPS coordinates if you have them. If you live in a remote area, tell the dispatcher at 911 the name of the closest local fire department, if you are certain of it, as dispatchers are often located in more urban areas and may not know your local geography.

After you call 911, go to the bottom of your road, and either have someone stand there or put up a non-flammable flag or some sign to let firefighters know where the emergency is and the way to your house. The easier you can make it for the firefighters, the greater your chance of surviving a fire.

B.2.1. EVACUATION

Be ready if you need to evacuate. Have everything you need packed beforehand. Some residents in high fire-risk areas move their valuables to a safer location during fire season. Identify alternate evacuation routes and drive them now so you know them well. Do this in the dark too so you will be comfortable during a large fire, where visibility can be very low. Know at least two ways out. Make sure you are comfortable with both routes. Have keys or combinations to locked gates in your vehicle. Turn on your headlights, and drive SLOWLY and carefully. There could be many people trying to leave and/or firefighters and other emergency service personnel trying to enter to protect you and your house. Sometimes the safest or quickest evacuation may be on foot. Know those routes too; make sure your friends, family, and local firefighters know that you may be on foot during a wildfire. *For more information on evacuation, see Appendix D.*

B.2.2. SHELTER IN PLACE

It is always preferable to evacuate well ahead of an approaching wildfire. To alert citizens of the need to evacuate, Amador County PSAP[50] uses a commercial software package - Reverse 911® - that provides reverse 911[51] capabilities. Reverse 911 allows the PSAP to initiate phone calls to every residence and business within a geographical area to inform residents of the need to evacuate. In 2010, the county refined this system by developing pre-defined reverse 911 areas based on neighborhood configurations and expected fire behavior. The intent of this refinement is to allow orderly evacuation of neighborhoods well advance of the wildfire. Reverse 911 is not a perfect system. Currently, it works only with landline phones – not cell phones. The ability to register cell phone numbers in the reverse 911 database is being developed.

There has been an effort in recent years to promote the concept of shelter in place at your home. In Australia, officials recommended people stay at home. Their motto is “Prepare, Stay, Defend.” Their fire protection strategies were developed around this plan.

February 7, 2009 is known as Black Saturday in Australia. On this date a series of wildfires started that killed 173 people (120 were killed in a single firestorm) and destroyed over 3500 structures and damaged thousands more. With the Australian experiment with “Prepare, Stay, Defend” it is understandable that Amador fire agencies do not favor this approach. Amador fire agencies want residents removed from the path of a wildfire so they can concentrate on firefighting not rescue.

So is there a time and place for shelter in place? Yes, the time to shelter in place is when no other option exists. Remember, the intent of the reverse 911 system is to move people out of the path of the wildfire well before it gets to them. However, reverse 911 is not a perfect system and someone may not be notified to evacuate. The safest place to be in a fire may be in a designated area to shelter in place. It is not advisable to stay in your residence. You should only shelter in place at your home as a last resort and only if you have good defensible space there and are prepared to stay for whatever length of time necessary.

There are areas within the Pine Grove Planning Unit where shelter in place makes good sense. These areas are identified in the risk descriptions or project lists of affected roads in Chapter 3.

Do not be surprised if fire fighters are hesitant to let you shelter in place. Residents often do not have the proper equipment or training to do this and liability issues can arise. It is often very difficult to know what the right thing to do is as the fire approaches. Be prepared. Talk to your local fire fighters now to develop a plan.

B.2.3. SAFETY ZONES

If you are unable to evacuate by road, know where your nearest “safe or safety zones” are. (Safe zones are identified on each community map located at *www.amadorfiresafe@volcano.net*). A safe zone is where you can go (other than your house) to shelter in place. These are locations where you and your family can survive a fire without any special equipment or clothing if your home is not safe (although your home is often your safest place). Safe zones are also used as staging areas but usually do not provide any services. Steep creek channels are not a good place to seek refuge, as fire travels faster in steep canyons. The fire will consume the oxygen there ahead of the flames and you could suffocate before the fire arrives. Instead, look for big open fields, large river bars, wide-open graveled or paved roads, or an open area that has already burned. This area should be four times wider than the fire's flame lengths *(see the fuel models for various vegetation types in Appendix 3 for typical flame lengths).* Talk to your local fire department about potential safe zones.

Safe zones for residents are different from those for firefighters. Do not attempt to shelter in a firefighter safety zone if you are not actively fighting the fire.

If an evacuation is ordered or you are sent to a safe zone, you will be notified of where to go by local law enforcement. Some safe zones may be used as the Emergency Operations Center and hence should be avoided so as not to interfere with the success of fire-suppression efforts.

B.2.4 PREPARING PETS AND LIVESTOCK

If you have pets and/or livestock, take the time now to plan for how best to ensure their survival. The following text of a brochure, "Disaster Preparedness for Dog and Cat Owners," is from the California Department of Food and Agriculture. Similar brochures are available regarding birds, horses, and livestock. These can all be found at: www.cdfa.ca.gov/ahfss/ah/disaster_prep_Brochures.htm. Additional information regarding this issue and animal evacuation during wildfire is available at *www.amadorfiresafe@volcano.net*.

With a little advance planning, you can save your pet's life in a disaster.

Before

PLAN AHEAD: In the event of an evacuation, pets may not be allowed inside human emergency shelters. Determine the best place to leave your pet in case of a disaster. Identify an off-site location as well as a place in your home.

IDENTIFICATION AND PHOTOGRAPHS: Dogs and cats should always wear properly fitting collars, personal identification, rabies, and license tags. Make sure all the information on the tags is current. Keep a current photo of each pet. Make sure any distinguishing markings are visible. You will need proof of ownership to retrieve your pet from a shelter.

DISASTER KIT: Maintain a disaster preparedness supply kit for each of your pets.

PAPERWORK AND RECORDS: Store important animal documents in a zip-lock or waterproof plastic bag. These should include vaccination and medical records.

VACCINATIONS: Your pets need to be current on vaccinations. You will be required to show proof of vaccination if you need to board your pet.

TRANSPORTATION: Each animal should have their own pet carrier. Familiarize your pet with the carrier or cage before an emergency.

LEASHES AND COLLARS: Keep a leash handy for each dog and cat in your home. Consider using a harness.

BUDDY SYSTEM: In case you are not home when disaster strikes, ask a trusted neighbor to check on your animals. Exchange veterinary information and file a permission slip with your veterinarian authorizing them to get emergency treatment for your pet if you can't be located.

During

IF YOU TAKE YOUR PET:

Evacuate your pet early, if possible.

Take your disaster preparedness kit, including the pet's vaccination and medical records, as well as identification photographs.

IF YOU CANNOT TAKE YOUR PET WITH YOU:

Bring your pet indoors. Do not leave pets chained outdoors.

Prepare a pre-selected site indoors for your pet. Use a room with no windows but adequate ventilation, such as a utility room, garage, bathroom, or other area that can be easily cleaned. Do not tie them up.

Leave only dry foods and fresh water in non-spill containers. If possible, open a faucet to let water drip into a large container or partially fill a bathtub with water.

Do not leave vitamin treats, which could be fatal if over-eaten.

House cats and dogs separately, even if they normally get along.

What about pets other than dogs and cats?

Plans for birds and reptiles can be found in the brochure: *Disaster Preparedness for Bird and Reptile Owners*

Small mammals, or pocket pets, should be transported in carriers suitable for maintaining the animals while sheltered. Remember to take bedding materials. Keep animals in a quiet, safe place.

After

Pet behavior may change after an emergency. Monitor your pets closely and keep them leashed. Familiar scents and landmarks may be altered, causing confusion and abnormal behavior.

Be aware of downed power lines, fallen trees, debris, and local wildlife.

If you find a pet, call animal control or any emergency phone numbers set up after the disaster. Isolate it from your animals until it is returned to its owner, or can be examined by a veterinarian.

IF YOU HAVE LOST YOUR PET:

Visit each shelter in your area at least once every other day. You must check the shelter in person; you are the only person who can truly identify your animal. Keep a current photo of your pet showing or describing any distinctive markings.

Create a flyer with your pet's photo and description, pet's name, your name and phone numbers where you can be reached.

When you do find your pet, immediately examine it for illness or injuries. Obtain medical attention from your veterinarian if needed. Use caution when handling animals. Panicky or injured animals may bite.

Practice Your Plan!

Disaster Preparedness Kit

- Pet carrier or cage for each pet
- Two-week supply of food and water
- Non-spill food and water bowls
- Medications and dosing instructions
- Pet first-aid kit
- Vaccination and medical records
- Your veterinarian's information
- Cat litter box and litter
- Newspaper
- Plastic bags for waste disposal
- Paper towels
- Disinfectants
- Leash and collar/harness
- Blankets
- Toys and treats

Be sure to provide your pets with as many amenities as possible.

Remember, they are counting on you for their survival and support!

Emergency Contact Information

Amador County Animal Response Team (ACART) is the animal response unit in Amador County. ACART can be activated by either County Animal Control or one of the fire departments. ACART, in turn, has agreements with their counterparts in Eldorado and Butte Counties, as well as the UC Davis Veterinary Emergency Response Team (VERT) for additional assistance.

Each pet owner should have 3 days worth of food, water, and supplies for each pet in a pre-packed "go-bag". If you are not home when the emergency arises, ACART may be able to help remove your animal(s). You must call Animal Control at (209) 223-6378 to start this process. Evacuation shelters for both humans and animals will be set up in either Amador or Eldorado County.

Additional information about animal evacuation is available on the Amador Fire Safe Council's website at http://www.**amadorfiresafe**.org.

B.3. AFTER THE FIRE

As a landowner living in the Sierra Nevada—where the ecosystems are naturally prone and dependent on frequent wildfires—there is a good possibility that a fire may eventually occur on your property. If fuel modification measures have been taken prior to the fire, the intensity of the fire will likely be less severe. Regardless of whether you have performed fuel hazard treatments or not, varying degrees of land restoration and post-fire impact mitigation measures may need to be taken. After the fire is out, the important step of healing the land will need to take place.

If a fire does occur on your land, the first post-fire step is to assess how severe the fire burned. Did the fire burn at a low, moderate, mixed, or high severity? In certain situations, such as with low fire intensity, wildfire may have achieved very positive results to reducing your fuel loads and benefiting natural processes. This includes burning through the understory and occasionally scorching individual trees, but not becoming a crown fire. In addition to reduced fuel loads, the wildfire may have performed a great service by increasing the structural diversity on your land and achieving great benefits to the local ecology and wildlife habitat through snag creation.

> *"Fire-killed snags and logs serve vital roles in the structure and function of healthy forest ecosystems in general, and are especially important for natural recovery processes following fire events. They provide food and shelter to wildlife, fish, and numerous insects, microbes, and fungi that are vital to post-fire recovery and long-term site productivity, they help retard surface water runoff and help retain and build soil, they help cycle nutrients and water to plants and soil, and snags that fall across streams provide links between terrestrial and aquatic ecosystems."*[52]

Wildfires that burn at high intensity can negatively affect soils and kill all of the overstory trees. This is known as a stand replacement fire. Moderate and mixed severity fires will burn hot in certain locations and these locations may need some restoration. Often, post-fire restoration efforts will focus on mitigating the impacts of fire suppression activities such as back burns and the firebreaks created by heavy equipment during emergency fire fighting. If a wildfire has burned through your property without fire suppression activities having taking place, the end result of that fire may be a positive one; nature may accomplish its own healing process with a little bit of assistance from you. Contact CAL FIRE or a Registered Professional Forester (RPF) if you have any questions.

Wildfires that have burned at high severity may have dangerous adverse effects to watershed health and pose extreme safety issues to local communities. Water erosion is one of the main concerns. Mountainsides that are completely burned, with all of the trees and vegetation gone, will not have the ability to hold back or absorb water (e.g. rain). Burned up hillsides may turn hydrophobic, where the ground is sealed and repels water instead of absorbing it. In these situations the potential for catastrophic events like landslides—where entire hillsides can turn to liquid and move downslope—are possible.

In addition to slope instability, invasive species can take hold after fire, changing the ecological balance for decades. Areas in the eastern Sierra are more prone to this type of weed invasion. Species like cheatgrass, an annual weed, will take over and replace native grasses and plants. Once established, cheatgrass increases future fire risk as it is highly flammable and carries fire very well; this increases the likelihood of more fires and in turn more weeds to perpetuate this cycle long into the future.

One technique for rehabilitating soils after a fire is to break up hydrophobic[53] soils by raking or mulching charcoal into the ground to help soak up water. Other activities include native grass seeding to mitigate invasive weed invasion, planting trees and shrubs, and other short and long-term erosion control efforts.

Following a fire on your land, it is recommended that you consult with trained resource professionals. Sometimes a team of specialists including hydrologists, geologists, soils scientists, botanists, foresters, and engineers may need to be consulted to assess the impacts the fire may have caused and give you direction regarding how to develop a restoration plan to start the healing process. In addition to their advice, it is also good to consult with a Registered Professional Forester to review your restoration plan. Often activities such as *salvage logging*[54] that some natural resource professionals consider restoration can actually set the cycle of ecological recovery back by inflicting more damage on the land.

Directly following a fire the land is at its most sensitive, and in an unstable state. Therefore, very careful consideration will need to be taken to ensure your actions will benefit its recovery.

For more information, see "After the Burn," www.cnr.uidaho.edu/extforest/AftertheBurnFINAL.pdf.

B.3.1. ASSESS YOUR SITUATION

In the 2004 summer fires in Shasta County, some homes were threatened that had burned only a few years before. Just because you live through a fire does not mean it cannot happen again. Learn from the experience to be better prepared next time. The following article from *Forestland Steward* was published after the 2003 Southern California firestorms.

"Post-fire response: assess your situation

> *"Although we all know that the California landscape is adapted to burn, we are seldom prepared for the reality of a large wildfire. The effects of a fire will have consequences for years. Approach the post-fire period thoughtfully. After a fire, there are important decisions to be made. What should you be concerned about and what needs to be done? The wrong choices could lead to problems down the road, so take some time to assess your situation before taking any action.*
>
> ***Areas of concern:***

The homesite

- *Damage to the home or other structures*
- *Loss of landscaping*
- *Hazardous trees or vegetation*
- *Danger of flooding, on-site sedimentation*
- *Drinking water quality and other environmental impacts*

The landscape

- *Safety hazards—trees, power lines, etc.*
- *Regeneration and recovery*
- *Wildlife habitat*
- *Watershed functions*
- *Erosion concerns*
- *Condition of remaining vegetation*

Streams

- *Proximity to home, roads, other facilities*
- *Hydrologic connectivity of existing drainage facilities*
- *Potential of increased woody debris load, stream flow, flooding, debris flow*
- *Need for treatments to upper watershed to minimize downstream impacts, impacts to property*

Roads

- *Existing problems that may be exacerbated by wildfire effects*
- *Damage to stream crossings, culverts*
- *Gullies, potholes, fillslope failure, cutslope failure, sediment deposits, wet spots*
- *Potential for culvert obstruction and diversion."*[55]

Furthermore, if you are in the unfortunate situation of losing your home to fire, learn from the fire in terms of what areas burned around your property versus those that didn't. Design your new fire-safe landscaping with this in mind. Perhaps most importantly, build or rebuild your home with fire-resistant materials, as described in Chapter 8 Section 4.4.6 WUI Building Standards.

B.3.2. DEVELOPING AND IMPLEMENTING A RESTORATION PLAN

After a wildfire has burned through your property, you will need to perform an assessment of the impacts the fire caused and what measures you will need to take to restore and mitigate the damage. Similar to developing a fuel treatment prescription you will need to develop a "Post Wildfire Recovery Plan" which will outline the priority areas on your property to begin work, and the sequence, schedule and timing that work will follow. Post fire restoration activities are aimed to focus on mitigating increased ecological damage and safety concerns for your homesite, and road infrastructure.

Where to Begin?

Immediate and Long Term Needs

In the development of your restoration plan, prioritize both immediate needs and longer term actions. Immediate needs relate to seasonal time lines and activities that need to occur right away for both human safety and the mitigation of ecological impacts. Following a wildfire, you will need to be thinking about the fall rains or snow that is on the horizon. In an effort to mitigate slope slides and erosion, your first step will be to stabilize these areas. Roadway infrastructure, homesite, and riparian areas are other immediate areas that may need restoration.

Long-term actions are the recovery work you will do over time. Restoration is a process and not a one-time occurrence. Planting trees, shrubs, and native grasses can happen immediately, but are part of long-term restoration activities. Maintaining fuels by limiting resprouting is another long-term effort.

Restoration Plan Mapping and Layout

Following the fire, consult with natural resource professionals to help you assess the damage. Get an aerial photograph of your property and designate zones for restoration priorities (try Google Earth for a free aerial picture, earth.google.com/). With this photo and subsequent map you can define the areas that burned the hottest, need immediate restoration, need long-term restoration, and project locations of greatest concern. This map will relate to a written plan that describes the restoration activities that will take place. Using GIS/ GPS tools and technology can be extremely helpful to accomplish this activity.

Developing a Restoration Priority List

Priority #1: Roads, Driveways, Homesite, and Steep Areas

In order to undertake restoration work you will need access to your property. Following a wildfire, weakened trees can fall across roads and may threaten driveways and road systems. Ensure the safety of ingress and egress by removing these trees.

Slope movement from a high intensity fire followed by rains can cause slides above and below roads. Stabilize these areas with erosion control methods. Trees that have burned and been scorched can pose safety issues along roads. These trees can be used to stabilize road banks by contour falling them (see Appendix C for descriptions). You can accomplish several goals with one activity. In restoration, we call this "*stacking functions*".[56] In this situation, you can increase the safety for travel along your driveway and in turn use the trees to hold the slopes in place.

If the fire burned hot within one hundred feet of your home you will need to take measures in this area for increased safety. If you have steep slopes below or above your house, perform safety mitigation work and erosion control. If your homesite is directly above your neighbors on a steep slope, prioritize developing a mitigation plan for these areas.

Priority #2: Streams, Riparian Areas, and Sensitive Habitat Areas

After you have ensured safety and access is available to perform restoration activities, focus on mitigating impacts to any streams. In an effort to prevent sedimentation from erosion into streams, it is critical for your efforts to focus attention on these locations. In addition to riparian areas and streams you will want to be thinking about the upland slopes above stream corridors.

If you have identified important wildlife corridors, sensitive habitat zones, and ecologically significant locations, you will want to focus your attention on these places.

Priority #3: Remaining Wildlands

Following restoration treatments of the priority areas described above focus the rest of your restoration activities on the long-term recovery of the wildlands you are fortunate enough to steward.

It is important when planning your post fire restoration efforts that you focus your attention on areas that most need it. Following the fire, some areas on your property may be fine left alone for natural recovery. Ultimately, the natural world will heal itself; what we are attempting to do is assist that recovery and mitigate further damage without causing additional problems. When developing your restoration plan, take into account each location and what its specific needs are. Directly after a fire things look charred and heavily impacted, however new life is on the horizon and will rise from the ashes.

B.3.3. MAKE A PLAN TO BE BETTER PREPARED NEXT TIME

Living through a wildfire can be a life altering experience. There is no other wake-up call quite like a wildfire. You will likely learn many new things about where you live and probably about who you are.

When replacing structures and/or landscaping after wildfire, use defensible space concepts like those outlined in this document to help you design a more fire-safe home. If you have to start from scratch, think about building site possibilities. Where are those places on your property that burned less or not at all? Does it make sense to rebuild in these locations? Look at the places on your property or in your neighborhood that survived and try to understand why. Talk to your neighbors about how their places survived and what they learned. Mimic those features that lead to survivability in the other places on your property that did not fare so well. Your home's survivability in future fires can improve if you understand your local landscape and how it reacts to fire.

Homes do not have to burn in a wildfire. We know what causes a fire to spread and homes to ignite. We have the knowledge to make them survivable, even in the absence of structure protection (fire fighting) resources.

Finally, a few closing words from Dr. David Horne. David has been active with the Greater Laguna Fire Safe Council since he lost his home to wildfire:

"Though it may be difficult, try to avoid spending energy on blaming someone or group or agency or fate that "caused" the wildfire to happen. Distance yourself from the doom-and-gloom personalities that will emerge to spread their message of sorrow. You only have so much personal strength and you will need it for the recovery

phase in a post-incident situation. Think positively, talk positively, and act positively about the future. Concentrate on regeneration prospects and rebuilding your homes, neighborhoods and community to be even better than before. Be a positive example of the incredible resiliency of the human spirit that will inspire your loved ones and others to pitch in to move forward with confidence and assurance. You can do it!"[57]

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[1] Most of this document was written by Tracy Katelman, ForEverGreen Forestry (www.forevergreenforestry.com) and Marko Bey, Lomakatsi Ecological Services, Inc. (www.lomakatsi.org).

[2] Surface Fuels: Materials on the ground like needles or low-growing shrubs that provide the fuel for fires to spread on the ground. Surface fuels are generally considered all fuels within six feet of the ground.

[3] Canopy: The top layer of a forest or tree, which is formed by leaves, needles, and branches creating a continuous cover.

[4] Crown Fire: A fire that spreads from treetop to treetop, and is characteristic of hot fires and dry conditions. Crown fires are generally more complex to control than fires on the surface.

[5] Ember: A piece of wood or a coal that is hot and glowing from fire activity, often dispersed by wind ahead of a fire. Also called firebrands.

[6] Spot Fires: A smaller fire outside the boundary of the main fire, started by airborne sparks or embers

[7] California now requires one hundred feet defensible space around your home, or to your property line; it used to be thirty feet. It may be necessary (although not legally required) to extend this space up to two hundred feet, depending on local conditions.

[8] www.fs.fed.us/r2/fio/dict.htm.

[9] Hurley, Jerry. Personal communication, 2003.

[10] Fitzgerald, Stephen, Waldo, Amy J. "Fire-Resistant Plants for Oregon Home Landscapes," April 2002.

[11] Plumas National Forest, www.plumasfiresafe.org/Documents/PNF_BRD%20Fire%20Resistant%20Plants.pdf.

[12] El Dorado County Fire Safe Council, www.edcfiresafe.org/fire_safe_vegetation.htm

[13] Jack Cohen, "Wildland-Urban Fire, A Different Approach," www.nps.gov/fire/download/pub_pub_wildlandurbanfire.pdf, 2000.

[14] Firewise, "Wildfire: Preventing Home Ignitions" video, 2001, 19 minutes, www.firewise.org.

[15] Cohen, 2000.

[16] Feathering: A process that reduces the appearance of change between treated and untreated sites by gradually softening the transition.

[17] Patch Under-Burns: A designated area, or vegetation patch, where fire is utilized to consume surface fuels but not trees and shrubs.

[18] Fuel Ladder: A ladder of vegetation from the forest floor into the canopy (or upper branches) of the trees that allows fire to climb upwards.

[19] Fuel Continuity: The amount of continuous fuel materials in a fire's path that allows the fire to extend in a horizontal or vertical direction.

[20] Limb Up: To remove the lower branches from a woody plant to create a defined space between the forest floor and the canopy.

[21] Limbing: Removing selected branches of a standing or fallen tree.

[22] California Board of Forestry, General Guidelines for Creating Defensible Space, May 8, 2006, www.bof.fire.ca.gov/pdfs/Copyof4291finalguidelines9_29_06.pdf.

[23] Brush: To control and/or clear small woody debris.

[24] Brushing: The act of removing brush such as dead materials, shrubbery, and branches.

[25] Flashy Fuel: AKA fine fuels, such as grass, leaves, pine needles, ferns, moss and some kinds of slash which ignite readily and are consumed rapidly when dry.

[26] Leave Trees: Trees that have been selected to remain standing in an area of thinning or harvesting.

[27] Drip-Line: The boundary of a tree's canopy, generally estimated by the extent of the tree's outermost limbs and the circular moisture line formed when rainfall drips from the limb tips.

[28] Sierra Economic Development District. (2002) "Fuel Treatment Recommendations." *Sierra County Fire Safe Council and Community Fire Safe Plan.* p. 7-1.

[29] PRC 4291 www.leginfo.ca.gov/cgi-bin/waisgate?WAISdocID=32907529051+0+0+0&WAISaction=retrieve

[30] California Government Code 51176.

[31] frap.cdf.ca.gov/projects/hazard/fhz.html

[32] California Government Code 51189, section a.

[33] www.bof.fire.ca.gov/pdfs/DefensibleSpaceRegulationsfinal12992_17_06.pdf

[34] www.bof.fire.ca.gov/pdfs/Copyof4291finalguidelines9_29_06.pdf

[35] Merchantable: Timber that is viable for sale under the current economic situation. This is generally determined by the part of the stem (trunk) that is suitable for timber products.

[36] www.bof.fire.ca.gov/pdfs/AB242010_28_05.pdf

[37] California Health and Safety Code section 13108.5.

[38] Firebrands: A piece of wood or a coal that is hot and glowing from fire activity, often dispersed by wind ahead of a fire. Also called embers.

[39] Firewise, "Is Your Home Protected From Wildfire Disaster? A Homeowner's Guide to Wildfire Retrofit," 2001, page 9, http://www.firewise.org/pubs/is_your_home/WILDFR2.PDF.

[40] Foote, Ethan. (August 2004). "Wildland-Urban Interface Ignition-Resistant Building Construction Recommendations." Community Wildfire Protection Plan Workshops. California Fire Alliance and the California Fire Safe Council.

[41] Draft: Using the forces of suction to draw water from ponds, swimming pools, or other bodies of water. This technique utilizes a partial vacuum formed by a suction pump and atmospheric pressure. The water is then moved where it is needed.

[42] Fuelbreak: A strategic area where fuel volumes have been intentionally reduced to slow down a fire and reduce its flame lengths and intensity; as distinguished from fire breaks where all fuels are removed to bare mineral soil for fire suppression.

[43] Ingress-Egress: Roads and other avenues to enter and leave your property. The act or right to come in, or go through as in entering a property (ingress). ☐The act or right to, depart or go out as in exiting a property (egress).

[44] Anchor Points: The point at which firefighters begin fire line construction, usually blocked from the spreading fire to protect firefighters from harm.

[45] High-Prunning: Cutting of both the dead and live branches ten to fifteen feet from the base of the tree (height to live crown). This is done on larger trees to separate the fuel connectivity from the ground to the crown of a tree.

[46] osfm.fire.ca.gov/pdf/fireengineering/structural/AppendixL.pdf, pp. 15-16.

[47] Living with Wildfire, Pacific Northwest Wildfire Consulting Group, pnwfireprevention.com/LWF/Livingwithfire.pdf.

[48] Not a wooden ladder! Put it on the ground near the house so it does not act as a fuel ladder for the fire to climb up your house.

[49] Global Positioning System: A hand held navigational device that uses satellites to determine positions on the earth.

[50] Public Service Answering Point is the 911 call center. In Amador County, the PSAP is the Sheriff Office Dispatch Center.

[51] Reverse 911 is the ability to call selected phone numbers within interactively defined geographical areas to advise residents of local emergencies and give instructions regarding evacuation.

[52] Salvaging Timber; Scuttling Forests, The Ecological Effects of Post-Fire Salvage Logging, Timothy Ingalsbee, Ph.D. 2003. Western Fire Ecology Center, American Lands Alliance, www.fire-ecology.org/research/salvage_impacts.html.

[53] Hydrophobic: Repelling, tending not to combine with, or incapable of dissolving in water

[54] Salvage logging: Logging and removing merchantable trees after a fire to capture economic potential. This is a very controversial subject.

[55] California Forest Stewardship Program, *Forestland Steward*, Spring 2004, p. 1.

[56] Stacking Functions: The act of accomplishing several goals with one activity.

[57] Horne, Dr. David. Personal communication, March 15, 2007.

APPENDIX C – FUEL REDUCTION

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C. WILDLAND FUEL HAZARD REDUCTION[1]

For thousands of years, Native Americans kept forest fuels in check through periodic burning. This practice created the pre-European Settlement forest landscape. The landscape known today as the "natural" Sierra Nevada is a result of *plant succession*[2] that responded for more than a century to the human practices of fire suppression, road building, logging, the introduction of non-native plants, and vegetation conversion for agriculture and livestock. These activities were needed to grow trees that supported a growing economy and population.

However, the ecological consequences of these practices include increased *forest stand density*[3] with low-level *growth or vigor*[4]; increased susceptibility of forest *stands*[5] to bark beetle attacks and pathogens; changed species composition and structure of forestlands, grasslands, shrublands, and oak woodlands; and habitat alteration of forestlands, shrublands, oak woodlands, and savannahs. These changes have caused an increase in fire hazard, as well as a shift in the intensity and effects of wildfire. Current trends in *silvicultural*[6] and *prescribed fire*[7] practices focus on restoring and maintaining vegetative communities to a more *fire-resilient,*[8] native vegetation condition.

In an effort to *modify fire behavior*[9] and reduce the potential for *crown fire*[10] in the Sierra, federal and state agencies, local fire districts, and private landowners have been taking a proactive approach to reducing extreme fuel hazards. Incorporating ecological considerations into planning and implementing these fuel hazard reduction treatments can be an innovative and exciting task for landowners and land managers.

Fuel reduction activities can give land stewards the opportunity to increase fire safety on their own property, with positive impacts to their neighborhood. Fuel reduction assists in initiating and enhancing the process of restoring health to the forestlands, woodlands, shrublands, and grasslands. Fuel hazard reduction work guided by conservation principles and designed with ecological treatment prescriptions will facilitate long-term positive environmental outcomes.

C.1. WHAT IS ECOLOGICAL FUEL REDUCTION?

Ecological fuel reduction seeks to reduce *surface fuels,*[11] *ladder fuels,*[12] and *crown density*[13] while implementing treatments that work to enhance plant community health and *biodiversity.*[14] Ecological fuel reduction techniques assist the natural environment in becoming healthier and more *productive.*[15]

Treatments are designed to be *site-specific,*[16] taking into consideration vegetation, *soil types,*[17] slope, aspect, forest health needs, and individual landowner objectives. Fuel reduction objectives are best accomplished with an emphasis on ecological treatments that incorporate *forest stand enhancement*[18] and restoration forestry techniques. The implementation of ecologically restorative fuel reduction treatments is guided by the Conservation Principles *(see Appendix A).*

Goals and methods for ecological fuel reduction seek to strike a balance among the following:

Goals

- To make the forest less susceptible to crown fire
- To reduce the intensity of wildfire through activities that separate surface and ladder *fuel continuity*[19] and volume.
- To manage and modify fuels and configurations of trees and plants, to reintroduce low-intensity fire (cool burning), and to contribute in a positive manner to the ecological processes upon which the forest and plant communities of the Sierra depend
- To make fire-suppression efforts safer and more effective because of reduced fuel loads near roads, home sites, and strategic landscape areas.
- To improve the health of the trees most suited to the site.
- To emulate a plant regime similar to what occurred with natural fire
- To maintain and enhance native species diversity
- To maintain and enhance wildlife habitat
- To control problematic, invasive, non-native species
- To provide erosion control where appropriate (e.g. *lop and scatter*[20] and *contour falling*[21]) with materials from fuel reduction activities.
- To utilize byproducts of fuel reduction activities (firewood, poles, and sawlogs) where ecologically appropriate and economically feasible to help offset costs.
- To insure these goals are economically sustainable over time by grants and other revenue producing means.

Methods

We are choosing methods that emulate lightning and *anthropogenic*[22] low-intensity fires that have helped shape the local landscape for thousands of years. These methods include:

- Thinning portions of the understory
- Selectively reducing crown density where it is ecologically appropriate.
- Favoring and retaining the largest, most fire-resilient, and healthiest trees adapted to the location.
- Burning or chipping the smaller fuel loads.

C.1.1 WHAT IS A TREATMENT PRESCRIPTION?

Excessive fuel loads can indicate poor health of the tree, plant, and/or natural community on your property. A treatment prescription as it relates to fuel hazard reduction and ecosystem health is a sequence of steps to bring the forestland, woodland, shrubland, or grassland back to a healthier state. These efforts will ideally increase the area's resiliency to fire as a *natural disturbance*[23] that can occur occasionally without burning the entire landscape to the ground. This is similar to the recovery of a sick person—the doctor will prescribe medicine and a series of steps that a person will follow to return to health.

Prior to beginning work, the first step is an assessment of the property, including fuel hazards and health conditions. This is called an *initial site assessment,*[24] where you walk the property and take a closer look to gather information about present conditions. Using the answers to a series of questions outlined below, you will accumulate the data that will enable you to plan your fuel hazard reduction treatments for homesite safety, community wildfire protection, and the ecological enhancement of the property.

When planning fuel reduction prescriptions, it is important to remember that you are attempting to manage a natural, living system. Whatever your actions, the natural ecosystem will generate a response that will either favor its health and recovery or have negative impacts. Three very important concepts to consider and/or research for planning your prescription are 1) *Present Condition,*[25] 2) *Historic Natural Condition,*[26] and 3) *Future Desired Condition*[27] of the property. In an effort to reduce fuel hazards without creating additional environmental problems, it is important to use these three concepts when planning a treatment prescription.

Site Assessment—Present Condition

Present Condition will describe what conditions occur on your property now. During the planning of fuel treatments, the present condition will enable you to outline the activities you wish to undertake, based on today's starting condition. It will facilitate gathering your initial assessment data for planning your treatments.

The following is a list of questions that will help you plan a prescription for a fuel reduction project.

Site Evaluation Information and Questions

1) What is the elevation of the treatment area? List the variety of elevations from low to high.

2) What are the aspects of the treatment area? What direction does your property face? Explain in some detail.

3) Give a brief synopsis of the topography of the site. Highlight *draws,*[28] ravines, rock outcroppings, and special landscape features.

4) What are the vegetation types and plant associations of the site? What are the *dominant*[29] and *codominant*[30] species on the property?

5) What are the estimated *age classes*[31] of the forest stands on the site? What is the variability (and range) of sizes of the trees? What are the DBHs (diameters at breast height)?

6) Explain the *fuel load conditions*[32] on the site. Describe the density of vegetation and the variety of fuel types. Assess the *ground fuels,*[33] surface fuels, ladder fuels, dead standing wood (snags), widow-makers (large trees with lots of dead limbs), etc.

7) Give an estimate of the number of snags per acre on the site. What species of snags are present? What is the DBH of these snags? Which snag classes are present? Snags are categorized into three structural classes—characterized by the amount of bark and branches, condition of the treetop, and condition of the wood—and these features determine wildlife use. You should document snag height. What may be causing tree mortality? Is there beetle activity present?

- Structural Class 1 represents those trees that have died recently and retain most of their bark and most of their branches; the top is intact. Very little decay has occurred in the wood, unless the tree had heart-rot decay when living. Class 1 snags are typically used primarily for foraging by woodpeckers on bark beetles in and under the bark. Once the bark loosens, bats can roost under the bark.

- Structural Class 2 represents those snags that have been dead for several years and have lost some branches and bark (except grand fir and Douglas fir, which tend to retain their bark after death); tops are often broken; there is some evidence of decay. Woodpeckers use these for nesting, foraging in the bark, and foraging in the interior for carpenter ants.

- Structural Class 3 represents those snags that have been dead a long time and lack branches and bark (except grand fir and Douglas fir). Tops are broken off and the sapwood and heartwood are extensively decayed. The primary use of these trees is by woodpeckers foraging on carpenter ants and wood-boring beetle larvae. Most of these trees are too decayed for woodpeckers to excavate a cavity in them, although secondary nesters may use existing cavities.

8) Describe fuel loads in relationship to homesite, driveway, and other *egress*[34]/access routes on the property.

9) List and explain any special details about this site that should be considered for fuel mitigation and forest stand enhancement treatments. Include information about sensitive zones for plants, wildlife, *slope stability,*[35] etc.

Historic Natural Condition

The Historic Natural Condition will give you the baseline data on how the ecosystem in question functioned prior to fire suppression, urbanization, and industrial activities that may have occurred there. Questions include:

- What trees and plants were dominant on the property and historically present?
- How frequently did fire occur?

- What plant communities were present prior to European settlement that are now gone?

Some of these questions can be answered from the vegetation type descriptions in Chapter 6. You can also acquire this information from old or historic photos of your property, old settler's journals, the traditional oral descriptions of Native American elders who may be living in your area, or by visiting neighboring lands in your watershed that have not been greatly altered. Additional ways to learn this information are from surveying your land and looking at older tree stumps and their configuration, or by talking to an ecosystem restoration professional.

The site-specific information for your property will create a closer-to-home level that will help in planning your treatment prescription. "Site-specific" is a key concept that will enable you to tailor your treatment prescription to your property, using general guidelines as a basis while taking into consideration detailed site conditions. "Site-specific" describes a unique place and its conditions. Site conditions should be considered in the overall plan.

Future Desired Conditions

Future Desired Conditions will outline both the short-term and long-term goals you wish to accomplish with your activities. For example, future desired conditions for fuel mitigation efforts along a driveway might be outlined as follows:

1. Will be an area with little to no surface fuels, no ladder fuels, and fire-resistant, shade-casting trees without low-hanging branches

2. There will be larger, well-spaced trees with wide spreading crowns. Any shrub or brush patches will be small and isolated.

3. The grasses on the site will be converted over time, from tall, annual grasses that carry longer flame lengths to shorter, native grasses with shorter, flashier flame spread.

Create your concept for a future desired condition based on the conservation principles and other information in this plan.

C.1.2 STRATEGIC LANDSCAPE FUEL TREATMENTS

Strategic Landscape Fuel Treatments emphasize the creation of *shaded fuelbreaks*[36] to increase community wildfire protection. These treatments typically occur along ridge tops that divide sub-watersheds, on slopes above high-ignition sources (such as railroads or dividing ravines), and adjacent to secondary logging roads that will serve as anchor points for this and future work. Fuel reduction activities will aim to create safer and more effective anchor points for fire-suppression efforts, and contribute to the creation of effective *ignition zones*[37] for future prescribed fire activities. The introduction of prescribed fire can contribute to the long-term maintenance of forest fuels and overall ecosystem health.

Strategic landscape treatments, including shaded fuelbreaks, can be creatively designed into an ecological *Variable-Density Thinning*[38] regime that will reduce fuels and maximize structural and species diversity.

Wildland Fuel Reduction Zone Ecological Fuel Reduction Practices

The Wildland Fuel Reduction Zone is the area one hundred feet or more from a house or other structure. This is the place where innovative ecologically fuel reduction treatments can be accomplished, in an effort to begin the restoration process for previously impacted and degraded landscapes.

Although vegetation types vary greatly in the Sierra, and site-specific treatments will need to be developed to take into account this variation, certain silvicultural practices are applicable throughout the different vegetation zones.

Shaded Fuelbreaks

When you remove fuel ladders around your property and leave the tree canopy in place, you are creating a shaded fuelbreak. This break in fuel continuity—a result of treating both surface and ladder fuel—gives firefighters a chance to slow down and perhaps even stop a fire. Shaded fuelbreaks are effective because you 1) reduce the amount of fuel, 2) modify the types of fuel, and 3) improve their arrangement. It is called "shaded" because you leave most of the forest canopy intact. Some of the canopy may need to be removed, however, if conditions are high for a crown fire.

A shaded fuelbreak differs from a firebreak where a bulldozer or other equipment is used to create a bare-ground break with no vegetation. Firebreaks tend to regenerate quickly with flashy fuel and require a lot of maintenance. By contrast, the shade cast by the forest canopy helps to reduce the regeneration of plants on the forest floor, thus keeping the amount of fuel low in these fuelbreaks and requiring less maintenance. Shaded fuelbreaks also improve your evacuation routes, as they provide a place where a fire might slow down or decrease in intensity, making it safer for you to get out (and firefighters to get in).

Their purpose is to reduce the amount of combustible material available so when a fire reaches the shaded fuelbreak, it will decrease in intensity and drop from the canopy to the ground. It is very important that shaded fuelbreaks be created in strategic locations to provide the most benefit. Favorable locations are along ridges, *benches*[39] and other areas of flatter terrain. Shaded fuelbreaks can also be constructed along roads and around WUI communities; however, it is important that these efforts be coordinated with multiple landowners to achieve increased community wildfire safety objectives. Shaded fuelbreaks located at mid slopes can sometimes be ineffective because fire can preheat an area from below, and burning materials from above can roll downhill and ignite fires.

The exact prescription for a shaded fuelbreak depends on your objectives and local (present) conditions. Some landowners want to create as much cleared space (and their perception of fire safety) as possible. Others want to maintain as much privacy as possible, sometimes compromising but usually still improving fire safety. Treatment prescriptions will also vary according to the vegetation type and the aspect in which you are working. Determine your vegetation type and reference its Fuel Modification Prescription in Chapter 6 for site-specific treatments to incorporate into your design.

Typically, trees are spaced so their crowns no longer touch. Lower branches are pruned. Shrubs and dead and downed material are removed to reduce surface fuel. Not all small trees need to be removed; care should be taken to create horizontal space between small trees and nearby larger trees. Heavy underbrush and fallen limbs are generally removed, leaving mature trees that are more fire-resistant. In forested areas, between sixty and eighty-five percent of the overstory canopy can be left intact, depending on the forest type.[40] Ponderosa pine stands, for example, which are typically less dense forests, tend to be located on arid aspects and resemble more of an open savannah plant community type. Historical canopy percentages for pine were less than sixty and closer to thirty percent on average. However, it is important to recognize that historic canopy percentages were representative of a long-term landscape with larger trees and broad crown ratios. Act cautiously within pine locations by retaining enough canopy to prevent adverse effects from opening things up too much, too fast. Moving any forest stand toward historic conditions can be achieved in intervals over a five- to ten-year period. The method of *sequential entries*[41] can be an effective, cautious way to both reduce fire hazard and restore the stand and associated ecological conditions. Monitoring the response of the forest and ecological community will be the guiding influence on what time intervals to use for further thinning entries. Ecological monitoring can be accomplished by a visual assessment of the stand's response, *photo-point monitoring,*[42] or by establishing permanent monitoring plots to measure closely the ecological benefits or impacts.

Shaded fuelbreaks can be constructed creatively to blend both fuel modification and forest stand enhancement objectives to achieve multiple positive outcomes. Variable-density thinning prescriptions can be incorporated into such treatments. It is important to consider the long-term health of each site, as well as potential adverse impacts on soils, understory plant communities, and forest stands. Species diversity can be retained within shaded fuelbreaks while still achieving fuel reduction objectives, especially if you do not try to do it all at once.

In Douglas fir stands, the canopy can be left more intact to accommodate the desired conditions for plants associated with this forest type. Douglas fir and red fir forests tend to grow on north and east aspects or in shaded draws with the appropriate microclimate. Shaded fuelbreaks in fir stands can still be very effective in reducing fire severity while leaving an average of seventy to eighty-five percent canopy closure.

In chaparral stands, shrub groupings can be left in patches that are spaced apart to reduce fuels while sufficient shade is cast to prevent the ground from drying out and invasive species from getting a foothold.

Varying levels of light on the forest floor will generate different resprouting responses; therefore creating shaded fuelbreaks requires the commitment to maintain them. As in all fuel reduction treatments, regular annual or bi-annual maintenance is often necessary as stump-sprouting plants, invasive species and/or shrubs begin to colonize the understory (although this is theoretically minimized with the shade provided by the intact canopy). Maintenance can be accomplished either by pruning and cutting back regrowth or through use of prescribed fire techniques. Established shaded fuelbreaks provide a good opportunity for prescribed fire applications.

Following thinning and prescribed fire application, restoring and establishing native grasses and forbs along shaded fuelbreaks is a long-term objective for the prevention of non-native species invasion. In situations where private lands border federal lands or wilderness areas, invasive species can travel into these neighboring public lands and "spread like wildfire"; hence, it is critical that long-term stewardship be a priority for maintaining these sites.

Basic Prescription for First Entry[43]

For the first entry, cut as much of the *one-hour*[44] (0–0.24 inches in diameter) and ten-hour fuel (0.25–1.0 inch in diameter) as possible, i.e., the finer fuel. Remove trees that look brushy (versus a more tree-like form), unhealthy, are lacking in vigor, or are overtopped by larger and/or more vigorous trees that block access to open spaces in the canopy. Eliminate dead vegetation of all sizes. Shade will inhibit the regrowth of the sprouting species, which will not resprout vigorously enough to be a major maintenance problem. Prune up all trees you leave behind as high as you can reach safely, with a chainsaw or pole saw.

Start low in the area and work gradually uphill. Also, start with the lowest-growing plants and work up the fuel ladder. This will help keep you from burying your work, and the result will be cleaner and more thorough.

When creating shaded fuelbreaks, you should work in teams with a sawyer and a brush hauler. This can result in a more thorough job with less effort once safety and logistical issues have been worked out. The sawyer can make a small to moderate mess in one spot and then move to the next spot while the brush hauler cleans up the mess in the first spot. They then flip-flop and the sawyer returns to the first spot to expand upon what has been done, while the brush hauler cleans up the mess in the second spot. While this method requires teamwork and awareness, it will enable the sawyer to cut with more ease. Meanwhile the brush hauler is cleaning things up but is not in danger from falling trees and limbs because the cutting occurs in a separate area.

Second Entry, or Advanced First Entry

Go to those trees and shrubs that you were not sure about on the first pass. Look at the leader (the new growth at the top of the tree) and the overall health and vigor of the tree in relation to other trees of the same species. The leader reveals the annual growth. How is the tree growing in relation to other trees? Is the leader longer or shorter? Does it look healthy? Leave the healthiest trees. Is there space for them to grow in the upper canopy? If not, can you create that space by removing the less healthy or suppressed trees? If not, the tree is a good candidate for removal regardless of health and vigor. Imagine the same place in ten or twenty years. Will there be room for all the trees you have left? If not, remove some of the unhealthiest and smallest ones, or those in the way of your largest and most dominant trees. Keep in mind that the denser the canopy, the less regeneration (maintenance) you will have to address next year.

Think about species composition. You will generally want to favor rarer species. The type of forest you have on your property will determine what species to leave, and the appropriate percentage of canopy and understory density. For example, certain mixed-conifer forest types and their associated plants require more of a *closed-canopy*[45] forest with a woody shrub understory plant community. These forest types are usually located on north or east aspects, along riparian areas, and dominated by Douglas fir at lower to mid elevations and red fir at higher elevations. Other forest types such as ponderosa pine, pine-oak woodland, or mixed-pine forests will generally have less canopy percentage and be located in drier sites on south- or west-facing aspects. They have more herbaceous plants consisting of native grasses and forbs, with an average of thirty percent woody shrubs present in the understory.

The Sierra Nevada region is quite diverse with many different forest and vegetation communities present. Determine what plant community exists on the property and make allowances for the varying percentages of canopy and understory thinning needed for fire behavior modification. This is explained in further detail in Chapter 6. Think about what you are leaving behind more than what you are removing. You can deviate from these general guidelines if you are doing so consciously, keeping in mind the overall principles mentioned above, foremost being the creation of breaks in fuel continuity and the Conservation Principles identified in Appendix A.

How to Decide which Trees to Leave or Take

First, look for the vigorous, healthy trees. One way to decide which trees to cut is to look at how much crown is on a tree. Trees with less than twenty-five percent live crown may be candidates for removal because they will have a hard time being *released*.[46] Choose trees with healthy crowns as the trees to leave. Create space around them by removing less vigorous trees. Look for existing space in the canopy. Is there space for the tree to grow into the upper canopy? If so, leave it. If not, consider removing it. There may be trees that you will eventually want to remove—often intermediate – trees that are not cost-effective on the initial entry, but could be on subsequent entry. Some of the intermediate trees may have enough size or volume for lumber production. Therefore, if your removal costs are not high you may be able to offset some of the expense with lumber for commercial or personal use. *(See Section C.2 below for details.)*

After you have created your shaded fuelbreak, take a final pass through the area. How does it look? Do you need to remove any branches or small fuels that were left behind? Did you miss some trees or shrubs that obviously can be taken out now? Remember, you do not need to remove everything. You can leave clumps of vegetation for wildlife habitat.

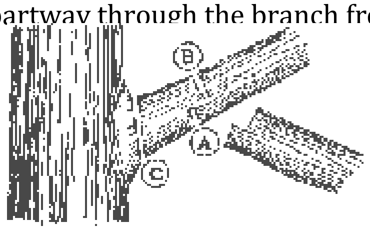
Pruning Individual Trees

Prune as high as you safely can with a chainsaw or a pole saw, given your available time and financial resources. The more you prune the more slash you will have to remove. Costs for this will vary widely, depending on the size of pruned limbs. Leave at least one-half of the tree height in live crown. Only remove one-third of the total foliage at one time. Do not bother pruning anything that is shorter than you are (unless it is right next to your house, then it should probably just be removed). Make sure to follow proper pruning techniques or you will create health problems in your landscape. Pruning is one of the most difficult skills to master but it is also one of the most important. For tips on proper pruning techniques, see the following table and the text entitled “Prune trees for better health and higher value,” by the California Forest Stewardship Program, ceres.ca.gov/foreststeward/html/prune2.html.

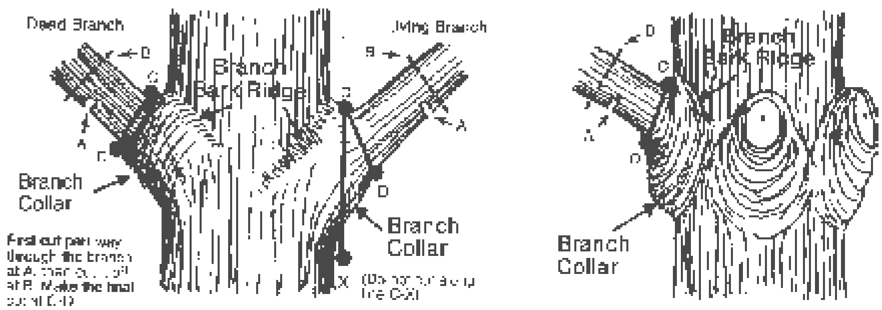
FIGURE 1. PROPER PRUNING TECHNIQUES[47]

Prune correctly. The object of the operation is to remove the branches as close to the tree stem as possible without leaving any stubs.

A. Cut partway through the branch from beneath at a point one or two inches from the trunk.



B. Make a second cut on the top of the branch, at a distance of 1/3 to 1/2 the diameter of the limb from the first cut. This should allow the length of the limb to fall from its own weight and be safely removed.
C. Complete the job by making a final cut next to the trunk, just outside the branch collar, with the lower edge farther away from the trunk than at the top.



Using the illustrations above, final cuts should be made from points C to D. Do not cut along C–X, which is an imaginary vertical line to help you locate C–D. First cut partway through the branch at A, then cut it off at B. Make the final cut at C–D.

Drip-Line Thinning

In forests and woodlands, the technique of drip-line thinning can be used to reduce ladder fuels and release desired leave-trees from competition for nutrients, sunlight, and water by removing the nearby small trees and shrubs.

The drip line is the area at the end of the longest branches of a tree or shrub where water drips vertically to the forest floor. The technique for drip-line thinning is accomplished by clearing away the ladder fuels within the drip-line circumference around the desired leave-tree. The best place to begin is by picking out your healthiest, largest, desired leave-trees and drip-line thinning around them. Following this technique, you can reevaluate what vegetation is left and plan how you will shape the remaining plants and stands of trees. For example, trees may be left more isolated as individual specimens, or standing in groups.

Mosaic Thinning and Adaptive Management

To accomplish fuel reduction objectives and provide ecologically sound treatment results such as enhancing site biodiversity, a *Mosaic Thinning*[48] approach can be used. Mosaic thinning regimes work to emulate the structural composition created by wildfire. Although thinning will not achieve the same ecological results as a natural fire, the openings and patches of vegetation that are created can increase the potential for a variety of habitat types. Mosaic thinning takes into consideration the site-specific conditions of the plant community type in order to choose the best prescription for a given area and to make allowances for a variety of ecological concerns that may arise during treatments where on-site direct *adaptive management*[49] will need to be practiced. For example, in certain portions of a treatment area, thicker vegetation and tree cover may be left to provide *thermal cover*[50] for deer and other wildlife, while in other locations canopy cover may be reduced to provide sunlight to the forest floor in order to favor struggling native grasses and associated herbaceous understory vegetation.

FIGURE 2 MOSAIC TREATMENTS IN CHAPPARAL

Mosaic thinning consists of treatments that reduce the abundance of dense vegetation, thus encouraging herbaceous understory and overstory growth. Such thinning results in a diversity of habitat types beneficial to wildlife by creating islands, corridors, thickets, open understory forest stands, and small grassy openings of random shape, size, and occurrence.

Variable-Density Thinning Practices: Reducing Fuels and Creating Diversity

In an effort to meet the desired outcomes for maintaining and enhancing plant communities and to reduce fuel loads and the threat of catastrophic wildfire, a Variable-Density Thinning, or *uneven-aged treatment,*[51] may be considered.

Variable-density thinning regimes are an integrated approach to the management of forest stands and vegetative communities of different sizes and densities. The silvicultural practice of variable-density thinning can be applied to the diversity of vegetation types throughout the Sierra, with site-specific adjustments made to accommodate the favored species historically suited for each plant community location.

The main goal of variable-density thinning is to restore maximum repeating variability or redundancy to a forested landscape.[52] Since we do not know exactly how much of what kind of habitat to restore or maintain, it is good to vary the treatments and apply them in small areas. This is in line with the *Precautionary Principle.*[53]

This kind of thinning will reduce crown fire hazard and can be combined with biomass utilization, surface fuel treatments, and prescribed fire activities. Low- to moderate-severity fire (the kind experienced historically in the Sierra) will then tend to select naturally for fire-resistant species.

Variable-Density Thinning to Create Structural Heterogeneity

"Variable-density thinning regimes in which thinning intensity and tree marking rules are varied within the stand of interest (Carey and Johnson 1995; Carey and Curtis 1996) are a useful approach to increasing heterogeneity in stand density and canopy cover. Variable-density thinning is sometimes referred to as a 'skips and gaps'" approach. In such a prescription, some portions of a stand are left lightly or completely unthinned ('skips'), providing areas with high stem density, heavy shade and freedom from disturbance, while other parts of the stand are heavily harvested ('gaps'), including removal of some dominant trees, providing more light for subdominant trees and understory plants (Carey et al. 1996). Intermediate levels of thinning are also applied in a typical variable-density prescription."[54]

These goals can be accomplished by the following practices: creating and maintaining variable or uneven spacing, with clumps of trees and canopy gaps; maintaining the largest trees of the stand; reducing the density of *ingrowth*[55]; maintaining early-seral species on the landscape; and reducing the fuel loading by removing ladder fuels.

In addition to providing fire safety, ecological fuel reduction provides many other benefits. Some of these are:

- Improved forest health and productivity: There will be less stress and mortality from reduced competition, and this translates into lower fire intensity. In addition, by removing the lower branches of your trees, you will have higher quality lumber (less knots) should you ever choose to harvest those trees for wood products.
- Improved wildlife habitat: Opening up the lower canopy and forest floor provides habitat for some of the species that prefer to dwell in larger trees or older forests.
- Improved aesthetics: Many landowners comment on how much nicer their view is after doing fire hazard reduction, as they can see out into the forest again.
- Creation of firewood, biomass, and sawlogs

For additional information on fuel hazard reduction, please see Appendix D, Fire Safety Information.

C.2. WHAT TO DO WITH THINNED MATERIALS

Because of your fire safety work, you will likely accumulate a lot of branches and other materials that you have cut. There are a few main options for dealing with thinned materials: burning, chipping, lop and scatter, some combination of these, small-diameter wood products, and biomass.

You can only use commercial wood products from your forestry operations on your own property. To sell most commercial wood products from a forest operation requires a Timber Harvest Plan (THP) approved by the California Department of Forestry and Fire Protection (CAL FIRE). THPs are generally too cost-prohibitive for fuel hazard reduction in most young forests. However, the Forest Fire Prevention Exemption provides an alternative; see Section B.1.1.5 for more information. The Mattole Restoration Council has a great summary and comparison of fire hazard reduction exemptions you can use for your fire-hazard-related forestry operations. See their "Forest Practice Rules for Thinning Exemptions," at mattole.org/pdf/Exemption_thinning_requirements.pdf, and "Comparison of Thinning Exemptions," at mattole.org/pdf/fire_hzrd_exemption_comparisons.pdf. They have also developed a model cost-share program to facilitate fuel hazard reduction on non-industrial private forestlands. For more information on that program, see mattole.org/program_services/forestry/fuelsreduction.htm.

Firewood is also a great by-product of fuel hazard reduction. To sell firewood, you need a firewood exemption from CAL FIRE. Always contact CAL FIRE before removing large trees.

C.2.1 BURNING

Burning is the cheapest and usually the easiest method to remove thinned materials, as long as it is done safely. Burning does require permits. The Amador County Air District requires burning permits for all burning except for residential burning of a single pile of vegetation less than 4 feet by 4 feet in size. Residents wishing to burn larger piles or multiple piles need to obtain a burning permit from the Amador Air District. These permits vary in cost depending on the type of burning. Some burn permits can be purchased on a multi-year basis. In addition to burn permits issued by the Amador Air District, CAL FIRE requires burn permits from May 1 to the end of fire season.

Following is a list of suggestions for safe burning adopted from the California Forest Stewardship Program:

- Arrange the material to be burned so that it emits minimum smoke. Place material of various sizes in the pile for adequate airflow.

- Amador Air District requires burn permits for most open burning. Check with CAL FIRE and the Amador Air Quality Management District regarding necessary permits while planning—and before starting—any burning.

- Except for large trees (six inches DBH or greater), ignite only the amount that can reasonably be expected to completely burn within the following 24 hours.

- Only ignite outdoor fires with ignition devices approved by the local Air Quality district and CAL FIRE.

- Ignite material to be burned as rapidly as practical within applicable fire control restrictions.

- Curtail, mitigate, or extinguish burning when smoke is drifting into a nearby-populated area or creating a public nuisance.

- Don't burn material unless it is free of tires, rubbish, tar paper, and construction debris; is reasonably free of dirt, soil, and moisture; and is loosely stacked in such a manner as to promote drying and ensure combustion with a minimum of smoke.

- Some air districts and/or counties may limit the amount of needles and leaves within a pile, as well as enforce burning hours throughout the day.[56]

Getting a group of friends together in the winter to thin and burn can be an enjoyable or at least satisfying way to spend a day outside.

Prescribed Burning and Slash Disposal

Prescribed Burning is the controlled application of fire to forest and woodland fuels in either their natural or modified state. It is done within site-specific environmental conditions to confine the fire to a predetermined area. The objective is to produce the fire behavior and characteristics required to attain fire treatment, ecological restoration, and resource management objectives.

Prescribed fire methods vary and include *hand pile burning,*[57] *swamper burning,*[58] *broadcast underburning,*[59] and *patch burning.*[60] All of these methods can be used to reduce fuel hazards and improve the ecological health of Sierra Nevada wildlands.

When choosing the right prescribed fire activity for your property it is very important that you consult fuel management and forestry professionals, especially when considering broadcast underburning. Prescribed fire methods are very site-specific. Not all methods are appropriate for every location. Prescribed fire prescriptions must be determined on a unit-by-unit or section-by-section basis. The details you will need for burning will develop as on-the-ground work progresses along with your knowledge of site conditions.

PRESCRIBED BURNING METHODS AND TREATMENTS

Swamper Burning

Swamper burning is a prescribed fire method in which fuels are gradually added (usually over the course of a day) to a hand or machine pile. In Sierra Nevada areas with a high concentration of homes, swamper burning for slash treatments may be a good option. This method is highly recommended within denser vegetation zones, following an initial *first-entry thinning treatment*[61] where high concentrations of slash will be generated. Swamper burning is also a first step of preparation prior to broadcast underburning activities.

Since 1993, Lomakatsi Restoration Project[62] (a restoration forestry contracting organization based in Southern Oregon) has used the swamper burning method on thousands of acres of private, state, and federal land throughout Southern Oregon and Northern California for fuel reduction. Lomakatsi believes the swamper burning method not only accomplishes fuel reduction goals, it also provides an extra degree of protection for nearby residences. This method is favored for the following reasons:

1. There is less smoke at any given time when you drag and burn downed slash than when lighting many hand piles at once.

2. More fuels are consumed because of this method. There is little opportunity for piles that are lit to extinguish in the center.

3. Swamper burning minimizes the scorching of leave-trees and sensitive vegetation zones. Slash can be dragged away from leave-trees and transported to burning piles in more open locations.

4. The danger level of crown scorching and the potential for runaway fire is lessened because piles are more manageable in a swamper burn situation than in a larger *touch-off*[63] hand pile burn.

5. The visual appearance of hundreds of hand piles burning at one time can be frightening for residents. Swamper burning is a good tool to educate landowners about working with and becoming more comfortable with fire, and the fire-adapted landscape in which they live.

6. Swamper burning methods are safer and more manageable, in both appearance and execution. In light of recent prescribed-fire disasters in the Southwest, this factor cannot be overstated in terms of developing and maintaining community trust for landowners, contractors, and agencies involved in the application of prescribed fire.

7. In a swamper-burning situation, materials for special forest products and small-diameter utilization can be more efficiently sorted by hand crews than during the standard industrial forestry approach of stacking larger hand piles where good materials are wasted during burning.

The swamper burn method is site-specific; one size does not fit all. For prescribed fire activities in montane chaparral, sagebrush-bitterbrush, and foothill woodland where fuels burn hotter than conifer forests, the swamper burning approach will achieve positive results, provide a safer burn, and prepare site conditions for the future reintroduction of low-intensity fire.

Swamper Burning Prescription

- Burn-pile locations will be placed at a minimum of ten feet outside the drip zones of the largest overstory leave-trees.

- Place burn piles in the most open areas to avoid damage to surrounding trees.

- Construct small piles (comprised of mainly smaller fine fuels such as live and dead branches) approximately every fifteen to twenty-five feet to serve as *pilot ignition piles.*[64] These piles can be constructed roughly three feet high and covered with *slash paper.*[65] After stacking enough material for the base of the pile, place a sheet over the material then stack about 1/3 more on top to hold down the protection sheet—this will keep things dry for when you come back to light the pile.

- Leave the remainder of slash on the ground until you burn. Swamper burning will likely need to be conducted prior to fire season, so check with your local fire department or CAL FIRE for permitting details. Desired sub-merchantable materials will be sorted for special forest products, small-diameter poles, and firewood. *(see section C 2.4 for more information*) These products will be yarded to roadside locations.

- When the burning is executed, ignite pilot piles in smaller sections (ten piles at a time), with the remaining slash dragged to the burning piles in a rotational fashion. Add slash to the piles while keeping flame lengths reasonable. When those piles have become manageable, crewmembers with hand-carried *drip torches*[66] can move ahead to ignite other piles, while a mop-up crew will stay behind and clean up the remaining slash and burn out the surrounding slash in the piles.

- Depending on the time of year, a *scratch line*[67] or *scalping*[68] down to *bare mineral soil*[69] may need to be placed around the piles in an effort to prevent the fire from burning outside the pile ring.

- After visible flames have burned down, hot embers will remain in the burn ring. Depending on what fuel type you are burning, these hot embers may remain for several days. It is important to inspect the area where you were burning several times throughout the following days until the fires are dead out. In regions like the Sierra, fuels on the ground can dry out rapidly even after several days of rain. Pay close attention to this to prevent fire from escaping.

Following burning, a good restoration practice is to sow native grass seed into the mineral-rich ashes of some of the burn locations in an effort to restore the native grass community. Native grass can establish itself well in disturbed locations like burn spots. It may be possible to acquire native grass seed for your specific location from the US Forest Service or a local nursery in your area. You can sow these seeds by hand and experiment with how much seed to sow. Seeding rates will vary, so check where you buy the seed as to how much to use per location. The best time to sow native grass seeds is November thru March during their dormant time, depending on elevation. Sowing native grasses not only restores herbaceous plant communities to your site, it is a good preventative measure for noxious weed mitigation.

Remember: do not strip the ground of all woody material in your burning operations. Be sure to leave some coarse woody debris. Do not burn every stick. Decide what to leave on the site based on slope percentage, aspect, and location.

Hand Pile and Burn

Following thinning operations, you may consider the method of *hand pile and burn,*[70] whereby slash can be gathered into piles located in open areas and burned. Slash is piled soon after it is cut, then covered with slash paper. Some people use plastic to keep piles dry and then burn the plastic. However, burning plastic is toxic especially to those doing the burning. If you decide to use plastic in your preparations, be sure to remove the plastic sheets before burning.

Slash piles are usually burned in the fall and winter during moist days. At this time, the piles will be relatively dry while surrounding vegetation will be damp, minimizing the spread of fire beyond the pile.

Slash Piling Specifications

- Pile debris ranging from two to eight inches in diameter, at least two feet or more in length. On slopes greater than 55%, small-diameter (greater than eight inches) coarse woody debris may be left for soil stability. Some favorable small-diameter materials may be yarded for special forest product utilization (*see section C 2.4 for more information*).

- Piles should be placed away from old stumps and fallen logs to minimize their ignition. In an effort to prevent holdover fire potential (i.e., a fire not burning out completely), make sure piles are not located on top of old stump holes or decomposing logs. Be sure to place piles a sufficient distance from the drip lines of trees to prevent scorch.

- Construct piles up and down slopes and create a secure base to prevent the rolling of materials.

- Smaller fuels form the initial core for later ignition, with larger fuels placed on the top and sides.

- Piles ideally range from a minimal size of four feet high[71] by four feet in diameter to a maximum size of five feet high by seven feet in diameter, except when insufficient slash is available in the area.

- Make piles as compact as possible. Limbing, aligning the material, and placing heavier material on top of the pile will obtain compaction. Air space between logs and limbs is not to exceed three inches in cross dimension after piling.

- Place slash paper on the piles such that the covering does not go beyond half the length of each side of the piles, as measured from the top (or center/mid-point). Your goal is to have the center core of the pile covered (not the entire pile) for successful ignition when lighting the pile later.

- Secure slash paper on piles by placing heavy materials on top of the paper. Place it to provide the best protection from rain and snow, in order to enable later ignition.

For piles that may cause unavoidable scorch to residual trees upon combustion, burn them during periods of rain or snow to minimize damage. Each pile should be *chunked*[72] at least once during burning operations. Include any creep in the chunk to keep the fire confined to the piled area. Chunk piles after they have had sufficient time to burn down. Check piles daily, and more often in windy conditions. Escaped burn piles are responsible for numerous wildfires in the Sierra**.**

Broadcast Underburning

Broadcast underburning is a method that allows a prescribed fire to burn in the understory over a designated area within well-defined boundaries. It is done to reduce fuel hazards and/or as a silvicultural restoration treatment.

In order to effectively and responsibly reintroduce fire (i.e., to ensure it will burn on the ground and not in crowns), thinning and brushing must first take place. These actions reduce stand densities, ladder fuels, and the build-up of brush and excessive surface fuels.

Before burning in forested stands, a few preventative measures should be taken to ensure the survival of overstory trees. Often a thick layer of duff or thatch will accumulate beneath mature trees. In many cases, feeder roots will grow into the duff layer close to the surface of the ground. The loss of these roots due to extreme heat and/or fire can cause tree mortality. Thus, duff should be raked back several feet with a McLeod to prevent unwanted impacts. Such treatments are especially important beneath large pines, which often accumulate thick mounds of debris, colonized by sensitive roots.

Favorable conditions for igniting fires include low winds, moderate humidity, moderate temperatures, and a small amount of soil moisture to protect soils from baking. Aboveground fine fuels should be dry enough to ignite and carry fires. The idea is to reduce fine fuels in the form of duff or grasses without compromising or impacting soils, fungal associates, sensitive tree roots, etc. Burn intensities will vary depending on the vegetation type, the amount of ground and surface fuels, and the restoration objectives on the site.

In certain locations, flashy underburns are the desired outcome where surface fuels are less and grasses persist in the understory (e.g. oak woodlands and savannahs). Flashy underburns are best accomplished in the fall. Burning in the fall enables safer broadcast burning of a larger area. This can be achieved usually the second dry day following a rain. You want the top several inches of the surface of the fine fuels to be dry, and the moisture content below sufficient to safely carry the fire quickly (flashy) and consume the top layer of the surface fuels leaving some organic material to protect the soil.

In other locations where surface fuels consist of deep, heavier leaf litter mixed with duff (e.g. Ponderosa pine and mixed conifer forests); a slower-creeping fire may be more appropriate. During Sierra Nevada mid-winter periods, an annual window of an extended dry period often occurs following heavier periods of earlier winter rain. This is a good time to accomplish this type of underburning to consume more of these abundant surface fuels. The slow creeping fire will consume more depth of surface and ground fuels. The native people of northern California and southern Oregon referred to this type of burning as 'cool burning'; the fire creeps along and consumes fuels without getting hot and out of control.[73]

Prior to execution of any broadcast underburning activities, it is recommended that a *burn plan*[74] be drafted on a unit-by-unit basis. During any underburn operation, it is necessary that a fire engine and a certified *ignition specialist*[75] and wildland firefighters be present to conduct the burn. If you decide to execute a broadcast burn, you will need to work with the local fire department and CAL FIRE in the development of the burn plan. A burn plan will describe the layout of the property and determine locations for firebreaks (skid roads, spur roads, and main access roads), *fire ignition,*[76] *escape routes*[77] (in case the fire becomes a wildfire, a reality to consider in all levels of prescribed fire activities), water *pump chance,*[78] and adjacent properties. Prior to considering broadcast burning be sure to contact CAL FIRE and the Amador Air District to obtain all the necessary permits and legal requirements.

For ecosystem health and the long-term maintenance of fuel levels, broadcast burning is an important and recommended activity. Although there are many risks involved, it is critical that landowners, agencies, and communities not only learn to live with fire, but also become accustomed to using it.

Broadcast Burn Fire Preparation Example

- Thin and remove ladder fuels and *jackpots,*[79] and prune to head height. Separate ground-to-crown and crown-to-crown live and dead fuels.
- Lop and scatter tree branches and tops; cut to twelve- to eighteen-inch lengths on the ground for broadcast burn.

- Pile all other slash three to four feet high, five to six feet at base.

- Use flagging to mark all desired leave-species like seedlings and native shrubs, and create a *blackline*[80] around them (slowly burning out from desired leave-species so they will be retained when the main broadcast burn is initiated).

- Blackline (backburn) all retained doghair thickets and gulches before broadcast burning.

- Pull back heavy duff from leave-trees to prevent root steaming and possible mortality. Use a McLeod tool for this task.

- Leave slash less than two to three inches in diameter on the forest floor.

- Put slash of two to three to eight inches in diameter in piles or near roads for firewood.

Patch Burning

Following initial thinning and slash treatment by either hand pile burning or swamper burning, patch burning may be used in site-specific locations. Patch burning is performed by defining and isolating a small area of fuels that you want to burn and applying fire only to that area. This method is sometimes used in the management of invasive blackberries where the area around the patch is thinned, a scratch line is created around the thinned area, then the inside patch is ignited.

This method can also be used to burn surface fuels within a variable-density treatment where unthinned areas are retained but you want to achieve the diversity of mosaic burn conditions.

If performed properly, patch burning can be a very effective method of reducing fuels and reducing costs. In the right conditions, it works well in chaparral and sagebrush, as these plant types often have lots of dead fuel, and patches can be isolated and burned.

Similar to all prescribed fire methods, only perform the activities by consulting and hiring skilled fire or forestry professionals.

Considerations for Burning Activities within Riparian Corridors

Some variation may occur during burning operations due to the change in vegetation, slope, and aspect.

- Burning should be carried out carefully along slopes above riparian draws, especially in *headwalls,*[81] or where loose boulders may be found. Lop and scatter coarse woody debris in these locations to protect the soil and enhance slope stability.

- Burn on stable benches within upland riparian areas. Thinned slash may need to be transported by hand crews to these locations.

- Take extra care while burning is being conducted to protect vegetative diversity. Burn slash away from *mesic*[82] vegetation.

- Underburn in a patch burn fashion.

C.2.2. CHIPPING

Chipping is another method for treating thinned materials, and like all options, it has both advantages and disadvantages.

Advantages to chipping are:

- You can work on days when burning is prohibited.
- The chips created can be used for landscaping on paths around your homesite.
- Chips spread along roadsides will suppress the growth of vegetation, thereby keeping down fire hazards. Disadvantages to chipping are:
- Chipping can be expensive.
- Chippers break down and need to be serviced.
- Chippers require use of fossil fuels to operate.
- Production levels for slash disposal are slower.
- Chippers have limitations to where they can be staged to accomplish fuels work.
- Chipped material can be used for biomass

If you do not have a chipper of your own, contact your local Fire Safe Council (FSC) or CAL FIRE unit. Many FSCs have community chipping programs or funding to help you chip instead of burn, especially in areas where air quality grants are available. If these programs are not available, you can either hire a forestry contractor who has a chipper or rent one. The chipper should be able to process material up to ten inches in diameter. Even if the material you are chipping is six inches, having a ten-inch chipper will make things go faster because sometimes you will want to put three branches (each three inches in diameter) in the chipper simultaneously. With a chipper that takes larger-diameter material, you will prevent the potential problem of jamming the machine. There are many good brands, so do some research and ask around. It is very important that you get a good chipper, since it can be frustrating to rent a chipper that does not serve your needs.

Chippers are best suited for use close to roads, landings, or where access to thinning slash is convenient. The best fuel types to use in a chipper are softwood conifer species. Chippers can be used on hardwood and chaparral, but you will need to pre-process these materials before putting them into the chipper. Broad, branchy fuels like chaparral (e.g. manzanita or buck brush) can cause a chipper to jam if you do not first limb the branches with a chainsaw. These fuel types are time-consuming but workable. Limit dirt from getting into the chipper, as this will quickly dull the blades. Remember to stack all your branches in the same direction so you can easily feed the chipper.

Use extreme caution when operating a chipper; always wear safety glasses and ear protection. Pay special attention to the feed control; watch that your clothes (especially shirtsleeves) are not caught on branches as they are pulled into the chipper. Many counties have roadside chipping programs where the service is free. You can contact CAL FIRE and the Amador Fire Safe Council for further information on this. Be safe, be cautious, and happy chipping!

C.2.3. LOP AND SCATTER

Lop and scatter is a method whereby thinned materials are spread about to rot on the forest floor—taking care not to form large piles (jackpots) of slash. Lop and scatter can be very cost-effective but is definitely a site-specific treatment.[83] This is the best method for improving the soil fertility of the forest and hence the forests' long-term productivity. By removing the ladder fuels and scattering them low to the ground, you are improving the chances of your forest surviving a wildfire. However, because of short-term increased hazard this is not a method to do near structures within the Defensible Space Zone. Rather, it is more appropriate in the forested landscape, in the Wildland Fuel Reduction Zone (see Appendix B for Zone definitions).

Material should be cut down to an ideal height of one foot above the ground. However, lopping to less than or equal to twelve inches above ground is likely beyond the skills of most, so eighteen inches is sufficient to strive towards. Remove all large pieces of wood (makes for great firewood). Dedicate some larger, heavier pieces to sit on top of the slash and weigh it down. Conifer slash "lies down" much easier and requires less lopping than most hardwood slash due to its growth habit. Green slash of all species lies down easier than dry slash (if you are thinking of coming back later to lop). Make sure none of your material on the ground is touching the base of any trees or shrubs you have left standing (your leave-trees). Think about this in terms of creating defensible space around leave trees just as you would around structures.

The risk with lop and scatter is that fire may occur within your treated area before the fine fuel falls to the ground and decomposes. Even so, lop and scatter does reduce your fuel hazard because the fuel is no longer part of the fuel ladder, and there is vertical clearance between the surface fuel and the bottom branches of the trees (ideally a minimum of eight feet of space). However, your surface fuel hazard may increase in the short term—from three to ten years—depending on the forest types on your property and the length of time it takes for the fuel to decompose.

C.2.4. SMALL-DIAMETER WOOD PRODUCTS

Much effort has been made in California and throughout the Pacific Northwest to develop markets for small-diameter wood products, especially hardwoods. It is possible to use these materials commercially, and they often produce beautiful lumber. Small, suppressed Douglas fir—a softwood—often has a tight grain that makes for attractive trim and tongue-and-grove flooring. Local hardwoods such as tanoak and Madrone are used by woodworkers to create stunning furniture, cabinets, and floors. To be merchantable, the logs need to be straight and between six to ten inches in diameter. Two great sources for more information on this subject are the Institute for Sustainable Forestry (www.sustainablehardwoods.net) and the Watershed Center (www.thewatershedcenter.org).

The principal issues limiting small-diameter wood products are lack of infrastructure and marketing. The following text from *Small-Diameter Wood Utilization in Sierra Nevada Forests, A Situation Analysis and Assessment of Opportunities for Expanding Existing Markets* (a study commissioned by the Sierra Forest Legacy), summarizes existing small-diameter wood product market issues in the Sierra:

- Stronger markets for small-diameter wood would help reduce the net cost of restoration treatments, thus encouraging more landowners to undertake restoration work.

- Throughout the Sierra, small-diameter wood is underutilized when compared to other regions in the US. A large volume of small-diameter wood is piled and burned, a costly treatment that exacerbates air quality issues, particularly in the southern Sierra.

- The existing infrastructure for small-diameter log utilization in the Sierra is relatively weak as compared with other regions in the US. Exceptions to this exist in areas in close proximity to sawmills capable of processing small-diameter material, or a biomass energy facility, as well as the relatively robust market for small-diameter incense cedar.

- Beyond that, a handful of examples of small-scale, small-diameter wood utilization facilities exist or are in development. Most of these are in need of outside funding or political support in order to thrive.

- Strong potential exists to develop new markets based on the amount of material potentially available, but many barriers exist to creating sustainable markets. Among the most vexing barriers is the lack of consistent and stable supply of small-diameter material. The long-term nature of stewardship contracts makes that tool a potentially attractive avenue for addressing supply issues.

Current small-log utilization in the Sierra

What is the fate of small-diameter logs that are harvested in the Sierra today? The vast majority of small logs will move down one of three primary chains:

Several Sierra sawmills have the capacity to process logs down to six inches and, depending on haul distances, will purchase some proportion of the small-diameter logs generated from traditional timber sales or from hazardous-fuel reduction projects. Incense cedar logs, in particular, have a high value for use in outdoor applications such as fencing and garden stakes, and several of the region's mills are actively seeking out more supply.

In locations near a biomass energy-generating facility, a proportion of the small-diameter log stream is chipped in the woods and hauled to the biomass plant. The rule of thumb is that costs begin to outweigh return about fifty miles' haul distance from such a facility.

Finally, a percentage of small-diameter logs are left in the woods, either scattered or piled and burned. Such treatments are frequently seen along roads throughout the range where the Forest Service and private landowners have increased the number of hazardous-fuel reduction projects in response to greatly increased federal and state funding in recent years….

The infrastructure for distributed, small- and medium-sized wood utilization that currently exists in the Rocky Mountain states (MT, ID, CO) and the Southwest (AZ, NM) does not exist in the Sierra. These states have lost much of their large-scale industrial infrastructure and long ago began the transition to a new forest economy based on smaller-scale operations. Fledgling efforts to develop such an infrastructure in the Sierra will be described in further detail later in the report, but perhaps the most important finding of this study is that after an extensive search for small-diameter wood utilization efforts in the Sierra, only a handful were found. Throughout most of the range, small logs continue to be underutilized compared to other forested regions in the West, and significant value continues to literally go up in smoke as small logs are piled and burned rather than converted into lumber products or energy.[84]

C.2.5. BIOMASS

Due to policies to suppress fire, the forests of the Sierra Nevada have accumulated an unnatural amount of forest biomass that we need to remove by both mechanical means and by returning controlled prescribed burning to the landscape.

Biomass refers to organic material from living things such as trees, shrubs, grasses and other plants. The temperate forests of the Pacific Northwest contain the highest amounts of biomass per acre of any forests in the world, far exceeding tropical forests. Biomass is commonly used as lumber, firewood, and paper. Biomass can also be used for energy production.[85]

In its simplest form, biomass is used to create heat. One of the most efficient ways is through a process called gasification. This technology is increasingly being used in schools in rural areas (see www.fuelsforschools.org for more information). Gasification uses woody materials as a source of energy to produce methane and hydrogen gases. These gases are then used to create additional heat or as fuel to power an engine that creates electricity. Biomass can even be used to replace our dependence on fossil fuel, and can be significantly better for the environment, assuming the production and collection of the original biomass is done in an ecologically appropriate and sustainable manner.

One of the noteworthy challenges associated with biomass as a source of energy is transportation costs. In order for biomass utilization to be economically feasible, the distance for the biomass to travel should not exceed twenty-five to fifty miles. In some of the remote communities in the Sierra Nevada, some transport routes could present trucking challenges. However, solutions are being developed, as woody biomass utilization is becoming more of a federally mandated emphasis for public land management agencies. The alternative is to bring the biomass plant to the woods. Portable biomass facilities are being developed but are not yet commercially viable. Developing community-scale biomass alternatives that distribute the benefits (and the risks, such as over-exploitation of forests and air pollution) while reducing transportation costs and limiting large-scale impacts are most desirable and advantageous for the Sierra Nevada.

There is a host of creative possibilities for using biomass, including combining community fire hazard reduction and electricity generation using a mobile generator on-site. The University of Washington has invented a process that converts small trees to methanol. They have found that even the smallest trees and branches can be utilized as a power source for fuel cells. Funding is available for biomass projects from the USFS and BLM under Title II of the Healthy Forests Initiative and Healthy Forests Restoration Act. Title II authorizes these agencies to overcome barriers to the production and use of biomass and to help communities and businesses create economic opportunities. Funding is available for research.

A number of promising biomass-related projects are moving forward in the Sierra. These include:

- The Cedar Mills Eco-Farm in Amador County, where a wood-fired boiler provides heat for a greenhouse on an abandoned sawmill site.
- The South Lake Tahoe High School is working to site a biomass boiler as the first Fuels-to-Schools project in California.
- Placer County has embarked on an innovative biomass strategy to reduce catastrophic fire risks, reduce energy dependence on fossil fuels, and promote local economic activity.
- The city of Truckee demonstrated small-scale heat and power from biomass. Their demonstration concluded that there is a need to scale up to a slightly larger output system.
- Buena Vista Biomass in Amador County is in the planning stage and will produce 18.5 mega The renewable energy will provide a sustainable energy resource to approximately 16,000 homes in California and assist the State with achieving its renewable portfolio standard goals. The significant capital investment will create 90 new jobs and tax base to the rural community and Amador County

The California Forest Biomass Working Group, which includes numerous agencies, consultants, and conservation organizations, has developed the following mission statement:

> "Every forest community in California has the capacity to address and utilize the excess biomass in their area that is appropriately scaled to be economically and ecologically sustainable so that local jobs are created that help restore the environment and reduce fire risk."

To learn more about the Working Group, contact US Forest Service Region 5, 707-562-8910.

[1] Much of this section was written by Marko Bey and is based on his work with Lomakatsi Ecological Services. (www.lomakatsi.org).
[2] Plant Succession: In ecology, progressive change of the plant and animal life of an area in response to environmental conditions.
[3] Forest Stand Density: The amount of trees in a forest per unit area. Can be measured in terms of basal area and crown cover.
[4] Growth or Vigor: The ability of plants to exhibit healthy natural growth and survival.
[5] Stand: A group of trees with similar species composition, age, and condition that makes the group distinguishable from other trees in the area.
[6] Silvicultural: The practice of caring for forest trees in a way that meets management objectives. For example, foresters may control the composition and quality of a forest stand for goods such as timber and/or benefits to an ecosystem.
[7] Prescribed Fire: A forest management practice that uses fire to improve habitat or reduce hazardous fuels. A plan for the prescribed burn must be written out and approved, and specific requirements must be met.
[8] Fire-Resilient Landscape: A natural landscape featuring plants that have adapted to local wildlife conditions, or a domestic outdoor space where appropriate actions have been taken to make it less vulnerable to wildfire and certainly less prone to causing one.
[9] Modify Fire Behavior: Using fire-safe practices such as fuel treatments, thinning, creating firebreaks, etc., to change the way a fire will behave, with a goal of slowing it down and/or suppressing it more easily.
[10] Crown Fire: A fire that spreads from treetop to treetop, and is characteristic of hot fires and dry conditions. Crown fires are generally more complex to control than fires on the surface.
[11] Surface Fuels: Materials on the ground like needles or low-growing shrubs that provide the fuel for fires to spread on the ground. Surface fuels are generally considered all fuels within six feet of the ground.
[12] Ladder Fuels: Materials such as shrubs or small trees connecting the ground to the tree canopy or uppermost vegetation layer. In forests, this allows fire to climb upward into trees.
[13] Crown Density: A measurement of the thickness or density of the foliage of the tree crown in a stand.
[14] Biodiversity: The abundant variety of plant, fungi, and animal species found in an ecosystem, including the diversity of genetics, species, and ecological type.
[15] Productive: A term used for land or forests that are growing efficiently and in a vigorous manner.
[16] Site-Specific: Applicable to a specific piece of land and its associated attributes and conditions (e.g. microclimate, soils, vegetation).
[17] Soil Types: Refers to the different combinations of soil particles and soil composition. Soil can vary greatly within short distances.
[18] Forest Stand Enhancement: A combination of both silvicultural thinning practices and other forest restoration activities such as prescribed fire, which aim to increase the health, resiliency, and vigor of tree communities within a forest ecosystem.
[19] Fuel Continuity: The amount of continuous fuel materials in a fire's path that allows the fire to extend vertically toward the crowns of trees or horizontally into the forest or other fuels.
[20] Lop and Scatter: The act of cutting and evenly spreading branches over the ground to reduce fire hazard and erosion potential while promoting the decomposition of branches via their close proximity to the ground.
[21] Contour Falling: Cutting and placing trees along the slope contour. This is a treatment that utilizes positioned logs to control erosion from water flow. Logs are offset on the slope contour to slow water by creating a meandering travel path.
[22] Anthropogenic: The result of human activities or the influence of humans on nature.
[23] Natural Disturbance: Disturbances, like fire and floods, which occur in the environment without the intervention of humans.
[24] Initial Site Assessment: The preliminary steps of an evaluation of a piece of property to determine fuel hazards and health conditions. Information is gathered to help plan a fuel hazard reduction treatment.
[25] Present Condition: The environmental conditions that occur on a property at the present time.
[26] Historic Natural Conditions: The natural condition of a property or area that occurred in the past, before fire suppression and industrial activities. Old photos, settler's journals, elders' oral history, and clues on the property such as old stumps may be helpful in identifying the historical natural condition of an area.
[27] Future Desired Condition: The short-term and long-term goals desired from management activities on a property. It is important to keep the Conservation Principles in mind when designing these.
[28] Draw: A topographic channel that is generally shallower than a ravine.
[29] Dominant: The species that is the most abundant or influential in an ecosystem. For example, a dominant tree is one that stands taller than the rest and receives full sun.
[30] Codominant: Species that share dominance or are of equal importance. For example, a codominant fir-pine forest would be dominated by both firs and pines.
[31] Age Classes: A way of classifying the age range of trees or forests, usually divided into 20-year units, e.g. 0-20 years.
[32] Fuel Load Conditions: The amount of combustible material (both dead and live fuels). It relates to the site's fuel model *(see Appendix 3)*, slope, and aspect, and the fuel moisture content.
[33] Ground Fuels: The layer of combustible material that exists below the surface litter. This layer includes plant roots, duff, etc. These materials can burn when embers drop from above.
[34] Egress: The act of going out, or right to leave or exit a property.
[35] Slope Stability: The degree to which a slope is susceptible to erosion and slides, or the measure of its overall stability.
[36] Shaded Fuelbreaks: A fuel-reduction technique for forested areas. Vegetation is reduced and/or modified to reduce fire hazard, but an adequate amount of crown canopy remains intact, thus inhibiting weedy undergrowth.
[37] Ignition Zone: The place where combustion is initiated.
[38] Variable-Density Thinning: Thinning or selectively cutting trees in a manner to restore repeating variability or redundancy in a forest. This technique ensures diversity in stand density and canopy cover.

39 Benches: Flat landscape areas that occur along foothill and mountainous slopes. They can be the result of natural land formations through slope movement and sluffing, or land alteration by previous resource extraction activities such as logging.

40 Salmon River Fire Safe Council, www.srrc.org/, Fuel Reduction Plans and Maps; Dennis Martinez, "Canopy Retention for Fuel Modification Treatment in Douglas Fir Stands," Boulder Dumont Late Successional Reserve (LSR) Vegetation Management Project. Tiller Ranger District, Umpqua National Forest.

41 Sequential Entries: Entering a forest stand or other vegetation type several times over the course of years to spread out the impacts of treatments.

42 Photo-Point Monitoring: Using a specific, identifiable point on a property from where photos are taken over time using the same view to compare and monitor changes.

43 This prescription is based on the work of Dave Kahan, Full Circle Forestry, Redway, CA.

44 One-hour timelag fuels are less than ¼ inch in diameter and respond very quickly to changes in their environment. These fuels will only take about an hour to lose or gain two-thirds of the equilibrium moisture content of their environment … Moving up in size, a fuel will lose or gain moisture less rapidly through time. Ten-hour fuels range in diameter from ¼ inch to 1 inch, 100-hour fuels from 1 inch to 3 inches, and 1,000-hour fuels from 3 inches to 8 inches. 10,000-hour fuels are greater than 8 inches in diameter. Obviously, the 1,000- and 10,000-hour fuels do not burn easily. However, if they do burn, these fuels will generate extreme heat, often causing extreme fire behavior conditions. From: National Weather Service, Fire Weather Definitions, Dead and Live Fuel Moisture, www.crh.noaa.gov/fsd/firedef.htm.

45 Closed-Canopy: Occurs when the canopies of trees touch and blend together enough so that light does not reach the floor of the forest

46 Release: Using thinning techniques to free a tree or group of trees from competition for nutrients, sunlight, and water by removing the competing small trees and shrubs.

47 California Forest Stewardship Program, *Forestland Steward* Newsletter, "Prune trees for better health and higher value," Winter 2002, ceres.ca.gov/foreststeward/html/prune2.html.

48 Mosaic Thinning: A style of thinning that creates openings and patches of vegetation to increase the potential variety of habitat types.

49 Adaptive Management: An approach to managing the environment that is based on a "learn by doing" technique. Adjustments in management change over time as new information is learned.

50 Thermal Cover: Vegetative cover that modifies unfavorable effects of weather for animals. For example, elk may move to a fir forest with trees at least forty feet tall and with seventy percent crown closure to protect themselves from harsh weather.

51 Uneven-Aged Treatment: A treatment that deals with three or more age classes of trees.

52 Lindenmayer, David B., and Jerry F. Franklin (2002). *Conserving Forest Biodiversity: A Comprehensive Multi-Scaled Approach.* Island Press. Washington, D.C. See in particular the "Risk Spreading" chapter.

53 Precautionary Principle: A principle that promotes a careful approach to developing and managing the environment when information is uncertain or unreliable. Erring on the side of caution and conservation is encouraged, along with a "better safe than sorry" attitude.

54 Lindenmayer and Franklin, 2002, p. 184.

55 Ingrowth: Trees that grow large enough in a season to be considered a sapling or pole timber.

56 California Forest Stewardship Program, "How to Burn Piles Properly," www.ceres.ca.gov/foreststeward/html/burnpiles.html

57 Hand Pile Burning: Hazardous fuels piled by hand for burning in a manner that will not damage surrounding trees or soil.

58 Swamper Burning: A method of prescribed fire where fuel is added gradually and continually to a burning pile over the course of a day.

59 Broadcast Underburning: A method of burning where a prescribed fire is allowed to burn in the understory of a designated area to reduce fuel hazards and/or as a silvicultural treatment.

60 Patch Burning: A method of prescribed burning where patches are burned to prepare an area for planting or to reduce fuels.

61 First-Entry Thinning Treatment: The first stage of tree thinning performed in a fuel reduction treatment.

62 www.lomakatsi.org

63 Touch-Off: A prescribed fire operation performed by a forestry or fire crew where large quantities of slash in hand piles are ignited simultaneously with drip torches.

64 Pilot Ignition Piles: Small piles made up primarily of small fine fuels such as branches.

65 Slash Paper: Paper used to cover slash piles before ignition with the intention of keeping or allowing the slash dry. Paper is considered more environmentally appropriate than plastic.

66 Drip Torch: A hand-held device used to ignite fires by dripping flaming liquid fuel on the materials to be burned.

67 Scratch Line: An incomplete control line in the beginning stages that is constructed as an emergency backup for spreading fires.

68 Scalping: The act of removing the surface layer to expose the bare mineral soil.

69 Bare Mineral Soil: The layer of inorganic earth below the litter and duff layer that is composed of sand, silt, and clay and has little to no combustible materials.

70 Hand Pile and Burn: The act of gathering slash into piles by hand and then burning the pile.

71 Piles greater than four feet by four feet require special permits from CAL FIRE and the Air District

72 Chunk: To complete the pile-burning process by turning in or placing the unburned woody material ends into the fire ring.

73 Pilgrim, Agnes Baker. Confederated Tribe of Siletz, Takelma Tribe of the Rogue Valley, Southern Oregon. Personal communication.

74 Burn Plan: Detailed document with specific information on prescribed burns. Used by the burn boss for implementing specific prescribed-burn projects.

[75] Ignition Specialist: A trained professional who specializes in ignition, prescribed fire techniques, and management. Ignition specialists are certified through the National Wildfire Coordinating Group and have years of experience in wildland fire suppression and prescribed fire use. They have met all necessary requirements to perform firing applications.
[76] Fire Ignition: The act of setting on fire or igniting a fire.
[77] Escape Route: A path or road that has been preplanned to get out of harm's way in a fire situation. The route should be well understood by all participants. If there is any unclear direction, the path should be marked.
[78] Pump Chance: An area where water can be pumped from a pond or creek for fire-suppression purposes.
[79] Jackpots: Generally, small pockets of dense fuels which could allow a fire to flare up and burn more intensely.
[80] Blackline: Preburning of fuels adjacent to a control line before igniting a prescribed burn.
[81] Headwall: Steep upper sides of a drainage where fire can move quickly.
[82] Mesic: The condition of being normally moist, as in vegetation or ecosystems.
[83] Jones, Tim. Fire Management Officer, Arcata Bureau of Land Management. Personal communication, July 12, 2004.
[84] Holst, Eric (2006). *Small-Diameter Wood Utilization in Sierra Nevada Forests,* A Situation Analysis and Assessment of Opportunities for Expanding Existing Markets.
[85] Institute for Sustainable Forestry, *Safeguarding Rural Communities: Fire Hazard Reduction and Fuels Utilization, Final Report,* September 2001 to December 2002, p. 23.

APPENDIX D – DEFENSIBLE SPACE GUIDE

General Guidelines for Creating Defensible Space

A. Purpose of Guidelines

Recent changes to Public Resources Code (PRC) 4291 expand the defensible space clearance requirement maintained around buildings and structures from 30 feet to a distance of 100 feet. These guidelines are intended to provide property owners with examples of fuel modification measures that can be used to create an area around buildings or structures to create defensible space. A defensible space perimeter around buildings and structures provide firefighters a working environment that allows them to protect buildings and structures from encroaching wildfires as well as minimizing the chance that a structure fire will escape to the surrounding wildland. These guidelines apply to any person


Effective defensible space

who owns, leases, controls, operates, or maintains a building or structure in, upon, or adjoining any mountainous area, forest-covered lands, brush-covered lands, grass-covered lands, or any land that is covered with flammable material, and located within a State Responsibility Area.

The vegetation surrounding a building or structure is fuel for a fire. Even the building or structure itself is considered fuel. Research and experience have shown that fuel reduction around a building or structure increases the probability of it surviving a wildfire. Good defensible space allows firefighters to protect and save buildings or structures safely without facing unacceptable risk to their lives. Fuel reduction through vegetation management is the key to creating good defensible space.

Terrain, climate conditions, and vegetation interact to affect fire behavior and fuel reduction standards. The diversity of California's geography also influences fire behavior and fuel reduction standards as well. While fuel reduction standards will vary throughout the State, some common practices guide fuel modification treatments to ensure creation of adequate defensible space:

- Properties with greater fire hazards will require more clearing. Clearing requirements will be greater for those lands with steeper terrain, larger and denser fuels, fuels that are highly volatile, and in locations subject to frequent fires.

- Creation of defensible space through vegetation management usually means reducing the amount of fuel around the building or structure, providing separation between fuels, and or reshaping retained fuels by trimming. Defensible space can be created removing dead vegetation, separating fuels, and pruning lower limbs.

- In all cases, fuel reduction means arranging the tree, shrubs and other fuels sources in a way that makes it difficult for fire to transfer from one fuel source to another. It does not mean cutting down all trees and shrubs, or creating a bare ring of earth across the property.

- A homeowner's clearing responsibility is limited to 100 feet away from his or her building or structure or to the property line, whichever is less, and limited to their land. While individual property owners are not required to clear beyond 100 feet, groups of property owners are encouraged to extend clearances beyond the 100-foot requirement in order to create community-wide defensible spaces.

- Homeowners who do fuel reduction activities that remove or dispose of vegetation are required to comply with all federal, state, or local environmental protections laws and obtain permits when necessary. Environmental protection laws include, but are not limited to, threatened and endangered species, water quality, air quality, and cultural/archeological resources. For example, trees removed for fuel reduction that are used for commercial purposes require permits from the California Department of Forestry and Fire Protection. In addition, many counties and towns require tree removal permits when cutting trees over a specified size. Contact your local resource or planning agency officials to ensure compliance.

The methods used to manage fuel can be important in the safe creation of defensible space. Care should be taken with the use of equipment when creating your defensible space zone. Internal combustion engines must have an approved spark arresters and metal cutting blades (lawn mowers or weed trimmers) should be used with caution to prevent starting fires during periods of high fire danger. A metal blade striking a rock can create a spark and start a fire, a common cause of fires during summertime.

Vegetation removal can also cause soil disturbance, soil erosion, regrowth of new vegetation, and introduce non-native invasive plants. Always keep soil disturbance to a minimum, especially on steep slopes. Erosion control techniques such as minimizing use of heavy equipment, avoiding stream or gully crossings, using mobile equipment during dry conditions, and covering exposed disturbed soil areas will help reduce soil erosion and plant regrowth.

Areas near water (riparian areas), such as streams or ponds, are a particular concern for protection of water quality. To help protect water quality in riparian areas, avoid removing vegetation associated with water, avoid using heavy equipment, and do not clear vegetation to bare mineral soil.

B. Definitions

Defensible space: The area within the perimeter of a parcel where basic wildfire protection practices are implemented, providing the key point of defense from an approaching wildfire or escaping structure fire. The area is characterized by the establishment and maintenance of emergency vehicle access, emergency water reserves, street names and building identification, and fuel modification measures.

Aerial fuels: All live and dead vegetation in the forest canopy or above surface fuels, including tree branches, twigs and cones, snags, moss, and high brush. Examples include trees and large bushes.

Building or structure: Any structure used for support or shelter of any use or occupancy.

Flammable and combustible vegetation:

- Fuel Vegetative material, live or dead, which is combustible during normal summer weather
- For the purposes of these guidelines, it does not include fences, decks, woodpiles, trash, etc.

Homeowner: Any person who owns, leases, controls, operates, or maintains a building or structure in, upon, or adjoining any mountainous area, forest-covered lands, brush-covered lands, grass-covered lands, or any land that is covered with flammable material, and located within a State Responsibility Area.

Ladder Fuels: Fuels that can carry a fire vertically between or within a fuel type.

Reduced Fuel Zone: An area extending from 30 to 100 feet away from the building or structure or to the property line, whichever is nearer to the building or structure.

Surface fuels: Loose surface litter on the soil surface, normally consisting of fallen leaves or needles, twigs, bark, cones, and small branches that have not yet decayed enough to lose their identity; also grasses, forbs, low and medium shrubs, tree seedlings, heavier branches and downed logs.

C. Fuel Treatment Guidelines

The following fuel treatment guidelines comply with the requirements of 14 CCR 1299 and PRC 4291. **All persons using these guidelines to comply with CCR 1299 and PRC 4291 shall implement General Guidelines 1., 2., 3., and either 4a or 4b., as described below.**

General Guidelines:

1. Maintain a firebreak by removing and clearing away all flammable vegetation and other combustible growth within 30 feet of each building or structure, with certain exceptions pursuant to PRC §4291(a). Single specimens of trees or other vegetation may be retained provided they are well-spaced, well pruned, and create a condition that avoids spread of fire to other vegetation or to a building or structure.

2. Dead and dying woody surface fuels and aerial fuels within the Reduced Fuel Zone shall be removed. Loose surface litter, normally consisting of fallen leaves or needles, twigs, bark, cones, and small branches, shall be permitted to a depth of 3 inches. This guideline is primarily intended to eliminate trees, bushes, shrubs and surface debris that are completely dead or with substantial amounts of dead branches or leaves/needles that would readily burn.

3. Down logs or stumps anywhere within 100 feet from the building or structure, when embedded in the soil, may be retained when isolated from other vegetation. Occasional (approximately one per acre) standing dead trees (snags) that are well-space from other vegetation and which will not fall on buildings or structures or on roadways/driveways may be retained.

4. Within the Reduced Fuel Zone, one of the following fuel treatments (4a. or 4b.) shall be implemented. Properties with greater fire hazards will require greater clearing treatments. Combinations of the methods may be acceptable under §1299(c) as long as the intent of these guidelines is met.

4a. Reduced Fuel Zone: Fuel Separation

In conjunction with General Guidelines 1, 2, and 3, above, minimum clearance between fuels surrounding each building or structure will range from 4 feet to 40 feet in all directions, both horizontally and vertically.

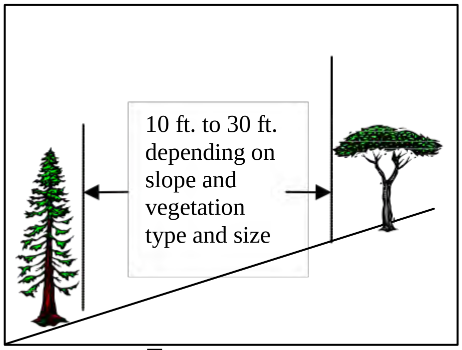
Clearance distances between vegetation will depend on the slope, vegetation size, vegetation type (brush, grass, trees), and other fuel characteristics (fuel compaction, chemical content etc.). Properties with greater

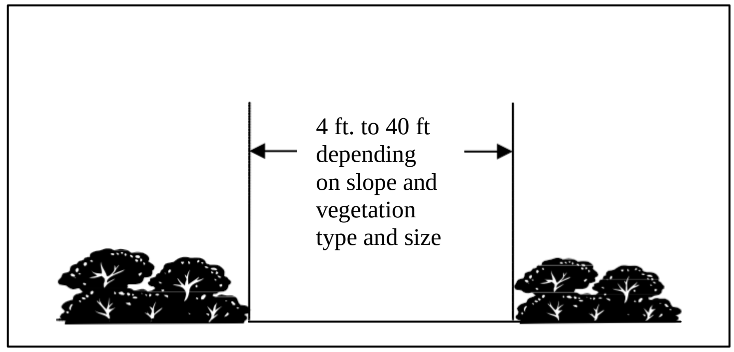
fire hazards will require greater separation between fuels. For example, properties on steep slopes having large sized vegetation will require greater spacing between individual trees and bushes (see Plant Spacing Guidelines and Case Examples below). Groups of vegetation (numerous plants growing together less than 10 feet in total foliage width) may be treated as a single plant. For example, three individual manzanita plants growing together with a total foliage width of eight feet can be “grouped” and considered as one plant and spaced according to the Plant Spacing Guidelines in this document.

Grass generally should not exceed 4 inches in height. However, homeowners may keep grass and other forbs less than 18 inches in height above the ground when these grasses are isolated from other fuels or where necessary to stabilize the soil and prevent erosion.

Clearance requirements include:

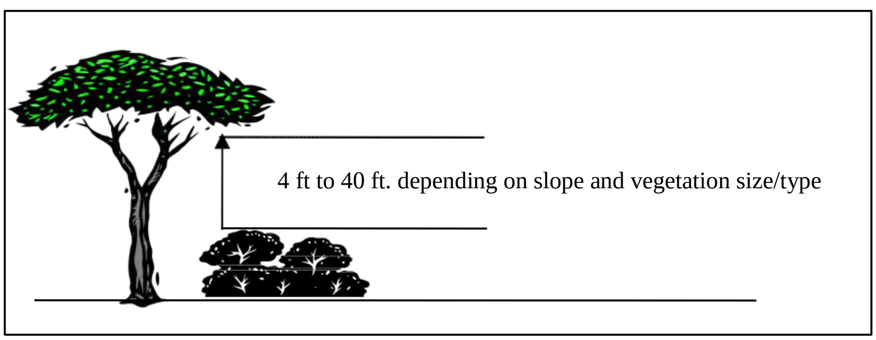
- Horizontal clearance between aerial fuels, such as the outside edge of the tree crowns or high brush. Horizontal clearance helps stop the spread of fire from one fuel to the next.





Horizontal clearance between aerial fuels

- Vertical clearance between lower limbs of aerial fuels and the nearest surface fuels and grass/weeds. Vertical clearance removes *ladder fuels* and helps prevent a fire from moving from the shorter fuels to the taller fuels.



Vertical clearance between aerial fuels

Effective vertical and horizontal fuel separation
Photo Courtesy Plumas Fire Safe Council.

Plant Spacing Guidelines Guidelines are designed to break the continuity of fuels and be used as a “rule of thumb” for achieving compliance with Regulation 14 CCR 1299.		
Trees	**Minimum horizontal space from edge of one tree canopy to the edge of the next**	
	Slope	Spacing
	0% to 20 %	10 feet
	20% to 40%	20 feet
	Greater than 40%	30 feet
Shrubs	**Minimum horizontal space between edges of shrub**	
	Slope	Spacing
	0% to 20 %	2 times the height of the shrub
	20% to 40%	4 times the height of the shrub
	Greater than 40%	6 times the height of the shrub
Vertical Space	**Minimum vertical space between top of shrub and bottom of lower tree branches:** 3 times the height of the shrub	

Adapted from: Gilmer, M. 1994. California Wildfire LandscapingLandscaping

Case Example of Fuel Separation: Sierra Nevada conifer forests

Conifer forests intermixed with rural housing present a hazardous fire situation. Dense vegetation, long fire seasons, and ample ignition sources related to human access and lightning, makes this home vulnerable to wildfires. This home is located on gentle slopes (less than 20%), and is surrounded by large mature tree overstory and intermixed small to medium size brush (three to four feet in height).

Application of the guideline under 4a. would result in horizontal spacing between large tree branches of 10 feet; removal of many of the smaller trees to create vertical space between large trees and smaller trees and horizontal spacing between brush of six to eight feet (calculated by using 2 times the height of brush).

Case Example of Fuel Separation: Southern California chaparral

Mature, dense, and continuous chaparral brush fields on steep slopes found in Southern California represents one of the most hazardous fuel situations in the United States. Chaparral grows in an unbroken sea of dense vegetation creating a fuel-rich path which spreads fire rapidly. Chaparral shrubs burn hot and produce tall flames. From the flames come burning embers which can ignite homes and plants. (Gilmer, 1994). All these factors results in a setting where aggressive defensible space clearing requirements are necessary.

Steep slopes (greater than 40%) and tall, old brush (greater than 7 feet tall), need significant modification. These settings require aggressive clearing to create defensible space, and would require maximum spacing. Application of the guidelines would result in 42 feet horizontal spacing (calculated as 6 times the height of the brush) between retained groups of chaparral.

Case Example of Fuel Separation: Oak Woodlands

Oak woodlands, the combination of oak trees and other hardwood tree species with a continuous grass ground cover, are found on more than 10 million acres in California. Wildfire in this setting is very common, with fire behavior dominated by rapid spread through burning grass.

Given a setting of moderate slopes (between 20% and 40%), wide spacing between trees, and continuous dense grass, treatment of the grass is the primary fuel reduction concern. Property owners using these guidelines would cut grass to a maximum 4 inches in height, remove the clippings, and consider creating 20 feet spacing between trees.

4b. Reduced Fuel Zone: Defensible Space with Continuous Tree Canopy

To achieve defensible space while retaining a stand of larger trees with a continuous tree canopy apply the following treatments:

- Generally, remove all surface fuels greater than 4 inches in height. Single specimens of trees or other vegetation may be retained provided they are well-spaced, well-pruned, and create a condition that avoids spread of fire to other vegetation or to a building or structure.

- Remove lower limbs of trees ("prune") to at least 6 feet up to 15 feet (or the lower 1/3 branches for small trees). Properties with greater fire hazards, such as steeper slopes or more severe fire danger, will require pruning heights in the upper end of this range.

Defensible Space retaining continuous trees

Photo Courtesy Plumas Fire Safe Council.

Defensible space with continuous tree canopy by clearing understory and pruning

Authority cited: Section 4102, 4291, 4125-4128.5, Public Resource Code. Reference: 4291, Public Resource Code; 14 CCR 1299 (d).

APPENDIX E – GLOSSARY

1-Hour Fuel: Fuels that are less than ¼ inch in diameter. These fuels will only take about an hour to lose or gain two-thirds of the equilibrium moisture content of their environment.

10-Hour Fuel: Fuels that range in diameter from ¼ inch to 1 inch, and take about ten hours to lose or gain two-thirds of the equilibrium moisture content of their environment.

100-Hour Fuel: Fuels that range from 1 inch to 3 inches and take about 100 hours to lose or gain two-thirds of the equilibrium moisture content of their environment.

20-Foot Wind Speed: The speed of wind, measured 20 feet up, in miles per hour.

90^{th} Percentile: Weather observations that are among the most extreme—only 10% of the observations are more extreme under 90^{th} percentile conditions.

Access Roads: Roads that allow entrance into and out of a property.

Adaptive Management: An approach to managing the environment/property that is based on a "learn by doing" technique that adjusts to changing conditions. Adjustments in management change over time as new information is learned.

Age Classes: A way of classifying the age range of trees or forests, usually divided into 20-year age classes.

Aloft Winds: Upper winds that occur in the atmosphere above the surface level, generally 2,000 feet and higher.

Anchor Point: The point at which firefighters begin fire line construction, usually blocked from the spreading fire to protect firefighters from harm.

Anthropogenic: The result of human activities or the influence of humans on nature.

Aspect: The direction that a slope faces—north, south, east, west, etc.

Backfire: A technique used in certain locations to direct fire spread against the wind while doing prescribed burns.

Bare Mineral Soil: The exposure of a layer of inorganic earth below the litter and duff layer that is composed of sand, silt, and clay and has little combustible materials.

Benches: Flat landscape areas that occur along foothill and mountainous slopes. These "benches" can be the result of natural land formations through slope movement and sluffing, or can be the result of land alteration by previous resource extraction activities such as logging.

Biodiversity: The abundant variety of plant, fungi, and animal species found in an ecosystem including the diversity of genetics, species, and ecological type.

Biomass: The total weight of living matter in a given ecosystem. May also be defined as the total weight of plant debris that can be burned as a fuel.

Blackline: Preburning of fuels adjacent to a control line before igniting a prescribed burn.

Broadcast Burning: A controlled burn, where the fire is intentionally ignited and allowed to proceed over a designated area within well-defined boundaries for the reduction of fuel hazard after logging, for site preparation before planting and/or for ecosystem restoration.

Broadcast Patch Burning: A controlled burn, where the fire is intentionally ignited and allowed to proceed over a designated smaller area for site specific management of fuels or plant community enhancement for certain groupings of vegetation or patches.

Broadcast Underburning: A method of burning where a prescribed fire is allowed to burn in the understory of a designated area to reduce fuel hazards or as a silvicultural treatment, or both.

Brush : To control and/or clear small woody debris.

Brushing: The act of removing brush such as dead materials, shrubbery, and branches.

BTU: British Thermal Units (heat)/feet/second.

Burn Plan: Detailed document with specific information on prescribed burns. Used by the burn boss for implementing specific prescribe burn projects.

Burn-Out Time: The length of time in which flaming and smoldering phases occur in a given area or for the whole fire.

Cambium: The growing layer of a tree located between the bark and wood of the stem.

Canopy: The top layer of a forest or tree, which is formed by leaves, needles, and branches creating a continuous cover.

Cavities: A hole or opening, usually in a decayed area of a tree, where birds and animals may live.

Chunked: Completing the pile burning process by turning in, or placing the unburned woody material ends into the fire ring.

Closed-Canopy: Occurs when the canopies of trees touch and blend together enough so that light does not reach the floor of the forest.

Codominant: Species that share dominance or are of equal importance. For example, a fir-pine forest may be dominated by both firs and pines.

Colonize: The act of establishing populations in new sites, such as burned areas, by seed.

Compact: To pack closely or tightly together, as in the fragments of soil being compacted from heavy equipment, thereby limiting the ability of oxygen or water to pass freely.

Composition: The percentage of each species that comprise a given area.

Conks: Shelf-like mushrooms that grow on trees, stumps, and downed wood. They are known for their wood decaying characteristics.

Containment: The process of completely surrounding a fire with natural or man-made fuel breaks.

Contour Falling: A treatment that utilizes positioned logs to control erosion from water flow. Logs are offset on the contour of the slope so the logs slow the water by creating a meandering path of travel.

Control: The act of managing a fire, which generally entails a completed control line around the fire.

Convection Column: Heat generated from a fire into a column that rises into the air at varying heights, depending on the size of the burn.

Cover: Any plants or organic matter that holds soil in place or grows over and creates shade that provides wildlife with an area to reproduce and find protection from predators and weather.

Crop: The amount of fruits a group of plant yields in one growing season.

Crown Density: A measurement of the thickness or density of the foliage of the tree crown in a stand.

Crown Fire: A fire that spreads from treetop to treetop, and is characteristic of hot fires and dry conditions. Crown fires are generally more complex to control than fires on the surface.

Crown Scorch: When a fire or a convection column burns a portion or the entire crown of a tree.

Crown Structure: The structure or arrangement of the uppermost branches and foliage of a tree.

Dappled Light: When the forest canopy has small openings where filtered sunrays project through the tree tops onto the forest floor.

DBH: Diameter at Breast Height, a measurement of a tree's diameter at the level of an adult chest (approximately 4.5 feet above the ground.)

Dead Out: When a fire has completely burned out or been entirely extinguished.

Decay Classes: Decomposing wood is categorized based on the level of decomposition, broken into five classes.

Defensible Fuel Profile Zone: Defensible Fuel Profile Zones: a term used by federal and state land management agencies to describe a larger shaded fuelbreak normally O.25 mile in width. The object of these measures are to reduce the fuel ladder and add space between the tree top canopy in order to keep the fire out of the canopy on the ground.

Defensible Space Zone: The one-hundred foot zone around the home.

Defensible Space: An area around a home/structure that has been cleared of flammable materials to act as a barrier between wildfires and property, thereby decreasing the risk of damage or loss. This space is now defined as 100 feet around a structure in California.

Discing: Cultivating or roto-tilling the soil.

Disturbance Factor: The aspects that influence changes to the environment, both human-caused and natural occurrences, such as logging or development, and fire, wind, or floods.

Disturbance Regime: The characteristic and usually historical pattern of disruptions to the environment (such as fire or flood or drought, for example) in a given area.

Disturbance: Various activities that disrupt the normal state of the soil such as digging, erosion, compaction by heavy equipment, etc.

Diurnal: Belonging to or active during the day.

Doghair: An excessively dense stand of trees. An example is an acre with 35,000 trees, all smaller than seven inches DBH.

Dominant: The species that is the most abundant or influential on an ecosystem. For example, a dominate tree is one that stands taller than the rest and receives full sun.

Downed Woody Debris: The remains of dead trees, branches, and various woody brush that sit on the forest floor—generally refers to trunks of trees.

Draft: Using the forces of suction to draw water from ponds, swimming pools, or other bodies of water. This technique utilizes a partial vacuum formed by a suction pump and atmospheric pressure. The water is then moved where it is needed.

Draw: A channel that is shallower than a ravine.

Drip Torch: A device held by hand to ignite fires by dripping flaming liquid fuel on the materials to be burnt.

Drip-Line Thinning: Clearing ladder fuels under the drip-line circumference of a leave tree.

Drip-Line: The boundary of a tree's canopy, generally estimated by the extent of the tree's outermost limbs and the circular moisture line formed when rainfall drips from the limb tips.

Duff: A layer on the forest floor that is made up of decomposing organic matter such as leaves, needles, and small branches.

Ecosystem: A community of organisms including plants, animals, and fungi and the non-living aspects of the physical environment that make up a specific area. Examples of ecosystem types include a pond or a forest.

Ecotone Edge: The boundary between two or more ecosystems. The change in ecosystems may be due to elevation, soil type, disturbance, or other factors.

Ember Attack: Embers blown by the wind during a firestorm that accumulate at intersections between horizontal and vertical members on the outside of your house, igniting debris and combustible materials. Embers can also enter into openings (e.g., attic vents and other wall openings), igniting debris on the inside of your home.

Embers: A piece of wood or a coal that is hot and glowing from fire activity, often dispersed by wind ahead of a fire. Also called firebrands.

Endemic: A plant that is native to a certain limited area and found nowhere else.

Ephemeral Stream: A stream or watercourse that does not flow all year round, only during rainy season.

Ephemeral: Meaning short duration or life, as in an ephemeral stream that only exists after a rainstorm or during the rainy season.

Erosion: The removal of soil over time by weather, wind and/or water such as rain or water runoff from roads.

Escape Route: A path or road that has been preplanned to get out of harm's way in a fire situation. The route should be well understood by all participants, and if there is any unclear direction, the path should be marked.

Escapes: Wildfires that cannot be contained with the first attempts at suppression.

Excessive Stems: Stems (tree or shrub main trunks) in high density.

Extension Agent: An employee from the government or a university who provides information to rural communities about agriculture, land management and/or resource management. In California, the University of California Cooperative Extension (UCCE) provides this service. For more information on UCCE, see: http: //ucanr.org/.

Extinction Moisture: The moisture level in fuels when fires tend to stop burning.

Facultative Sprouter: A species of plant that can resprout after a fire from the rootstock, although this may not be its usual method of reproduction in the absence of fire. The ability to resprout may be dependent on the intensity of the fire.

Feathering: A process that reduces the appearance of change between treated and untreated sites by gradually softening the transition.

Fire Adapted: The ability of organisms or ecosystems to make long-term genetic change for the most advantageous response to fire-prone environments.

Fire Behavior: The combination of fire spread, heat output, flame length intensity, etc. as the fire responds to weather, topography, types of fuels, etc.

Fire Climax: The stage of vegetation that is sustained with frequent fire.

Fire Free Zone: A five- foot minimum zone around the home that is free of all fuels.

Fire Ignition: The act of setting on fire or igniting a fire.

Fire Intensity: A measurement of the heat released in an area during a specific amount of time (btu/ft/sec). Intensity has a large influence on an ecosystems' recovery from fire.

Fire Prevention: Actions taken by homeowners and community members to lessen wildfires and damage caused by wildfires. Includes education, enforcement, and land management practices.

Fire Regime: The characteristic patterns of fire in a given ecosystem. May include fire behavior, distribution, frequency, size, and season.

Fire Resiliency: The ability of an ecosystem to maintain its native biodiversity, ecological integrity, and natural recovery processes following a wildland fire disturbance.

Fire Return Interval: A period of time between fires in a specific region or area.

Fire Safe Council: Public and private organizations that comprise a council intended to minimize the potential for wildfire damage to communities and homeowners, while also protecting the health of natural resources. Goals are achieved by distributing fire prevention materials, organizing fire safety programs, implementing fuel reduction projects, and more.

Fire Safe Practices: Activities such as creating defensible space, firebreaks, access to your home, fire-resistant landscapes, changes to your home in terms of material and design, etc., that make your home/property safer in wildfire situations.

Fire Weather: The various types of weather that affect how a fire ignites, behaves, and is controlled.

Fire-Adapted Ecosystem: A local mix of mature natural vegetation (ideally native species but often found in combination with exotic species) that maintains its ability to survive and regenerate, and perhaps even to thrive, with regular disturbance from wildfire. Some species may actually require fire to trigger seed maturation, such as the giant sequoia. Opportunistic species benefit from fire and the openings it can create in a woodland; this is part of their adaptation.

Firebrands: A piece of wood or a coal that is hot and glowing from fire activity, often dispersed by wind ahead of a fire. Also called embers.

Firebreak: A strip of land that has been cleared of vegetation to help slow or stop the spread of wildfire. It may be a road, trail, or path cleared of vegetation or other burnable materials. A firebreak could also be a stream.

Fire-Resilient Landscape: A natural landscape featuring plants that have adapted to local wildlife conditions, or a domestic outdoor space where appropriate actions have been taken to make it less vulnerable to wildfire and certainly less prone to causing one.

Fire-Resistant Building Materials: Materials used in the construction of a house that are resistant to ignition when exposed to radiant heat or flames. Examples include clay tile roofs, metal roofs, and stucco siding.

Fire-Sensitive: A species of tree that is more susceptible to fire damage. Sensitivity may be due to thin bark or easily ignitable foliage.

Fireshed: An area or areas with similar fire management, fire history, and risk of wildland fire issues.

First Entry Thinning Treatment: The *Initial Entry* first stage of tree thinning performed in a fuels reduction treatment.

Flame Length: The span of the flame from the tip to the base.

Flammable: A quantity of a substance that makes it likely to catch fire, be easily ignited, burn quickly, and/or have a fast rate of spreading flames.

Flanks: Slope areas on both sides below a ridge top.

Flashy Fuel: AKA fine fuels, such as grass, leaves, pine needles, ferns, moss and some kinds of slash which ignite readily and are consumed rapidly when dry.

Foehn Events: A wind that blows warm, dry, and generally strong, creating extremely dry fuel and dangerous fire potential.

Forest Stand Density: The amount of trees in a forest per unit area. Can be measured in terms of basal area and crown cover.

Forest Stand Enhancement: A combination of both silvicultural thinning practices and other forest restoration activities such as prescribed fire, which aim to increase the health, resiliency, and vigor of tree communities within a forest ecosystem.

Fragment: Used as a verb, the transformation of forests or vegetation into one or more patches of smaller size than the original area. Can also refer to one of the patches.

Fragmentation: The transformation of forests or vegetation into one or more patches of smaller size which can occur by natural means such as fire, disease, etc., or by management practices such as timber harvesting.

Fuel Bed Height: A measurement of the height of fuel composition on the forest floor.

Fuel Complex: The volume type, condition, arrangement, and location of fuels.

Fuel Continuity: The amount of continuous fuel materials in a fire's path that allows the fire to extend in vertically towards the crowns of trees or horizontally into the forest or other fuels.

Fuel Ladder: A ladder of vegetation from the forest floor into the canopy (or upper branches) of the trees that allows fire to climb upwards.

Fuel Load Conditions: The amount of combustible material (dead and live fuels), which relates to the *fuel model* of a given site, the slope, aspect, and the fuel's moisture content.

Fuel Modification: The management of fuels for fire safety. Examples include prescribed burns and creation of firebreaks.

Fuel Treatment: The act of removing burnable materials to lower the risk of fires igniting and to lessen the likelihood of damage to property and communities. Treatments may include creating a defensible space, developing fuelbreaks, initiating prescribed burns, and thinning vegetation.

Fuel Volumes: The quantity of fuel in a specified area that is susceptible to fire consumption.

Fuel: All burnable materials including but not limited to living or dead vegetation, structures, and chemicals that feed a fire.

Fuelbreak: A strategic area where fuel volumes have been intentionally reduced to slow down a fire and reduce its flame lengths and intensity; as distinguished from fire breaks where all fuels are removed to bare mineral soil for fire suppression.

Future Desired Condition: The short-term and long-term goals desired from activities on a property. It is important to keep Conservation Principles in mind.

Generalist: A species with the ability to utilize a wide variety of resources and tolerate various environmental situations.

Girdling: A technique used to kill trees by cutting through the cambium and sapwood layer around the circumference of the tree. The flow of water and nutrients is broken and the tree eventually dies.

Global Positioning System: A hand held navigational device that uses satellites to determine positions on the earth.

Green Islands: Patches of live tree and plant communities retained within a mosaic thinning prescription.

Ground Fuels: The layer of combustible materials that exists below the layer of surface littler. This layer includes plant roots, duff, etc., which will combust without a flame.

Ground-Disturbing Activities: Actions that interrupt the natural condition of the ground, such as digging and compaction from heavy equipment.

Growth/Vigor: The ability of plants to exhibit healthy natural growth and survival.

Hammerhead Turnout: A "T" shaped roadway that allows for large emergency vehicles to turnaround. This space allows for a three-point turnaround and should be as wide as other surrounding roads.

Hand Pile and Burn: The act of gathering slash into piles by hand and then burning the pile.

Hand Pile Burning: Hazardous fuels piled by hand for burning in a manner that will not damage surrounding trees or soil.

Heat Output: The total amount of heat a fire released in a specific area during the passing of the flaming front.

Heat Per Unit Area: The amount of heat produced by burning fuels in a given unit area through the entire duration of the fire.

Herbaceous Overstory Vegetation: The vegetation layer that forms the uppermost canopy layer and is partly composed of non-woody plants that die back in the winter.

Herbaceous Understory Vegetation: The layer of vegetation under the forest canopy that is composed of non-woody plants that die back in the winter.

High-Pruning: Cutting of both the dead and live branches ten to fifteen feet from the base of the tree (height to live crown). This is done on larger trees to separate the fuel connectivity from the ground to the crown of a tree.

Historic Natural Conditions: The natural condition of a property/area that occurred in the past before fire suppression and industrial activities. Old photos, settler's journals, elder's oral history, and clues on the property such as old stumps may be helpful in identifying the historical natural condition of and area.

Home Ignition Zones: Includes the home and a 100 to 200 foot area around the home.

Hydrology: A science that deals with the waters of the Earth including movement, distribution, seasonal patterns, and conservation.

Hydrophobic: Literally meaning "water-fearing" as in a substance such as oil, which does not mix well with water. Also refers to a soil that will no longer absorb water.

Ignition Specialist: A trained professional who specializes in ignition and prescribed fire techniques and management. Ignition specialists are certified through the National Wildfire Coordinating Group and have years of experience in wildland fire suppression and prescribed fire use, and have met all necessary requirements to perform firing applications.

Ignition Zones: The zone where combustion is initiated.

Ingress-Egress: Roads and other avenues to enter and leave your property. The act or right to come in, or go through as in entering a property (ingress). The act or right to, depart or go out as in exiting a property (egress).

Ingrowth: The trees that grow large enough in a season to be considered a sapling or pole timber.

Initial Data Assessment: Information gathered from initial site assessment based on a series of questions.

Initial Entry: The first stage of vegetation and tree thinning performed in a fuel reduction treatment.

Initial Site Assessment: The preliminary steps of a site assessment where fuel hazards and health conditions of a property are determined. Information is gathered to help plan a fuel hazard reduction treatment.

Invasive Weeds: Undesirable plants that are not native and have been introduced to an area by humans. These plants generally have no natural enemies and are able to spread rapidly throughout the new location. Some examples include Himalayan Blackberries, English Ivy, and Scotch Broom.

Jack Pots: Generally, small pockets of dense fuels which could allow a fire to flare up and burn more intensely.

Key Ecosystem Component: An important piece of an ecosystem such as soil, native species, or mature/rare habitats, which are essential to the stability of an ecosystem.

Ladder Fuel Continuity: The amount of continuous fuel materials in a fire's path that allows the fire to extend in a vertical direction towards the crowns of trees.

Ladder Fuels: Materials such as shrubs or small trees connecting the ground to the tree canopy or uppermost vegetation layer. In forests, this allows fire to climb upward into trees.

Layout: In this case, defining and designating forest operations for a specific location.

Leading Edge: The foremost part of a fire that is guiding the fire in the direction of travel.

Leave Trees: Trees that have been selected to remain standing in an area of thinning or harvesting.

Leave-Patches: Swaths or clusters of trees or other vegetation that have been selected to remain standing in an area of fuel treatment.

Limb Up: To remove the lower branches from a woody plant to create a defined space between the forest floor and the canopy.

Limbing: Removing selected branches of a standing or fallen tree.

Live Crown Percentages: The proportion of the height of the tree on which live branches and foliage are present.

Lop and Scatter: The act of cutting and evenly spreading branches over the ground to reduce fire hazard and erosion potential while promoting the decomposition of branches via their close proximity to the ground.

Mast: Nuts or fruits of trees and shrubs such as acorns, walnuts, or berries that collect on the forest floor and are a food source for animals.

Merchantable: Timber that is viable for sale under the current economic situation. This is generally determined by the part of the stem (trunk) that is suitable for timber products.

Mesic: The condition of being normally moist, as in vegetation or ecosystems.

Mixed-Structural Thinning: Practice of selectively eliminating multi-stemmed species to achieve a variety of densities where either one stem is retained or groupings of stems are retained.

Modify Fire Behavior: Using fire-safe practices such as fuel treatments, thinning, creating firebreaks, etc., to change the way a fire will behave, with a goal of slowing it down and/or suppressing it more easily.

Moisture Content: The dry weight of a material, such as wood or soil, compared to the wet weight of the same material. It is not unusual for live material to have moisture content greater than 100% because it could contain more water than solid material by weight.

Monitor: To watch, keep track of, or check regularly for changes - in this case, to the environment.

Montane: A mountainous region of moist cool upland slopes that occurs below the tree line and is predominately composed of evergreen trees. It is also described as the lower vegetation belt on mountains that is composed of montane plants and animals.

Mosaic Thinning Regimes: A system of thinning to create patches and openings that emulate the structural composition created by a wildfire.

Mosaic Thinning: A style of vegetative thinning that creates openings and patches of vegetation to increase the potential variety of habitat types.

Mycorrhizal: The mutually beneficial relationship between plant roots and fungi "roots," AKA mycorrhizae, where the fungus receives sugar from the tree while helping the tree with water and nutrient uptake. The majority of plants depend on this relationship.

Natural Disturbance: Disturbances, like fire and floods, which occur in the environment without the intervention of humans.

Natural Place Community: A simple term describing a specific type of ecosystem.

Natural Range of Conditions: The normal assortment of circumstances under which an organism or group can survive.

Niches: A species or population's role/function within an ecosystem. Includes resource use, interactions, etc.

Nurse Log: A tree that has fallen, died, and started to decompose. The decaying log is rich in moisture and nutrients and provides a germination spot for plants, as well as habitat for insects.

Obligate Seeder: A plant that reseeds itself after fire as a means of recovery and regeneration.

Obligate Sprouter: A plant that resprouts after fires as a means of recovery and regeneration.

Offshore Flow: The flow of wind blowing from the land to the water, or in other words wind blowing offshore.

One-Way Transport Route: A hauling trail used during tree extraction activities where one entry pass is made.

Overstory Trees: Tress that form the uppermost layer of the canopy in a forest.

Overstory: The topmost trees in a forest which compose the upper canopy layer; compared to the understory, which is the lower woody or herbaceous layer underneath treetops.

Patch Burning: A method of prescribed burning where patches are burnt to prepare an area for planting or to form an obstruction to future fires.

Patch Under-Burns: A designated area, or vegetation patch, where fire is utilized to consume surface fuels but not trees and shrubs.

Patch-Retention Thinning: A silvicultural thinning practice where patches of trees and vegetation are retained in a given area while other parts of the treatment area are thinned (selectively cut) at intermediate levels.

Perennial Stream: A stream or watercourse that has water all year round.

Perennial: In reference to water, a stream that holds water year-round during a typical year. May have some flux in a drought year.

Permeability: Where fire can spread through a community with minimal negative impact.

Pilot Ignition Piles: Small piles of primarily small fine fuels such as branches and dead materials organic matter.

Pistol Butts: Trees within a forest stand that have a crooked sweep beginning at the base of the tree, then growing straight toward the sky. A "pistol butt" tree indicates erosive soil movement on the slopes of a particular area.

Plant Community: A group of plants that are interrelated and occupy a given area.

Plant Succession: In ecology, progressive change of the plant and animal life of an area.

Pole-Sized: Generally younger trees with a trunk diameter between four and eight inches.

Precautionary Principle: A concept that promotes a cautious approach to development and managing the environment when information is uncertain or unreliable. Erring on the side of caution and conservation is encouraged, along with a "Better safe than sorry" attitude.

Prescribed Fire: A forest management practice that uses fire to improve habitat or reduce hazardous fuels. A plan for the prescribed burn must be written out and approved, and specific requirements must be met.

Present Condition: The conditions that occur on a property at the present time.

Productive: A term used for land or forests that are growing efficiently and in a vigorous manner.

Pump Chance: An area where water can be pumped from a pond or creek for fire-suppression purposes.

Rate of Spread: The speed of an advancing fire. May be measured by the growth in area or by the speed of the leading edge of the fire.

Regeneration: The renewal of trees or forests by planting seedlings or direct seeding by humans, wind, birds, or animals after large disturbances like fire. "Regeneration" also refers to the young trees that were naturally seeded or planted.

Registered Professional Forester (RPF): A person licensed in California to manage state or private forestlands and advise landowners on management of their forests. For more information, see: www.bof.fire.ca.gov/licensing/licensing_current_docs.aspx.

Release: Using thinning techniques to free a tree or group of trees from competition for nutrients, sunlight, and water by removing the competing small trees and shrubs.

Repeating Skips and Gaps: The forest structure throughout a treatment area following a variable density treatment where some areas are retained and not thinned (skips) and other portions of the stand are heavily harvested (gaps). The range of size of the skips and gaps are from a few hundred square feet to up to an acre where site conditions dictate.

Residence Time: How long the flaming front burns in any one location.

Resilient, Resiliency: The ability of an ecosystem to return to its balanced state after a disturbance.

Retention Patch: A clump of vegetation that has been isolated from contiguous fuels and retained for wildlife habitat and/or native plant species diversity.

Rhizome: An underground stem that has the ability to send out roots and shoots. Grasses and irises are two plants that exhibit rhizomes.

Riparian: A strip of land along the bank of a natural freshwater stream, river, creek, or lake that provides vast diversity, and productivity of plants and animals.

Salvage Logging: Logging and removing merchantable trees after a fire to capture economic potential. This is a very controversial subject.

Saturated: The broad meaning is "full." Saturated soil refers to the point at which the soil is so full of water that no more water can get into (be absorbed by) the soil, and therefore must run off.

Scalping: The act of removing the surface layer to expose the bare mineral soil.

Scratch Line: An incomplete control line in beginning stages that is constructed as an emergency backup for spreading fires.

Sediment: Particles of topsoil, sand, and minerals that come from soil erosion or decomposing plants and animals. Wind, water, and ice carry these particles; when the sediment collects in waterways it can destroy fish and wildlife habitat.

Seed Bank: A repository of dormant seeds found buried in the soil.

Seep: An area where water rises from an underground source to the surface and creates a wet area.

Sensitive Species: A plant or animal species that can tolerate a small range of resources and environmental situations. These species raise concerns about population numbers and may be recognized locally as rare.

Shade Tolerant: Attribute of a species that is able to grow and mature normally in and/or prefers shaded areas.

Shaded Fuelbreaks: : A fire-suppression technique using fuelbreaks in forested areas. Vegetation is reduced and/or modified to reduce fire risk, but an adequate amount of crown canopy remains intact, thus inhibiting weedy undergrowth.

Shaded: Blocked from light with shade or shadows.

Shape: The act of pruning a tree to a desired form or appearance.

Sheltered Connectivity: Contiguous areas within a thinning treatment that are retained for wildlife cover and to support wildlife movement.

Silvicultural: The practice of caring for forest trees in a way that meets management objectives. For example, foresters may control the composition and quality of a forest stand for goods such as timber and/or benefits to an ecosystem.

Site Specific: Applicable to a specific piece of land and its associated attributes and conditions (e.g microclimate, soils, vegetation).

Size Class: The division of trees by the size of their diameter, sometimes split into three categories—seedlings, pole, and saw timber—or by diameter in inches.

Slash Paper: Paper used to cover slash piles before ignition with the intention of keeping the slash dry or allowing it to dry. Paper is more environmentally appropriate than plastic.

Slash: The wood debris left on the ground after pruning, thinning, or brushing—may include branches, bark, chips, or logs.

Slope Stability: The degree to which a slope is susceptible to erosion and slides, or the measure of how stable a slope is.

Slope: A percentage or degree change in elevation over a defined distance that measures the steepness of a landscape.

Snag: A standing dead tree that has usually lost most of its branches. Snags offer essential food and cover for a host of wildlife species.

Soil Type: Refers to the different combinations of soil particles and soil composition. Soil can vary greatly within short distances.

Spatial Distribution: The manner in which plants are arranged throughout an area.

Spot Fire: A smaller fire outside the boundary of the main fire, started by airborne sparks or embers.

Spur: A road branching off the main road to provide access to a designated area.

Stacking Function: The act of accomplishing several goals with one activity.

Stand Structure Model: The spatial arrangement of the forest stand, describing the density and connectivity of the understory, mid-story, and overstory vegetation.

Stand: A group of trees with similar species composition, age, and condition that makes the group distinguishable from other trees in the area.

Steady State Climax: The stage of vegetation that is self-sustained without disturbance.

Stem and Poles: The trunk of a tree or a piece of wood that is long and slender.

Stemwood: The wood of the main stem or trunk of a plant

Stocking Levels: The density and calculation of tree seedlings, saplings, and poles in a given area.

Strip Patch: In prescribed burning, a narrow section or area where the fuel is burnt while the surrounding area is left untreated.

Structural Protection Zone: Immediate thirty- foot buffer zone around the home.

Structure: The composition of a forest or vegetation, specifically looking at the density, cover, size or diameter, and arrangement.

Stump-Sprout: The ability of a tree to resprout from its cut stump.

Submerchantable: Trees that cannot be sold for timber products due to disease, deformities and/or size.

Surface Fire: A fire on the forest floor that consumes debris and smaller plants.

Surface Fuels: Materials on the ground like needles or low-growing shrubs that provide the fuel for fires to spread on the ground. Surface fuels are generally considered all fuels within six feet of the ground.

Surface or Crown: The distinguished location that a fire burns. Surface refers to the forest floor while crown refers to fires in the top of trees.

Suspended Dead Material: Typically composed of pine needles that are draped on living brush. Made up of dead fuels not in direct contact with the ground, consisting mainly of dead needles, foliage, twigs, branches, stems, bark, vines, moss, and high brush. In general these fuels easily dry out and can carry surface fires into the canopy.

Swamper Burning: A method of prescribed fire where fuel is added gradually and continually to a burning pile over the course of a day.

Thermal Cover: Vegetation cover that modifies unfavorable affects of weather for animals. For example, elk may move to a fir forest with trees at least 40 feet tall and a crown closure of 70% to protect themselves from bad weather.

Thicket: A thick area of brush containing close-growing plants. Provides habitat to wildlife but may be difficult for humans to pass through.

Thinning Away Contiguous Fuels: The practice of cutting back fuel loads from the edge of a desired leave-tree or patch in an effort to separate fuel connectivity.

Thinning From Below: Silvicultural practice where smaller understory trees are selectively removed below overstory trees. This method is also called "low thinning."

Tillering: The process by which these new aerial shoots emerge from the base of the plant.

Tip Sprout: The ability of a shrub to resprout from a cut limb.

Torching: A rapid and intense burning of a single or small group of trees/shrubs, causing the upward movement of fire; a.k.a. crown fire initiation or flare-up.

Touch-Off: A prescribed fire operation performed by a forestry or fire crew where large quantities of forest treatment slash that are arranged in hand piles are ignited with drip torches at one time by multiple crew members.

Treatment: An action or controlled technique that is applied in a specific process. Refer to "Fuel Treatment" for a more specific definition.

Underburn: A prescribed fire method where burning is conducted in the understory of the forest below the dominant trees.

Understory: Generally herbaceous or shrubby vegetation that makes up the layer of forest under the tree canopy layer.

Uneven-Aged Treatment: A treatment that deals with three or more age-classes of trees.

Unstable: Land that is lacking stability, or liable to change with activity, such as in the case of step slopes or crumbly soils.

Untreated: Not altered from a natural or original state; unprocessed, e.g. no fuel reduction or defensible space activities.

Variable-Density Thinning: Thinning or selectively cutting trees in a manner to restore repeating variability or redundancy in a forest. This technique ensures diversity in stand density and canopy cover.

Variable-Density Treatments: Silvicultural thinning practice where some portions of a stand are left lightly or completely unthinned ("skips"), providing areas with high stem density, heavy shade, and freedom from disturbance; while other parts of the stand are heavily cut ("gaps"), including removal of some dominant trees to provide more light for subdominant trees and understory plants. Intermediate levels of thinning are also applied in a typical variable-density prescription. This practice is also known as "free thinning."

Vertical and Horizontal Structure Diversity: Describes the configuration of trees within a forest stand that create a variation of structure where trees stand straight up and down (vertical) or grow at an angle (horizontal).

Vertical Fuels: Those fuels (brush, small trees, decks, etc.) that provide a continuous layer of fuels from the ground up into the top fuel layers (i.e. tree canopy).

Watershed: All of the land that drains water runoff into a specific body of water. Watersheds may be referred to as a drainage areas or drainage basins. Ridges of higher elevation usually form the boundaries between watersheds by directing the water to one side of the ridge or the other. The water then flows to the low point of the watershed.

Weed Eater: A hand-held tool that utilizes a gas or electric motor and a rotating nylon string or metal blade to cut down vegetation.

Wick: A combustible material that allows fire to travel along a confined path to larger fuel sources. An example would be a wooden fence connected to your home.

Wildlands: An area of land that is uncultivated and relatively free of human interference. Plants and animals exist in a natural state, thus wildlands help to maintain biodiversity and to preserve other natural values.

Wind throw: Trees that are uprooted by wind events. May occur in logged areas or in stands of shallow-rooted trees such as white pines. Formerly protected stands whose edges are opened up become vulnerable to this effect.

WUI: Wildland Urban Interface, the area where wildlands and communities converge, often assumed to be at high risk of wildfire.

Yarding: A technique for moving felled trees, limbs, and brush by hauling them to the road with a cable and tractor.

APPENDIX F – INTERNET LINKS

GENERAL INTEREST WEBSITES

cafirealliance.org/cwpp/, California Fire Alliance, CWPPs.

fire.ca.gov/education.php, CAL FIRE, Fire Safety Education.

frap.cdf.ca.gov, The California Dept. of Forestry and Fire Protection, Fire and Resource Assessment Program.

www.cafirealliance.org, California Fire Alliance homepage.

www.fire.ca.gov/education_homeowner.php, California Department of Forestry and Fire Protection (CAL FIRE), Homeowner's Responsibility.

www.firesafecouncil.org, California Fire Safe Council homepage.

www.firewise.org, Firewise homepage.

www.firewise.org/resources/homeowner.htm, Firewise Homeowners Resources.

www.safnet.org/policyandpress/cwpp.cfm, Society of American Foresters, "Preparing a Community Wildfire Protection Plan, A Handbook for Wildland Urban Interface Communities."

www.wildfireprograms.usda.gov/, National Wildfire Programs Database, provides information about policies and programs that seek to reduce the risk of loss of life and property through the reduction of hazardous fuels on private lands.

fire.ca.gov/about_content/downloads/Evacuation2006.pdf, CAL FIRE, Evacuation Handout.

firesafecouncil.org/education/attachments/Homeownerchecklist.pdf, California Fire Safe Council (CFSC) Homeowner's Checklist

firesafecouncil.org/education/attachments/landscapingbrushland.pdf CFSC Landscaping Guides: Brushland.

firesafecouncil.org/education/attachments/landscapinggrassland.pdf, CFSC Landscaping Guides: Grassland.

firesafecouncil.org/education/attachments/landscapingtimberland.pdf, CFSC Landscaping Guides: Timberland.

groups.ucanr.org/HWMG/index.cfm, Homeowner's Wildfire Mitigation Guide.

osfm.fire.ca.gov/pdf/regulations/summareofwuicodes.pdf, Summary of California WUI Codes.

www.bof.fire.ca.gov/pdfs/AB242010_28_05.pdf, Board of Forestry, Forest Fire Prevention Exemption Language.

www.bof.fire.ca.gov/pdfs/Copyof4291finalguidelines9_29_06.pdf, Board of Forestry Defensible Space Guidelines.

www.edcfiresafe.org/documents/edc_firesafe_news_spring_2006.pdf, EL Dorado County Fire Safe Council, Air Quality Burning Regulations

www.edcfiresafe.org/fire_safe_vegetation.htm El Dorado County Fire Safe Council, Fire Resistant Landscape.

www.fire.ca.gov/CDFBOFDB/pdfs/RoleofRPF_2005version.pdf, The Role of Registered Professional Foresters (RFP), RFP Law.

www.fire.ca.gov/education_100foot.php, CAL FIRE, Why 100 Feet?

www.fire.ca.gov/education_content/downloads/Beforeduringandafter2005.pdf, CAL FIRE, Before, During, and After Wildfire Brochure.

www.fire.ca.gov/education_homeowner.php, California Department of Forestry and Fire Protection (CAL FIRE), Homeowner's Responsibility.

www.firewise.org/resources/homeowner.htm, Firewise Homeowners Resources.

www.leginfo.ca.gov/cgi-bin/waisgate?WAISdocID=4051777136+0+0+0&WAISaction=retrieve, PRC 4290

www.leginfo.ca.gov/cgi-bin/waisgate?WAISdocID=4052207349+0+0+0&WAISaction=retrieve, PRC 4291
www.plumasfiresafe.org/Documents/PNF_BRD Fire Resistant Plants.pdf, Plumas National Forest

Appendices

1. Pioneer/ Volcano Community Conservation and Wildfire Protection Plan Introduction

1.4. Introduction to [Place], California

www.census.gov/popest/estimates.php, US Census population data.

1.5. Pioneer/Volcano planning Unit Communities at Risk

cafirealliance.org/communities_at_risk/, California Fire Alliance, "Communities at Risk."

1.7. Introduction to Amador Fire Safe Council

www.dnco.org/downloads/DNFSPFinal.pdf, Del Norte Fire Safe Plan, see section 1.5 for example of text.

2. Pioneer/Volcano Fire Safe Planning Process

2.1. Planning Area Boundaries

cwp.resources.ca.gov/browser/, California Watershed Portal, searchable by subregion.

mattole.org/pdf/UMFP_final.pdf, Upper Mattole Fire Plan, an example of neighborhood-level planning.

support.esri.com/index.cfm?fa=knowledgebase.gisDictionary.search&search=true&searchTerm=global+position+system GIS dictionary.

wildfire.cr.usgs.gov/fireplanning/, Fire Planning and Mapping Tools.

2.2. Process and Plan Development

jfsp.fortlewis.edu/collaboration2.asp, Joint Fire Sciences, "Enhancing Community Collaboration and Building Community Capacity."

www.mattole.org/html/publications_main.html, Lower Mattole Fire Plan.

www.ncrs.fs.fed.us/pubs/bro/applegate.pdf, Applegate Fire Plan, Steps to improve Community Preparedness, includes "Lessons for Other Communities from the Applegate."

3. Wildfire: Current Environment And Behavior

www.lomakatsi.org/ A great example of a group doing fire hazard reduction work while improving basic watershed and ecosystem function in southern Oregon. They have created a list of ecological principles to use in implementing fuel reduction projects.

3.1. Introduction: Defining the Wildfire Problem

frap.cdf.ca.gov/infocenter.html, California Fire Resources Assessment Plan.

3.2. Fire Behavior Characteristics

cdec.water.ca.gov/queryTools.html, California Department of Water Resource site. One of the best for weather data sources.

fire.boi.noaa.gov, The National Fire Weather website on fire weather.

raws.wrh.noaa.gov/cgi-bin/roman/past.cgi, University of Utah, Mountain Meteorology Group. One of the best fire weather data sources.

www.firelab.org/, USFS - Missoula Fire Science Labs Homepage.

www.fs.fed.us/fire/planning/nist/ffp_305_rn.rtf, A sorting program called Fire Family that facilitates analysis of weather information.

www.stormcenter.com/envirocast/fire/2003-09-16/, A comprehensive newsletter resource about forest and wildland fires.

www.wrcc.dri.edu/summary/Climsmnca.html, A useful source on climate data for local environment.

3.3. General Wildfire Environmental Description

cdec.water.ca.gov/snow_rain.html, I Information on precipitation and snow levels in California.

cwp.resources.ca.gov/browser/, Watershed information.

frap.cdf.ca.gov/data/frapgismaps/select.asp, Fire Resource Assessment Plans Maps.

jfsp.nifc.gov/projects/01B-3-3-28/01B-3-3-28_Final_Report.pdf, Fire Effects on Rare Flora and Fauna in Southern California National Forests.

mapserver.maptech.com/homepage/index.cfm?BPID=MAP0060030900&CFID=1175344&CFTOKEN=955679,07 Map Tech USGS Topographic maps, NOAA Nautical Charts, and more. Free website.

plasma.nationalgeographic.com/mapmachine/, National Geographic satellite maps, street maps, theme maps and more.

water.usgs.gov/waterwatch/?m=real&w=map&r=ca, USGS Water Watch site.

watersupplyconditions.water.ca.gov/, California Department of Water Resources "Drought Preparedness."

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CHAPTER 1 PLAN INTRODUCTION

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1. GREATER PINE GROVE AREA CCWPP INTRODUCTION

This plan is collaboration between several organizations and government agencies. These include the Amador County Board of Supervisors, Amador Fire Safe Council, CAL FIRE, Amador Fire Protection District, and Lockwood Fire Protection District.

The Amador Fire Safe Council is the lead agency for this plan. The council's board of directors and other citizens acted as the steering committee for the project. A core-working group comprised of representatives from the council, CAL FIRE, Amador Fire Protection District, and Lockwood Fire Protection District was responsible for preparing the draft plan for the steering committee and community stakeholders.

Funding for some aspects of the plan was provided the Sierra Nevada Conservancy.

1.2 PINE GROVE CCWPP GOALS AND OBJECTIVES

1.2.1 GOALS

- To identify priority projects to reduce risks and hazards from wildfire while protecting conservation values. Goals are to be achieved principally through prioritization and implementation of fuel hazard reduction, community education, and fire-suppression projects and activities.
- To provide community priorities for conservation-based fuel reduction on public lands
- To provide conservation-based fire safety educational information to residents of the Pine Grove Planning Unit
- To provide a positive balance among fire prevention, conservation, and wildlife protection
- To provide a guidance document for future actions of the Amador Fire Safe Council, County of Amador, CAL FIRE, Bureau of Land Management, Pacific Gas & Electric Company and local emergency service providers.
- To coordinate fire protection strategies and investments across properties and administrative boundaries to achieve landscape scale fire defense systems.
- To integrate private land management goals with community needs and expectations for fire safety.
- To create ecologically sustainable biomass utilization and removal projects within Pine Grove Planning Unit.
- To provide tools to emergency response agencies that improves response capabilities.
- To reduce the potential of large scale damage from the historic large fire scenario in upper Amador County
- Prevent damage to the environment and infrastructure caused by the historic large wildfire scenario[1] in Amador County.
- Provide for safe evacuation of citizens during wildfires
- Assist fire and other emergency agencies to respond to emergencies
- Obtain 100% compliance with the defensible space requirements[2]

- Educate the citizens of Amador County about the importance of re-establishing a pre-European forest landscape and its importance on fire safety and forest health.
- Finally, this document is being written as a Community Wildfire Protection Plan, in order to meet the requirements for future National Fire Plan and other government funding sources, and to provide community direction for federal lands management within the planning area.

1.2.2 OBJECTIVES

The objectives for fire safety will drive the development of the assessment and eventual solutions. These objectives reflect the particular characteristics facing Amador County.

- **Minimize Ignitions** - It may seem obvious that unplanned ignitions should be minimized. Numerous ignitions place a strain on firefighting resources, which can lead to high levels of damage because of greater fire area burned.
- **Decrease Intensity** - One factor that disposes structures to fire damage is fire intensity, or the amount of heat transferred to the structure. High-intensity fires also are most likely to produce *crown fires*[3] and *torching.*[4] Embers created from these crown fires are lofted well ahead of the fire front, creating numerous *spot fires,*[5] and they are often the cause of structures burning. The level of fire intensity greatly influences the damage to natural resources. Every ecosystem is adapted to a range of fire intensities; however, most of the Sierra Nevada is characterized by low-intensity fire. Higher-intensity fire causes a greater level of damage, such as erosion, degraded water quality, tree mortality, visual blights, and a decline in certain wildlife habitats.
- **Decrease Damage** - Fire is part of the natural ecology of the Sierra Nevada. However, increases in forest fuel accumulations over the last century have led to larger more damaging wildfires. Along with these fuel accumulations has been a steady increase in the number of man-made improvements, including homes, in the forests. Wildfire damage to resources, structures, and human improvements needs to be minimized.
- **Increase Resiliency** - An important objective is to rebound quickly after a wildfire burns through a community. Fires of small size or limited damage support a more rapid recovery. Communities with greater preparation for wildfires (rehearsed evacuations, established communication protocols, etc.) also have greater resiliency.

1.3 INTRODUCTION TO THE AMADOR FIRE SAFE COUNCIL

1.3.1 AMADOR FIRE SAFE COUNCIL BACKGROUND, HISTORY, MISSION

The Amador County Fire Safe Council is a non-profit organization that collaborates with local businesses, community organizations, and property owners of Amador County.

The council's advisors include the USFS, CDF, BLM, Amador Resource Conservation District, Amador County Board of Supervisors, Sierra Nevada Conservancy, Sierra Business Council, and the Central Sierra RC&D. The council is also assisted by numerous volunteers who help to make this vital organization work for Amador County residents. The Amador Fire Safe Council is chartered to educate and assist Amador County residents in keeping their properties and Amador County a Fire Safe Community. Look to the Amador Fire Safe Council to:

Provide educational workshops to teach citizens living in the wildlands how to become a fire safe community

Distribute fire safety materials on fire preparedness and ways to maintain a fire safe home and property such as fire resistant plants and personal home evacuation plans

Help citizens develop community fire plans

Help citizens to get involved in short term action projects to benefit their community through volunteering and/or participation in meetings and special interest groups

Conduct landscape scale fuel reduction project (fuelbreaks) designed to reduce the potential of damage from wildfire. These projects are conducted in cooperation with the fire agencies and land management agencies within the county. These projects are based on priorities established in existing Community Wildfire Protection Plans.

Assists communities become designated Fire Wise Communities

1.3.2 AMADOR FIRE SAFE COUNCIL PROJECTS

In the current fiscal year, Amador Fire Safe Council is or has:

- Writing Conservation and Community Wildfire Protection Plans for two Planning Units
- Constructing a shaded fuelbreak around the community of River Pines
- Providing free firewood to low income and qualifying senior citizens
- Assisted low-income seniors to comply with defensible space requirements. The Senior Assistance Project pays for contractors who clear vegetation from around qualifying senior citizens homes. The senior citizens are not charged for this service:
- Contracts with various private contractors to chip vegetation removed from private residences. The chipper project provides these services at no cost to the landowner.
- Rehabilitating the Pine Acres Fuelbreak

1.3.3 AMADOR FIRE SAFE COUNCIL STRATEGIC AND/OR FUTURE PLANS

The Amador Fire Safe Council is constructing wildfire defenses (fuelbreaks) based on priorities established in the 2005 Amador County Generic Community Wildfire Protection Plan (CWPP). All work is funded by either state or federal grants. The 2005 divided the county into nine planning units. These planning units are ranked as to their relative risk from wildfire. The Council is reviewing each of these units based on their risk. The first unit to be reviewed and updated is the Pioneer/Volcano Planning Unit. This unit is the second most at risk area of the county. This document is the update to the 2005 CWPP as it pertains to the Pine Grove Planning Unit.

Amador Fire Safe Council is also funded to rewrite the 2005 CWPP for the third most at risk area of the county, the High Country Planning Unit (called the Upcountry Unit in the 2005 CWPP). The Council is seeking funding to redo Fiddletown Planning Unit, and Sutter/Amador Planning Unit. These units represent those areas of the county that are most vulnerable to large wind driven wildfires that historically occur east of Highway 49.

1.4 CONSERVATION PRINCIPLES FOR WILDFIRE PROTECTION IN THE SIERRA NEVADA

This document is based on the following conservation principles.

> "Fire always has been and always will be an ecological force in the Sierra Nevada. Decades of fire suppression have changed this role, allowing stands to thicken and fuels to accumulate, especially in the foothills and lower *montane*[6] zone, where developments are increasing. We either manage fire and live with fire on our terms or let fire dictate the terms. The choice is ours."
>
> — Jan W. van Wagtendonk, *Wildfire* (2006)

Most Sierra Nevada residents choose to live here because of the natural beauty. What many of us do not realize is that living within these forests and *wildlands*[7] carries a responsibility. We need to be good stewards of the land, learning to live in balance with the natural world, of which fire is a significant part. This document summarizes what residents can do to coexist with fire in the Sierra. It will show you how to provide a positive balance among *fire prevention,*[8] conservation, and wildlife protection at your Sierra Nevada home. You have chosen to live here, and with your choice comes a stewardship responsibility.

For more information on fire safety in general, please contact the Amador Fire Safe Council, or go to

www.amadorfiresafe.org
www.fire.ca.gov/education_homeowner.php
www.firesafecouncil.org/homeowner/index.cfm
firewise.org/resources/homeowner.htm

1.4.1 BASIC CONCEPTS TO REMEMBER FOR LIVING WITH FIRE IN THE SIERRA NEVADA

- **Fire is a dynamic element of the Sierra.** Property in the planning unit has likely burned before and will burn again. The landscape of today may seem "natural." In fact, it has changed drastically over the last 150 years as government and private citizens attempted to manage fire and forest growth. In preparing property for fire, residents can help restore it to a more ecologically appropriate state. In doing so, they will learn how to be prepared for wildfire—it is not only possible, it is smart. It is rarely practical to completely "fire proof" a property. However, there are steps property owners can take to survive a wildfire. *For more information see www.fire.ca.gov/education_content/downloads/live_w_fire.pdf*

- **One size does not fit all in terms of homeowner fire safety.** Every place is unique. Residents should work with the Amador Fire Safe Council,[9] their local fire department, Cooperative Extension Agent,[10] a Registered Professional Forester,[11] and/or contractors to design the appropriate fire-safe practices[12] and defensible space[13] for their property. See *www.fire.ca.gov/education_100foot.php* *and www.firesafecouncil.org/homeowner/index.cfm for more information.*

- **Homes and other infrastructure exist within a larger watershed.**[14] They are located in the midst of a much larger landscape. Home and business owners should think about where their property is on the slope.[15] Is it on top of a ridge, where fire will easily burn toward homes and other structures? Is the slope steep or gentle? Fire moves quickly up steeper slopes, which means that residents may need to treat a larger area to create effective defensible space. What is below and above? What direction, or "aspect,"[16] does the property face? Generally, south-facing properties are hotter and drier; they can therefore be more susceptible to fire. Are there any natural firebreaks[17] such as streams, rivers, or rocky outcrops where a fire might naturally go out? Do wildlife use or move through the property to get to food, shelter, or water? In what watershed is the property located? Do the roads in and out of the property follow ridges or rivers? Look beyond property lines to understand the ecological perspective of the property. *See www.audubon.org/bird/at_home/Explore.html for more information.*

- **Fire can behave both predictably and unpredictably.** Fire managers can generally predict fire direction and behavior; it will go the way the wind is blowing and burn as much *fuel*[18] as is available. Predicting the exact time and place where fire will burn is less obvious. As fire moves across the landscape, it can climb up into trees. A key fire safety objective is to prevent that spread. Dead leaves and branches on the ground *(surface fuels*[19]*)* act as a *wick*[20] to move fire horizontally across the land. Shrubs, small trees, and live branches *(ladder fuels*[21]*)* can carry fire vertically into the larger trees. Too much of these surface and ladder fuels can cause the *overstory*[22] trees to burn up in what is called a "crown fire"—when fire spreads from tree to tree in the forest canopy (or tree tops). One of the main principles in creating defensible space and reducing hazardous fuel conditions is to create physical space between vegetation layers (both vertically and horizontally) so a fire cannot climb easily from the ground into the trees or to homes and other structures. *See www.for.gov.bc.ca/protect/suppression/behaviour.htm#Behaviour for more information.*

- **Timing is everything.** There are appropriate times for different actions, much as there are different seasons of work in the garden. Defensible space and fuel reduction work need to occur well before fire season, to avoid having sparks from equipment start fires in dry vegetation. Avoid *ground-disturbing*[23] activities in forest or wildland when the ground is too wet or when birds and animals are nesting. Do not try to do everything at once. Think about fire safety seasonally. Plan activities in the winter and spring; start clearing when the ground begins to dry (when it's not *saturated*[24]) or when there is snow on the ground; finish treatments by early summer before the vegetation is dry; do defensible space maintenance around and inside structures in the fall; and burn piles after the rains begin in the winter. *See celosangeles.ucdavis.edu/Natural_Resources/Wildland_Fire.htm for more information.*

- **Homes are likely a fuel source.** Many Sierra homes are located in places where a fire can start and spread into surrounding vegetation. The more residents prepare their homes and other structures, the less they will have to treat the surrounding vegetation. The biggest improvement residents can make to reduce fire risk is to build or remodel homes and businesses to resist the millions of tiny *embers*[25] created by *ember-attack*[26] from wildfires. When wildfires burn in extreme conditions they send burning firebrands (embers) ahead of them; these firebrands ignite new fires. Using *fire-resistant building materials*[27] and appropriately designed structures will give you the best chance to survive wildfire. Replace wood shake roofs with fire-resistant materials. An interactive source of information to reduce homeowner risk in the wildland-urban interface is provided by the University of California Center for Fire Research and Outreach; it is called the Fire Information Engine Toolkit. *See firecenter.berkeley.edu/toolkit/homeowners.html for details on how this web-based program can* *help residents make better decisions to reduce the fire risk, and the related UC Extension's Homeowner's Wildfire Mitigation Guide groups.ucanr.org/HWMG/index.cfm. Consult local fire agencies or see firewise.org/resources/files/wildfr2.pdf for more information. When* building a new home, homebuilders and property owners should consider slope, aspect, surrounding fuels, and potential environmental impacts before deciding where to site the home. This may be more important than the view in the long term. Talk to the local planning department to learn about local fire-safe building regulations, or *see osfm.fire.ca.gov/WUIBS.html, or cdfdata.fire.ca.gov/pub/fireplan/fpupload/fppguidepdf99.pdf for more information about state regulations*.

- **Landowners need to know their legal obligations.** Learn the legal requirements regarding defensible space and fire-safe building and construction. Discover how to balance these with the ecological needs of the property. *See Appendix B Home Safety page 220.*

- **Firefighters need the public's help to protect homes and businesses**. Make it safe for them and their equipment to get to and from homes and businesses. Be sure they can find homes and businesses by providing visible road and address signs. Remember that fire-safe landscaping and construction greatly improves firefighters' ability to protect homes. *For more information, see principle 4C below, and www.livingwithfire.info/beforethefire/accesszone/index.php.*

1.4.2 CONSERVATION PRINCIPLES

Landowners should consider the Conservation Principles below as how to approach fire safety and defensible space. It is all about balance. It is possible to have an aesthetically pleasing landscape that is fire-safe, supports local plant and animal species, and still provides landowners with privacy and plantings.

REMEMBER THE VEGETATION (NATIVE TREES AND OTHER PLANTS)

a. Discover and monitor forest and vegetation's dynamic changes.

It is important to plan for the future of the forest. Because citizens are the conservation stewards of their land, their work in the forest will be ongoing. Homeowners should watch the wild areas on their property and learn from them as they grow and change with the resident's stewardship. It is important to think both in the short term (what will happen this year) and in the long term (what will happen over time). It is helpful to document those changes as the years go by keeping notes and records. Learning how to *monitor*[28] the ecological changes and using that information for *adaptive management*[29] of wildlands provides landowners with the tools to manage effectively the fire threat. To live safely with wildfire residents need to take the responsibility to manage, adapt, and guide the vegetation around their homes. *For more information, see www.dnr.state.mi.us/publications/pdfs/huntingwildlifehabitat/Landowners_Guide/Habitat_Mgmt/Planning/Evaluating_Land.htm.*

b. Act conservatively.

When manually recreating a more *fire-resilient landscape*[30] *by* implementing *fuel treatments*[31] it is important to apply the general concepts of the *precautionary principle*[32] while implementing *fuel treatments*[33]*:* one can always remove more trees and vegetation at a later time, but one cannot immediately replace what has been cut. The vegetation left is ultimately most important.

Careful planning will insure the remaining forest stand is healthy and *resilient.*[34] *See* *www.mindfully.org/Precaution/Precautionary-Principle-Common-Sense.htm for more information.* An exception to this principle occurs when structures are present. Vegetation must be removed to provide defensible space. *See Appendix B Section B.1.1.4.*

c. Protect native species that share the property.

Resident can look at the native vegetation around their property—or ask local plant or forestry specialists for help—to see what different plants share their home. There may be rare plants. Often rare plants can be protected by providing defensible space (while keeping in mind their needs, such as shade). A good source of information is how these rare plants are being managed by others within the watershed.

Residents should watch for *invasive weeds.*[35] It is often necessary to follow vegetation treatments with invasive weed removal. Exotic plant species near homes can become invasive and should be avoided, especially those that can spread into adjacent wildland areas. Invasive species can change the fire hazard very quickly and be difficult to manage.

Avoid unnecessarily introducing water into the landscape, as water will generally help non-native plants out-compete native plants. *See www.cnps.org/activities/natives.htm, www.cal-ipc.org, and www.ipm.ucdavis.edu/PMG/weeds_common.html for more information.*

d. Keep the oldest and biggest trees.

Generally, most of the oldest trees in the forest are no longer present. Landowners with old or very large trees should create defensible space around them to help them survive wildfire. This may include raking away thick *duff*[36] at the base of the trees. These trees often have thick bark so they are generally fire-resistant (they have evolved with fire). Remove ladder fuels to prevent crowning. At the same time, do not remove all of the small trees in the forest. Small trees are the next generation of large trees. Keep enough *regeneration,*[37] possibly in small patches, to provide for the future forest, while still providing adequate space between all the trees. An additional benefit of keeping the biggest trees is that they can break up the wind as it's moving through, which can slow down fire spread. *See www.eri.nau.edu/cms/content/view/544/740/ for more information.*

REMEMBER THE WILDLIFE

e. Provide local wildlife a place to live.

Become familiar with the animals sharing the property. Talk to local wildlife experts and/or bird watchers. Learn what wildlife need in terms of shelter, food, water, and reproduction. Remember that the property is their home too. Find ways to balance land management activities with their needs, and leave some areas *untreated*[38] for the birds and wildlife using them. Protect them creating defensible space while still considering their needs for *cover.*[39] *For more information, see www.fs.fed.us/psw/rsl/projects/wild/verner/psw_37.html*, and cetuolumne.ucdavis.edu/newsletterfiles/Master_Gardener_Articles_20044858.doc.

f. Provide access to food and water.

Protect and retain trees with nests and cavities, or where obvious wildlife feeding or nesting activities are occurring. Leave some plants that have berries or other fruit or *mast*[40] used by wildlife. Be especially careful to leave cover around streams, *seeps,*[41] or other wet areas to keep those areas cool and wet; this will provide wildlife the protective cover they need when they are using those places or moving to and from them. Make sure all natural water supplies are clean by keeping any poisons and *sediment*[42] away from any water that could drain into them. *For more information, see www.dnr.state.mi.us/publications/pdfs/huntingwildlifehabitat/Landowners_Guide/Habitat_Mgmt/Backyard/Backyard_Intro.htm.*

g. Protect future generations of wildlife.

Find out when local species are nesting and/or breeding and avoid working in and around the wildlands during those times. Learn what kind of habitat local species might use for nesting and breeding, and be sure to protect those areas during management activities. *See www.paws.org/about/emailnetwork/archive/wildagain/wild_2004_06_02.html and www.audubon.org/bird/at_home/SafeMisc.html for more information.*

h. Value the standing dead trees.

Standing dead trees—or *snags*[43]—are especially important for wildlife. They provide both shelter and food to many birds and other animals. However, they can also be a wildfire hazard if they are near enough to fall on a home or fall and block an evacuation road during a fire. Balance the needs of wildlife with the need for fire safety. *See www.nwf.org/backyard/snags.cfm for more information*.

i. Conserve rare and endangered species.

One of the bonuses—and responsibilities—of living in the Sierra is living with the many rare and endangered species with which share the habitat. Residents can find out if there are rare or endangered species in their area by talking to your local Cooperative Extension Agent or Forest Service wildlife biologist. Fuel reduction actions should be planned around the needs of these species. Often by a minor refinement of management activities, such as timing, technique, or extent, can protect species while realizing the desired fuel reduction goals. *For more information, see www.dfg.ca.gov/hcpb/species/t_e_spp/tespp.shtm, www.dfg.ca.gov/habitats/wdp/region-sierra_nevada-cascades/overview.html*.

REMEMBER THE SOIL

j. Maintain the life in the soil.

There is as much or more activity below the ground on a property as there is above the ground. Keep this in mind in terms of what is done above ground. Talk to a Cooperative Extension Agent or local gardeners to find out what *soil types*[44] are on a property. Some soil types can tolerate much more *disturbance*[45] than others can. Minimize activities that could *compact,*[46] flood, or poison the soil. The health of the land is directly dependent on the health of the soil. As such, the soil is one of the most valuable assets of any property. *See managingwholes.com/new-topsoil.htm for more information.*

k. Ensure that the soil cover is fire safe.

Replace cover that burns easily (such as dry or dead vegetation) with cover that is less *flammable*[47] (e.g. gravel, fleshy green plants, etc.). The objective is to ensure that when a fire comes through, it is not so hot that it kills the life in the soil. Rather, it should move through without a lot of fuel to consume in its path. For example, a very light layer of pine needles can help with soil erosion *(see below),* but too much can be a fuel problem. *See* www.laspilitas.com/classes/fire_burn_times.html *for more information.*

l. Minimize erosion.

Protect the soil by keeping it covered. Cover helps to prevent *erosion,*[48] especially on ground that is not flat; it keeps the soil in place. Do not let soil move across the property, most importantly not into streams or other natural water sources. Keep ground-disturbing activities away from *unstable*[49] areas and *riparian*[50] areas. Pay special attention on steep slopes. The steeper the slope, the faster the soil can move downhill if it's disturbed, and the faster a fire can climb uphill under the right (or wrong!) conditions. *See* www.uri.edu/ce/healthylandscapes/tips/6.html *and* www.pfmt.org/fire/topos_effect.htm *for more information.*

m. Protect the soil after a fire.

Soil can be most fragile after a wildfire. This is often exacerbated when winter rains come soon after a fire. The potential for erosion and loss of soil is huge with this combination of conditions. Residents experiencing fire on their property should get cover onto the soil as soon as possible to prevent erosion. Remember, soil is alive, so help it grow. *See* www.ext.colostate.edu/PUBS/NATRES/06308.html and www.cnr.uidaho.edu/extforest/AftertheBurnFINAL.pdf *for more information.*

REMEMBER THE PEOPLE

n. Plan actions with neighbors

Talk to neighbors. Find out what they are doing on their land. Find ways to cooperate in land management actions. One person's defensible space will likely impact the neighbor's chances of surviving a wildfire and vice-versa. Talk about what to do in an emergency and how to evacuate safely. Attend an Amador Fire Safe Council Meeting to learn what resources are available. Meeting dates and contact information are posted online at *amadorfiresafe.org*. Help make the community a Firewise community. Coordinated work amongst neighbors will have a greater impact on everyone's individual fire safety. *For more information, see* www.firesafecouncil.org, www.fire.ca.gov/about_content/downloads/Evacuation2006.pdf, *and* www.firewise.org.

o. Find experienced workers and treat them well.

Forestry workers with chainsaws in hand are the actual decision-makers as to what stays or goes—what lives or dies—in the forest. If the objective is to reduce fuels while still maintaining ecological integrity and diversity on a site, the workers must have the knowledge and experience to help achieve this. Involve the workforce in the design, planning, and monitoring of projects. Talk to the Amador Fire Safe Council or neighbors and check references to find reputable contractors. *See* ewp.uoregon.edu/programs.html *for more information.*

p. Work with the local fire department.

Talk to the local firefighters. Find out what they need to safely get to a house and back out. Make sure that *access roads*[51] are safe; maintain fuel treatments along all roads, both for firefighter safety in protecting resident's homes and safety in case of evacuation. Have street and address signs visible so out-of-town firefighters can locate the residents they are assigned to protect. Make sure to have a water supply they can find and use. *See www.projecttahs.org/pdf/firedepartment.doc for more information.*

1.5 INTRODUCTION TO THE PINE GROVE PLANNING UNIT

The Pine Grove Planning Unit is located in the midsection of Amador County (*See Executive Summary, Plate 2 – Pine Grove Base Map*). Its eastern boundary is a line from Highway 26 to Volcano and up Charleston Road to Shake Ridge. Shake Ridge Road is the northern boundary although the plan's boundary does cross Shake Ridge in places. The western boundary follows a southeasterly track from near the intersection of Shake Ridge and Pine Gulch Roads eventually terminating at the Mokelumne River. From there the boundary follows the river in a northeasterly direction to near Highway 26.

Several large drainages lie within or adjacent to the planning unit. Most significant of these are Sutter Creek and the Mokelumne River. The affect of these drainages on potential wildfire damage is related to their east/west orientation, fuel load, and the historic large fire occurrence.

Much of the planning unit contains an abundance forest fuels capable of supporting intense fire behavior, including crowning. Intermingled with the forest are many homes and businesses. Many of these structures were constructed before the adoption of modern fire safe building and development standards and would not be permitted today.

Most of the land within the planning unit is privately owned. Some of the land is devoted to timber production and other agricultural uses. There are numerous parcels owned by the Bureau of Land Management scattered throughout. The entire area is unincorporated.

Most of the area is zoned R1, R1A, R2, R2A, R3, and RE.[52]. The County of Amador is currently updating its General Plan. All versions of zoning for the new plan increase the residential zoning within the Pine Grove Planning Unit (*See Plate 1 – Pine Grove General Plan Zoning*).

See Chapter 5 for more information on the Pine Grove Planning Unit

FIGURE 1. PUBLIC LAND MANAGERS IN PINE GROVE PLANNING UNIT

Agency	Name	Acres
US Bureau of Land Management	The Mother Lode Office	1533[53]

1.6 PINE GROVE PLANNING UNIT COMMUNITIES AT RISK

On January 4, 2001, for the purposes of the National Fire Plan, the Department of Interior (DOI) published in the *Federal Register* a "Notice of Urban-Wildland Interface (WUI) Communities Within the Vicinity of Federal Lands That Are at High Risk from Wildfire." In 2001, the DOI added Pine Grove to the list.

After the 2000 fire season, the California Department of Forestry and Fire Protection (CAL FIRE), working with the California Fire Alliance, developed a list and associated map of communities at risk from wildfire using 1990 Census and USGS Geographic Names Information System data to identify populated places, and CAL FIRE's Fire and Resource Assessment Program (FRAP) fuel hazard data.[54] This data describes relative risk to areas of significant population density from wildfire by combining residential housing unit density with the proximate fire threat to give a relative measure of the potential loss of structures and threats to public safety from wildfire. CAL FIRE's designation of the Pine Grove WUI encompasses all of the Pine Grove Planning Unit and thus, no further proposals for areas within the planning unit to be designated as Communities at Risk are required.

FIGURE 2. COMMUNITIES AT RISK IN PINE GROVE PLANNING UNIT

Community at Risk	Threat Level[55]	Federal Adjacency?[56]	Source of Designation
Pine Grove	3-Very High	✔	California Fire Alliance and CAL FIRE (FRAP)

1.7 PINE GROVE PLANNING UNIT FIRE PROTECTION AREAS AND AGENCIES

On land known as a Federal Responsibility Area (FRA), federal agencies have primary responsibility for fire protection. FRA is defined based on land ownership. The Bureau of Land Management (BLM) has responsibility to provide wildland fire protection on all FRA lands in Greater Pine Grove Planning Unit. This includes the financial responsibility of preventing and suppressing fires. BLM contracts with CAL FIRE to provide protection for all BLM lands located in Amador County. This is accomplished through what is known as the Cooperative Fire Protection Agreement or the "4-Party Agreement."

State Responsibility Area (SRA) is defined based on land ownership, population density, and land use. CAL FIRE determines SRA lands using guidelines established by the State Board of Forestry and Fire Protection. CAL FIRE has a legal responsibility to provide wildland fire protection on all SRA lands, including the financial responsibility of preventing and suppressing fires. Lands in incorporated cities or surrounded by federal land are excluded from SRA lands. For example, CAL FIRE does not have responsibility for densely populated areas or agricultural lands.

Local fire districts and urban fire departments are responsible for providing structure protection on SRA lands. They are also responsible for providing all fire protection on Local Responsibility Area (LRA) lands. LRA lands are not the responsibility of federal or state agencies.

For a map of current FRA, SRA, and LRA areas, see Plate 17 Wildland Fire Protection Responsibilities.

The following fire protection agencies provide fire protection services to residents in the planning area. For more information on these agencies and their services, see Chapter 6.

1. CAL FIRE, Amador Eldorado Unit
2. Amador Fire Protection District
3. Lockwood Fire Protection District

1.8 ORGANIZATION OF THIS DOCUMENT

This document is based on the design of the *Sierra Nevada Community Conservation and Wildfire Protection Plan (CCWPP) Guidebook*. It contains the following sections:

Summary and Action Plan—a summary of all the following chapters and the CCWPP Action Plan

Chapter 1, Plan Introduction—an introduction to the document, Pine Grove Planning Unit, and the Amador Fire Safe Council

Chapter 2, Pine Grove Planning Unit Fire Safe Planning Process—summarizes the public process used to develop this Fire Plan.

Chapter 3, Risk Assessment: Identifying and Evaluating Assets at Risk**—**summarizes assets at risk, risk assessment process, and results.

Chapter 4, Meeting Your Objectives: Pine Grove Planning Unit Fire Safe Action Plan—identifies actions to reduce risks from wildfire in Pine Grove Planning Unit.

Chapter 5, Wildfire: Current Environment and Behavior—introduces wildfire concepts and issues in Pine Grove Planning Unit.

Chapter 6, Fire Ecology and Management of Sierra Nevada Vegetation Types**—**summarizes the common Sierra vegetation types found in Pine Grove Planning Unit, their fire ecology, and conservation and fuel management considerations.

Chapter 7, Pine Grove Planning Unit Community Features—describes the social, political, and community-planning milieu; includes a discussion of land ownership and management.

Chapter 8, Fire Protection Organizations—summarizes current fire protection resources and issues in Pine Grove Planning Unit.

Chapter 9, Facilitating Pine Grove Planning Unit Fire Safety in the Long Term**—**outlines a monitoring strategy and long-term steps to maintain and update this plan.

Background documents on conservation and wildfire include:

Appendix A – Conservation Principles for Community Wildfire Protection in California's Sierra Nevada**.**

Appendix B – Wildland Fire Safety at Home is a text document explaining conservation-based wildfire safety.

Appendix C – Wildland Fuel Hazard Reduction is a text document explaining conservation-based methodologies and prescriptions that can be used in Pine Grove Planning Unit.

Appendix D – Defensible Space Guidelines

Appendix E – Glossary

Appendix F – Internet Links

Appendix G - Literature Cited

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[1] Foehn wind driven wildfires
[2] Public resources Code 4291
[3] Crown Fire: A fire that spreads from treetop to treetop, and is characteristic of hot fires and dry conditions. Crown fires are generally more complex to control than fires on the surface.
[4] Torching: A rapid and intense burning of a single or small group of trees/shrubs, causing the upward movement of fire; a.k.a. flare-up.
[5] Spot Fire: A smaller fire outside the boundary of the main fire, started by airborne sparks or embers.

[6] Montane: A mountainous region of moist cool upland slopes that occurs below the tree line and is predominantly composed of evergreen trees. It is also described as the lower vegetation belt on mountains that is composed of montane plants and animals.
[7] Wildlands: An area of land that is uncultivated and relatively free of human interference. Plants and animals exist in a natural state, thus wildlands help to maintain biodiversity and to preserve other natural values.
[8] Fire Prevention: Actions taken by homeowners and community members to lessen wildfires and damage caused by wildfires. Includes education, enforcement, and land management practices.
[9] Fire Safe Council: Public and private organizations that comprise a council intended to minimize the potential for wildfire damage to communities and homeowners, while also protecting the health of natural resources. Goals are achieved by distributing fire prevention materials, organizing fire safety programs, implementing fuel reduction projects, and more.
[10] Extension Agent: An employee from the government or a university who provides information to rural communities about agriculture, land management, and/or resource management. In California, the University of California Cooperative Extension (UCCE) provides this service. For more information on UCCE, see: ucanr.org/.
[11] Registered Professional Forester (RPF): A person licensed in California to manage state or private forestlands and advise landowners on management of their forests. For more information, see: www.bof.fire.ca.gov/licensing/licensing_current_docs.aspx.
[12] Fire Safe Practices: Activities such as creating defensible space, firebreaks, access to your home, fire-resistant landscapes, changes to your home in terms of material and design, etc., that make your home/property safer in wildfire situations.
[13] Defensible Space: An area around a home/structure that has been cleared of flammable materials to act as a barrier between wildfires and property, thereby decreasing the risk of damage or loss. This space is now defined as 100 feet around a structure in California.
[14] Watershed: All of the land that drains water runoff into a specific body of water. Watersheds may be referred to as drainage areas or drainage basins. Ridges of higher elevation usually form the boundaries between watersheds by directing the water to one side of the ridge or the other. The water then flows to the low point of the watershed.
[15] Slope: A percentage or degree change in elevation over a defined distance that measures the steepness of a landscape.
[16] Aspect: The direction that a slope faces—north, south, east, west, etc.
[17] Firebreak: A strip of land that has been cleared of vegetation to help slow or stop the spread of wildfire. It may be a road, trail, or path cleared of vegetation or other burnable materials. A firebreak could also be a stream.
[18] Fuel: All burnable materials including but not limited to living or dead vegetation, structures, and chemicals that feed a fire.
[19] Surface Fuels: Materials on the ground like needles or low-growing shrubs that provide the fuel for fires to spread on the ground. Surface fuels are generally considered all fuels within six feet of the ground.
[20] Wick: A combustible material that allows fire to travel along a confined path to larger fuel sources. An example would be a wooden fence connected to your home.
[21] Ladder Fuels: Materials such as shrubs or small trees connecting the ground to the tree canopy or uppermost vegetation layer. In forests, this allows fire to climb upward into trees.
[22] Overstory: The topmost trees in a forest which compose the upper canopy layer; compared to the understory, which is the lower woody or herbaceous layer underneath treetops.
[23] Ground-Disturbing Activities: Actions that interrupt the natural condition of the ground, such as digging and compaction from heavy equipment.
[24] Saturated: The broad meaning is “full.” Saturated soil refers to the point at which the soil is so full of water that no more water can get into (be absorbed by) the soil, and therefore must run off.
[25] Embers: Small glowing or smoldering pieces of wood or other organic debris, often dispersed ahead of a fire, also known as firebrands.
[26] Ember Attack: Embers blown by the wind during a firestorm that accumulate at intersections between horizontal and vertical members on the outside of your house, igniting debris and combustible materials. Embers can also enter into openings (e.g., attic vents and other wall openings), igniting debris on the inside of your home.
[27] Fire-Resistant Building Materials: Materials used in the construction of a house that are resistant to ignition when exposed to radiant heat or flames. Examples include clay tile roofs, metal roofs, and stucco siding.
[28] Monitor: To watch, keep track of, or check regularly for changes—in this case, to the environment.
[29]Adaptive Management: An approach to managing the environment/property that is based on a “learn by doing” technique that adjusts to changing conditions. Adjustments in management change over time as new information is learned.
[30] Fire-Resilient Landscape: A natural landscape featuring plants that have adapted to local wildlife conditions, or a domestic outdoor space where appropriate actions have been taken to make it less vulnerable to wildfire and certainly less prone to causing one.

[31] Precautionary Principle: A concept that promotes a cautious approach to development and managing the environment when information is uncertain or unreliable. Erring on the side of caution and conservation is encouraged, along with a “Better safe than sorry” attitude.
[32] Precautionary Principle: A concept that promotes a cautious approach to development and managing the environment when information is uncertain or unreliable. Erring on the side of caution and conservation is encouraged, along with a “Better safe than sorry” attitude.
[33] Fuel Treatment: The act of removing burnable materials to lower the risk of fires igniting and to lessen the likelihood of damage to property and communities. Treatments may include creating a defensible space, developing fuelbreaks, initiating prescribed burns, and thinning vegetation.
[34] Resilient, Resiliency: The ability of an ecosystem to return to its balanced state after a disturbance.
[35] Invasive Weeds: Undesirable plants that are not native and have been introduced to an area by humans. These plants generally have no natural enemies and are able to spread rapidly throughout the new location. Some examples include Himalayan Blackberries, English Ivy, and Scotch Broom.
[36]Duff: A layer on the forest floor that is made up of decomposing organic matter such as leaves, needles, and small branches.
[37] Regeneration: The renewal of trees or forests by planting seedlings or the direct seeding by humans, wind, birds, or animals after large disturbances like fire. “Regeneration” also refers to the young trees that were naturally seeded or planted.
[38] Untreated: Not altered from a natural or original state; unprocessed, e.g. no fuel reduction or defensible space activities.
[39] Cover: Any plants or organic matter that holds soil in place or grows over and creates shade that provides wildlife with an area to reproduce and find protection from predators and weather.
[40] Mast: Nuts or fruits of trees and shrubs such as acorns, walnuts, or berries that collect on the forest floor and are a food source for animals.
[41] Seep: An area where water rises from an underground source to the surface and creates a wet area.
[42] Sediment: Particles of topsoil, sand, and minerals that come from soil erosion or decomposing plants and animals. Wind, water, and ice carry these particles; when the sediment collects in waterways it can destroy fish and wildlife habitat.
[43] Snag: A standing dead tree that has usually lost most of its branches. Snags offer essential food and cover for a host of wildlife species.
[44] Soil Type: Refers to the different combinations of soil particles and soil composition. Soil can vary greatly within short distances.
[45] Disturbance: Various activities that disrupt the normal state of the soil such as digging, erosion, compaction by heavy equipment, etc.
[46] Compact: To pack closely or tightly together, as in the fragments of soil being compacted from heavy equipment, thereby limiting the ability of oxygen or water to pass freely.
[47] Flammable: A quality of a substance that makes it likely to catch fire, be easily ignited, burn quickly and/or have a fast rate of spreading flames.
[48] Erosion: The removal of soil over time by weather, wind and/or water such as rain or water runoff from roads.
[49] Unstable: Land that is lacking stability, or liable to change with activity, such as in the case of step slopes or crumbly soils.
[50] Riparian: A strip of land along the bank of a natural freshwater stream, river, creek, or lake that provides vast diversity and productivity of plants and animals.
[51] Access Roads: Roads that allow entrance into and out of a property.
[52] R1 Single family residential district; R1A Single family residential and agricultural district; R2 Low density multiple family residential district; R2A Single family (2 acre minimum) residential district; R3 High density multiple family residential district; RE residential estates district
[53] BLM lands in and immediately adjacent to the Pine Grove Planning Unit
[54] California Fire Alliance. “Communities At Risk History.” cafirealliance.org/communities_at_risk/communities_at_risk_history.
[55] The Threat Level Code designates a community’s fire threat level, with 1 indicating the least threat, 3 indicating the highest threat.
[56] Lands adjacent to federal lands are indicated as such with a mark in this column.

CHAPTER 2- PLANNING PROCESS

TABLE OF CONTENTS

2. PINE GROVE CCWPP PLANNING PROCESS

2.1 PINE GROVE CCWPP PLANNING UNIT BOUNDARIES

This Fire Plan covers the entirety of the Pine Grove Planning Unit as identified in the Amador County Generic Community Wildfire Protection Plan (2005). *(See Executive Summary, Plate 2 - Pine Grove Base Map)*

2.2. PROCESS AND PLAN DEVELOPMENT[i]

The Amador Fire Safe Council began the process of the updating the Amador County Generic Community Wildfire Protection Fire Plan in 2008. The Generic CWPP divides the county into nine planning units. Each planning unit represents a distinct wildfire environment and fire protection problem.

FIGURE 1- WORKING GROUP PLANNING SESSION

Rather than rewrite the entire plan, the fire safe council decided to review and rewrite each planning unit separately starting with the most at risk planning unit. Thus, this process is a partial update of the 2005 generic plan.

In January 2012, a rewrite of the most at risk area, Pioneer/Volcano Planning Unit was completed. Pine Grove is the second most at risk area in the county.

While the 2005 plan took a broad countywide view and recommended landscape scale projects designed to reduce damage from large wildfires, this update is focused more locally.

Greater emphasis is given to neighborhood and community risks that can be mitigated by an individual property owner, community group, local government agency, non-profit, state agency, corporation, or federal agency. Issues like evacuation, water supplies, defensible space, local fuel reduction, ingress and egress, and signage are at the forefront. This is not to say that large landscape scale projects were ignored. The 2005 plan recommendations are included in this plan along with additional large fuel reduction projects identified during the planning process.

The Community Wildfire Planning process is by its very nature a community effort. Great importance is placed on the desires of the community concerning what the plan contains. To facility input from the community, the planning writers held several public meetings. Unfortunately, these meeting were poorly attended. However, the core working group and steering committee includes many individuals from within the planning unit.

To begin the discussion regardless of the audience, the planning team developed a PowerPoint program outlining the planning process, fire problem, and current efforts to mitigate the wildfire threat.

In November(2012), each draft section of the plan was posted on the Amador Fire Safe Council's web page and community organizations and individuals were invited to comment and submit additional recommendations.

2.2.1 COMMUNITY MEETINGS

Initial Meeting

An initial community meeting was held in Pine Grove in November 2011 at Volcano Telephone Company's Tech Center. The purpose of the meeting was to introduce interested community and agency members to the Pine Grove Plan project. At this meeting, the working group responsible for preparing the draft plan was introduced.

This group included:

- Cathy Koos Breazeal, Amador Fire Safe Council (also representing the Lockwood Fire Protection District)
- Keith Brizzi , Amador Fire Protection District
- Ray Blankenheim, Battalion Chief
- Brian Mulhollen, Bureau of Land Management
- Charlie Blankenheim, Battalion Chief, CAL FIRE
- Jim Simmons, consultant
- John Hofmann, Amador County BOS Consultant

Funding for this plan update was provided by a grant from the Sierra Nevada Conservancy.

Community/Neighborhood Meetings

One of the goals in developing the Pine Grove Fire Plan is to educate residents regarding fire safety and defensible space. Therefore, the planning process was designed to maximize public input. A series of community meetings was held in Pine Grove. The community meetings were held in the following locations in 2011 and 2012. All meetings were held at the convenience of the community group.

Community meetings were held:

- Volcano Tech Center, 11/7/ 2011
- Volcano Tech Center, 12/14/2011
- Pine Grove Community Center, 1/25/2012
- KC Ranchettes homeowners association, 8/2011
- Stakeholders Meeting, 11/7/2011
- Pine Grove Community Council, 1/4/2012
- Pine Grove Civic Improvement Club, 1/4/2012
- Progressive Women's Committee, 1/5/2012
- Amador County Fire Chiefs Association, 1/5/2012
- Interagency Co-op Work Group , 1/10/2012
- Stakeholders Meeting, 1/25/2012
- Progressive Women's Committee, 2/2/2012
- Amador County Fire Chiefs Association, 3/1/2012
- Progressive Women's Committee, 4/5/2012
- Stakeholders Meeting, 4/26/2012
- Amador County Fire Chiefs Association, 5/3/2012
- Upcountry Rotary, Pine Grove, 5/30/2012

2.2.2. COMMUNITY OUTREACH

An outreach effort was made to encourage public participation in these meetings. Cathy Koos Breazeal coordinated this outreach effort. It included:

- The Amador Fire safe Council provided forms for residents and community associations to write comments and suggestions regarding the plan.
- All draft documents were posted on Amador Fire safe council's website
- Draft review was announced at multiple public meetings throughout the review period

Public Comment Process

In addition to the meetings that generated local data, the public was provided another opportunity to contribute to this document. An internal draft was prepared for the Steering Committee and other interested agency members. In October 2012, the public review draft of the Fire Plan was published. The draft of the plan was posted on the Amador Fire safe Council's website. An article in the local monthly newspaper notified stakeholders of the posting. This article invited all residents of the study area to comment and make suggestions regarding the plan. The final plan was released in early 2013. The following people made comments regarding the plan.

FIGURE 2. COMMENTS TO PUBLIC DRAFT OF THE PINE GROVE FIRE PLAN

Comments submitted from (Name and Affiliation):	Date Rec'd:	Comments
Patrick Ousby, citizen		Need information on waiver to roadside clearing along BLM lands, money for roadside clearing along private sections of Mitchell Mine. Support is growing for clearance. Need more money for clearing. Also, interested in meeting to talk about fuelbreak.
Dennis Manner, citizen		Try to have the CCWPP published in the Ledger upon completion along with as much other pertinent info, i.e., fire hose thread capatibility.

2.3. STAKEHOLDERS

FIGURE 3. STAKEHOLDER REPRESENTATIVES AND DATE INVITED TO PARTICIPATE

Agency/Stakeholder Group	Representative	Date Invited to Participate
Amador Fire Protection District	Ray Blankenheim, Battalion Chief	2011
Amador Fire Safe Council	Cathy Koos Breazeal	2011
Bureau of Land Management	Brian Mulholland	2011
CAL FIRE (representing unit chief)	Tom Tinsley, Forester	2011
Lockwood Fire Protection District	Cathy Koos Breazeal	2009
Sierra Pacific Industries	Craig Ostergaard	2011

2.3.1 STEERING COMMITTEE

A Steering Committee was established to oversee development of the Fire Plan and to ensure its compliance as a Community Wildfire Protection Plan. The steering committee included all members of the Amador Fire Safe Council and other community members. The purpose of the committee is:

- to provide oversight to the planning process,
- to meet the requirements of Community Wildfire Protection Plans (CWPP) of the National Fire Plan

- to ensure that the Plan meets the needs of all sectors of the Pine Grove Planning Unit in terms of fire safety and prevention

Steering Committee members represent a broad cross section of interest in Amador County. The steering committee had access to technical advisers from local government, Bureau of Land management, and CAL FIRE. Oversight of the planning process by this committee ensures that the plan meets the applicable parts of the collaboration requirements of a CWPP.

Steering Committee Members:

- Lola Blevins, President (Farrier and horse rancher)
- Jim McCart, Vice President (Chief, Amador Fire Protection District)
- Amy Rocha, Secretary (Range conservationist for NRCS)
- Elena Knox, Member (artist)
- John Romena, Member (Manager, Buena Vista Biomass)
- Kristina Agustin, Member (Realtor)
- Tony Migiaccio, Member (Pharmacist)
- Steve Bonner, Member (Retired)
- Ingrid Barnes, Member (CSAA Manager)
- Amy Rocha, USDA Natural Resources Conservation Service
- Dick Hess, retired forester
- Debbie Dunn, member at large
- John Hofmann, consultant and Amador County representative
- Paul Maben, PG&E forester
- Tom Tinsely, CAL FIRE forester

[i] The community fire planning process outlined in this chapter was developed by Tracy Katelman, ForEverGreen Forestry (www.forevergreenforestry.com) and the Mattole Restoration Council (www.mattole.org).

CHAPTER 3 RISK ANALYSIS

CONTENTS

3 RISK ASSESSMENT: IDENTIFYING AND EVALUATING ASSETS AT RISK

What are Assets at Risk? Assets at risk (also called values at risk) are those assets, either natural or man-made, that are at risk from wildfire. The following table contains the assets at risk[1] evaluated when developing the assets at risk for the Greater Pine Grove Planning Unit.

TABLE 1 - ASSETS AT RISK CATEGORIES

Public Issue Category	Location and ranking methodology
Public welfare	1) Watersheds that feed run of the river power plants, ranked based on plant capacity; 2) cells adjacent to reservoir based plants (Low rank); and 3) cells containing canals and flumes (High Rank)
Public safety, Public welfare	Watersheds with a history of problems or proper conditions for future problems, ranked based on affected downstream population
Environment	Watersheds ranked based on erosion potential
Public welfare	Watershed area up to 20 miles upstream from water storage facility, ranked based on water value and dead storage capacity of facility
Public health	1) Watershed area up to 20 miles upstream from water supply facility (High rank); 2) grid cells containing domestic water diversions, ranked based on number of connections; and 3) cells containing ditches that contribute to the water supply system (High rank)
Public welfare	Four mile view shed around Scenic Highways and 1/4 mile view shed around Wild and Scenic Rivers, ranked based on potential impacts to vegetation types (tree versus non-tree types)
Public welfare	Timberlands ranked based on value/susceptibility to damage
Public welfare	Rangeland ranked based on potential replacement feed cost by region/owner/vegetation type
Public health, Environment, Public	Potential damages to health, materials, vegetation, and visibility; ranked based on vegetation type and air basin
Public welfare	Historic buildings ranked based on fire susceptibility
Public welfare	Unique recreation areas or areas with potential damage to facilities, ranked based on fire susceptibility
Public safety, Public welfare	Ranked based on housing density and fire susceptibility
Environment, Public welfare	Critical habitats and species locations based on input from California Department of Fish and Game and other collaborators
Public safety, Public welfare	Infrastructure for delivery of emergency and other critical services (e.g. repeater sites, transmission lines)
Environment	Ranked based on housing density and fire susceptibility

The 2011 Fire Plan for the Amador Eldorado Unit of CAL FIRE uses *assets at risk* to prioritize its projects in order to reduce suppression cost and reduce damage from wildfire. The following is from the Amador Eldorado Unit Fire Plan (2011).

"Knowledge of the type, magnitude, and location of assets at risk, is critical to fire protection planning. Given the limits on fire protection resources, these resources should be allocated, at least in part, based on the value of the assets at risk. Knowledge of assets at risk is also necessary to choose those projects, which will provide the greatest benefit for a given investment. Thus, as part of the overall fire plan process, assets were addressed at two levels. First, generalized assets at risk were estimated to indicate what areas contain high valued assets. Second, the input of collaborators further refined this assessment."

"The areas with the highest combined asset values and fire risk were considered for projects, particularly where those projects would protect assets and reduce suppression costs should a fire start in the project area. Second, as potential projects were identified in these areas, they were subjected to an analysis of the degree to which the projects will reduce damage to assets and potential suppression costs."

The following table represents the weights (1-5), 1 being low and 5 being high. CAL FIRE applied these weights to compute the overall Asset Rank within the Unit.

Asset	Weight	Asset	Weight	Asset	Weight
Infrastructure	3	Timber	3	Storage (water)	3
Water Supply	4	Range	1	Fire-Flood	2
Historic	2	Soil	1	Air	4
Scenic	2	Hydroelectric	3	Recreation	2
Housing	5	Non-game Wildlife	1	Game (Wildlife)	1
Ecosystem	3				

CAL FIRE used USGS 7.5 topographical quadrant maps in their analysis. Each quad map was divided into grid cells, about 450 acres each. Each map yields 81 cells. CAL FIRE's asset at risk analysis uses these cells. Each cell must be ranked as High, Medium, or Low based on potential impacts from a large fire event. Rankings are developed based on the potential physical fire effects as well as the human valuation of those effects. For example, for air quality the physical effects of a large fire in timberlands are higher than grasslands due to production of a larger volume of smoke. The valuation of this effect will differ based on the additional factor of how many people are potentially affected within specific air basins.

The potential physical effects of a large fire also include a susceptibility component for assets such as structures, historic buildings, or recreation that involve specific sites within a cell. For example, the ranking procedure for structures involves a valuation component based on the number of housing units within a grid cell as well as a susceptibility component, or exposure. The exposure measure includes site-specific factors near housing such as vegetation clearance, roof type, and accessibility.

This CCWPP used the CAL FIRE Assets at Risk analysis to identify the relative wildfire risk. However, where CAL FIRE's method does not provide the neighborhood-by-neighborhood assessment needed for this document, this section identifies risks at a more localized, neighborhood level.

3.1 ASSETS AT RISK IN GREATER PINE GROVE PLANNING UNIT

Three fire scenarios create the potential for significant destruction of manmade improvements, infrastructure, and key elements of the ecosystem. These scenarios are:

1. *Fires occurring during foehn wind events (wind driving fires)*

2. *Fires occurring in drainages during normal summer fire weather pattern (wind and terrain driven fires)*
3. *Fires occurring in areas of heavy fuel accumulations (fuel driven fires)*

Wind Driven Wildfires (Foehn)

Year	Size in Acres	Fire Name
1917	10,057	Unnamed
1924	8,948	Pi Pi Indian Diggings
1961	34,964	Rancheria
1981	14,125	Miess
2004	16,983	Power

The risk to manmade improvements and the ecosystem can be broadly categorized by types of wildfire events. The first and potentially most devastating is the historic large wildfire in Amador County. Historic records starting in 1900 show these fires occurring every twenty years to thirty years.

Burn patterns of almost all historic large wildfires indicate they occurred during a relatively rare weather event called a foehn[2] wind (See detailed description in Chapter 3 - Fire Behavior). The last large wildfire in the Greater Pine Grove Planning Unit occurred in 1924 (Pi Pi – Indian Diggings Fire). The most recent fire in Amador County affected by a foehn wind event was the Power Fire in 2004. This fire was started during the normal summer weather pattern and was declared contained two days later[3]. Four days after the Power Fire started, a foehn wind event developed producing down slope winds in excess of 30 mile per hour. The affect of this wind event can be clearly seen in the fire perimeter maps (See Chapter 5, Plates 9 and 10).

Fires burning east of the Greater Pine Grove Planning Unit during foehn wind events pose a serious threat to assets in both the Greater Pine Grove and the Pioneer/Volcano Planning Units. Therefore, the development of this plan is closely coordinated with the development of the High Country Community Wildfire Protection Plan (revision planned in 2012/13). Many of the recommended mitigation measures in both plans that address foehn driven fires will be the same.

Historic fire records indicate numerous large wildfires with burn patterns indicating the direction of travel was from east to west. The latest fire following this pattern was the Power Fire *(see Plate 10, Power Fire Late Progression)*. Fires like the Power Fire pose the greatest wildfire risk to the Greater Pine Grove Planning Unit, especially to the largest concentration of structures lying in the eastern half of the unit.

Several significant fuel reduction projects are currently developed, being developed, or planned for development in the High Country CWPP and Pioneer/Volcano. CCWPP that directly contributes to mitigating the potential losses within the Greater Pine Grove Planning Unit. These projects and others, collectively referred to as the "*cooperative fire defense system",* are large-scale fuel modification projects undertaken by government and private industry.

The *Cooperative Fire Defense System* is a series of fuel management zones on federal and private forestlands designed to provide fire control points in key areas. These fuel management zones are either fuelbreaks or Strategically Placed Area Treatments (SPLAT). *See Plate 3, Cooperative Fire Defense System.*

Regardless of the type of fuel treatment, the ultimate purpose is to slow the westward advance of fires during foehn wind conditions.

Wind and terrain driven fires

The normal summer winds come from the southwest. These winds push upslope following major river canyons and branching into lesser drainages as they go. These canyons and side drainages form natural chimneys that favor the rapid spread of wildfires. When fuel accumulations within these natural chimneys are unnaturally high, fire behavior can become very erratic and intense. The steeper the slope on the sides of drainages, the faster a wildfire spreads upslope. Developments located along ridge tops above river and stream drainages are directly threatened by wildfires in drainages. Most major drainages are orientated on an east to west axis. Fires starting during normal summer winds tend to be pushed upslope following the drainages. Even where no wind exists, fires will follow the terrain moving from lower elevation toward high elevations.

The west slope of the Sierra is vulnerable to terrain and wind driven fire. Numerous fires following this pattern have occurred in the central Sierras in recent history. In 2001, the Darby Fire *(see Plate 4)* started in the Stanislaus River Canyon near the Stanislaus Powerhouse. It rapidly spread upslope along the river canyon. The canyon walls are steepest on the Tuolumne side of the river. Thus, the greatest area burned was in Tuolumne County.

Structures located on ridges where the associated drainages are steep are vulnerable to wildfires similar to the Darby Fire. Fortunately, many of the same mitigation measures for foehn driven wildfires apply to this wildfire scenario. The primary mitigation measures are managing fuels in drainages to reduce erratic, extreme fire behavior and parcel-by-parcel defensible space within subdivisions.

Fuel Driven Wildfires

Fuel driven fires occur where heavy fuel accumulations increase the intensity of a wildfire. Terrain and wind also influenced fuel driven fires. In this type of wildfire, the primary agent contributing to the fire's spread is the fuel. These types of wildfires can cause a great deal of damage.

Normally, these fires are of short duration. Reduction of fuel volumes in and around structures and other assets is the best protection against these fires.

3.1.1 STRUCTURES AND OTHER DEVELOPMENT ASSETS

All Greater Pine Grove Planning Unit is within the Wildland/Urban Interface (WUI). The southern half of the Greater Pine Grove Planning Unit contains the highest concentration of structures within Amador County. Most of the area is zoned R1, R1A, R2, R2A, R3, and RE.[4]. The County of Amador is currently updating its General Plan. All versions of zoning for the new plan increase the residential zoning within the Greater Pine Grove Planning Unit *(See Plate 5, Housing Density.)*

Commercial areas exist in Pine Grove and the Red Corral areas. These areas are at risk from large wildfires, particularly foehn wind driven fires.

3.1.2 INFRASTRUCTURE ASSETS

POWER GENERATION AND WATER INFRASTRUCTURES

Water is one of Amador County's most valuable natural resource. Intense wildfire can cause significant erosion of soils within the burn area. Known as the "*Fire Flood Sequence*", this erosion can cause significant downstream damage to infrastructure such as water treatment plants, power generation facilities, spawning grounds, and other assets. The post-fire flood potential is greatest within the drainages especially in the Mokelumne River drainage (High risk). The remaining area is rated mostly moderate with some low risk areas, *(See Plate 6- Post Fire Erosion Potential)*.

Important power and water infrastructures are located in and adjacent to the Greater Pine Grove Planning Unit. Pacific Gas & Electric's Tiger Creek Power Plant and the associated Tiger Creek Afterbay are located near the confluence of Antelope Creek and the Mokelumne River. This is the primary source for the Central Amador Water Project (CAWP) system, the Amador Water System (AWS), and the PG&E Tiger Creek Powerhouse system. Water supplied from rainfall and snowmelt is stored in Tiger Creek Afterbay and gravity feeds to the PG&E Tiger Creek Powerhouse Memcor Plant. There it is treated and serves the PG&E Conference Center.

Water from the Tiger Creek Afterbay is also pumped to the Buckhorn Water Treatment Plant where it is treated and ready for use by residents and businesses in Pine Grove, Pine Acres, Sunset Heights, Fairway Pines, Jackson Pines, Pioneer, Gayla Manor, Ranch House Estates, Pine Park East, Toma Lane, Sierra Highlands, Silver Lake Pines, Ridgeway Pines, Rabb Park, and Mace Meadows.

Water from the Mokelumne River is also stored in Lake Tabeaud and conveyed to the Tanner Water Treatment Plant where it is treated for use by the customers of Jackson, Sutter Creek, Amador City, and Drytown. The Ione Pipeline transports raw water from the Tanner Reservoir to the Ione Water Treatment Plant where it is treated for use by customers of Ione. Additionally, the Mokelumne River is a major source of water to over 1.5 million people in the East Bay area. Wildfires that create significant erosion in the Mokelumne watershed can adversely affect the quality of water to all users.

COMMUNICATIONS INFRASTRUCTURE

Volcano Telephone Company has thirty remotes scattered throughout the Planning Unit. Many of these facilities control the generation of ring tones. If any of these are damaged by wildfire, the ability to use the Reverse 911 system or to use local phone trees to notify citizens of the wildfire could be compromised and WI FI would be compromised. Additionally, Volcano shares a cell phone tower with a major cell phone provider. This tower is located on eastern edge of the Planning Unit. Finally, the Volcano Phone Company operates a WI FI site that provides a means for the company to communicate repair and other information with its main office.

SCHOOLS

Pine Grove Elementary School is located along Highway 88 east of the community of Pine Grove. The fuels near the school and its construction make it unlikely that this facility would be threatened by wildfire except in the most extreme conditions.

LPG STORAGE

Kamps and Main Street Propane are located on Highway 88 near the intersection of Highway 26. The fuels and the fact that this facility is surrounded by wide roads make it unlikely that this facility would be threatened by wildfire except in the most extreme conditions.

PG&E POWER TRANSMISSION LINES

Pacific Gas and Electric (PG&E) maintains high voltage power transmission lines that bisect the southern portion of the Planning Unit. Smoke, heat, and errant fire retardant drops from air tankers can disrupt power service for short period. PG &E's distribution lines are more vulnerable to damage from wildfire. These lines are mounted on wooden poles with wooden cross arms. It is common for power lines of this type to suffer extensive damage during wildfires. With the exception of the Sherwood Forest area and a few isolated structures, virtually all residences and businesses are served by these power distribution facilities.

3.1.3 CULTURAL ASSETS

Several local cultural assets exist but are generally not at risk from fire. See the Volcano and Buckhorn risk assessments.

- Grinding Stone State Park
- Pine Grove School House
- Pine Grove baseball field
- Mount Zion State Demonstration Forest
- George Madeira Astrological Observatory (historical landmark # 715)
- Historical Pine Grove Buildings
- Irishtown historical landmark #37
- Pine Grove Community Park
- Roaring Camp
- Gold Country Resort Campground
- Aqueduct Cemetery

3.1.4 NATURAL ASSETS

One of the major reasons for living in the Greater Pine Grove Planning Unit is the beauty of the environment. Large wildfires, such as the Power and Rancheria Creek fires, can cause near complete destruction of the viewshed[5] . Renewal of the forest following large destructive wildfires takes many years.

Wildlife habitat and rare flora and fauna are often destroyed by wildfire. The central Sierra is home to many species. These include:

California buckeyes, Aesculus californica

Manzanita shrubs, Archtostaphylos spp.

The Acorn Woodpecker, Melanerpes formicivorus

Western Rattlesnake, Crotalis viridis

Common King Snake, Lampropeltis getulus

California Ground Squirrel, Citellus beecheyi

Mule Deer, Odocoileus hemionus

Ponderosa pine, Pinus ponderosa

Jeffrey pine, Pinus jeffreyi

Incense Cedar, Calcedrus decurrens

Sugar Pine, Pinus lambertianna

Douglas fir, Pseudotsuga menzieii

Black Oaks, Quercus kellogii

Western Gray Squirrel, Sciurus griseus

Black Bears, Ursus americanus

Black-headed Grossbeak, Pheucticus melanocephalus

Dark-eyed Junco, Junco hyemalis

Stellar Jay, Cyanositta stelleri

Red Hills soap root, Chlorogalum grandiflorum (present in planning unit)

There are at least 1,300 vascular plant species in the Sierra Nevada, along with numerous bryophytes[6] and lichens. There are at least 450 species of vertebrate animals. One hundred and thirty-five plant species in the Sierra Nevada have status as Threatened, Endangered, or Sensitive.[7]

3.1.5 CONFLICTS BETWEEN NATURAL ASSETS AND HUMAN OCCUPATION

The Greater Pine Grove Planning Unit is the second most at risk area of Amador County[8]. This determination of risk is based on the large numbers of homes and businesses present and:

1. Fuels types range from thick stands of mixed conifer and Ponderosa pine to areas of oak woodland interspersed with brush and meadowlands on the westerly part of the unit. Ponderosa pine mixed conifer forests (Fuel Model 10) tend to have frequent, reoccurring fire. Where fuel accumulations exceed historic norms, wildfires in Fuel Model 10 will burn with high intensity.

2. Fuel loads are very heavy in many areas. These unnatural fuel accumulations are often found within or bordering human developments and pose a serious threat the both the ecosystem and human activity.

3. Two large topographical features create the potential for large damaging wildfires. These are the Mokelumne River and Sutter Creek. Both these drainages are orientated in such a way that they create natural chimneys for fire to travel from west to east during the summertime prevailing southwesterly winds. While the large fire history for this area indicates large fires

occur during a different weather pattern, the combination of terrain, fuel accumulations, and proximity of structures throughout the entire planning unit make this area vulnerable for significant losses during relatively small fires (50 to500 acres).

4. Historically, large fires in mid to upper Amador County occur on a northeast or east wind. These foehn winds occur periodically during the fire season. Wildfire occurring during foehn winds poses the greatest wildfire threat to the Greater Pine Grove Planning Unit. However, even relatively small wildland fire, regardless of weather pattern, can cause significant loss of structures.

5. The fuel condition class for most of the Greater Pine Grove Planning Unit is Condition Class III (See Appendix 3 for detail description of condition class). Condition class is a representation of the divergence from the historical fire regime. The description of Condition Class III is *high (stand replacement) severity (greater than 75% of the dominant overstory vegetation replaced).*

6. Many subdivisions were created before current fire safe development standards. These developments lack water for fire fighting, two lane roads and/or all season roads, adequate road and address signage, and adequate separation of homes from each other. All these create the potential for large-scale loss of manmade improvements.

7. The high number of homes and other structures affect firefighting strategy and tactics in a manner that increases the potential damage to the ecosystem. The primary strategy of wildfire control is to gain perimeter control. However, wildfires occurring in highly populated areas divert large numbers of fire fighting resources to structure protection. Resources assigned to structure protection are taken away from the primary firefighting objective and this diversion can significantly increase the size and severity of a wildfire.

8. There is a threat to infrastructure (phone, water, electrical generation, etc.) from wildfire.

9. Recent history in other areas clearly demonstrates the potential for loss of life from wildfires. Fifteen people, including a firefighter, were killed in the Cedar Fire (2003), San Diego. This fire occurred during a Santa Ana (foehn) wind. One hundred and seventy-three perished during the 2009 Black Saturday fires in the Australian State of Victoria.

As part an earlier planning process, a reverse 911 database was created. This database allows the county to notify residents to evacuate well ahead of an approaching wildfire. It is very important that citizens obey the order to evacuate. Early evacuation of residents from the fire area is the best way to avoid loss of life.

3.2 ASSESSING RISKS IN GREATER PINE GROVEPLANNING UNIT

3.2.1 METHODOLOGY (SEE CHAPTER 5 FOR ADDITIONAL INFORMATION ON RISK)

Each road or area described in this appendix was physically evaluated by Fire Safe Council Staff. These findings were reviewed by CAL FIRE, Amador Fire Protection District, and Lockwood Fire Protection District personnel. Each risk ratings are based on these factors:

- **Fuel models**[9] - Fuel models describe the type of fuels available to a wildfire. Models are based on the amount, distribution, and continuity of vegetation. These models are used by fire managers to predict how fires will burn. CAL FIRE's Surface Fuel models were used to predict fire behavior. Each model describes a set of fire behavior outputs (flame length, rate of spread etc.). These models are stylized vegetation types that can exhibit burning characteristics similar to those outputted by the fuel model assigned. Spread rates and flame length are described using the following adjectives:

Adjective	Rate of spread (ft/hr)	Flame length (ft)
Very low	0-132	0-1
Low	132-330	1-4
Moderate	330-1320	4-8
High	1320-3300	8-12
Very High	3300-9900	12-25
Extreme	>9900	>25

- **Fuel load** is the amount of flammable material present at the time of this risk assessment. Fuel load includes all flammable material including vegetation (native and non-native), structures, vehicles, and other manufactured items. Fuel load was estimated using ArcGIS software and 2009 digital aerial photos of the study area. Aerial photos do not show surface fuel accumulations in certain fuel models. Therefore, surface fuel load was estimated during field surveys. Fuel load is described in general terms of "light", "moderate", "heavy", and "very heavy". No attempt was made to separately rate aerial and surface fuel load. However, the reader should understand that the amount of surface fuel present directly affects the crown fire potential in certain fuel models. Therefore where surface fuel load in certain fuel models is heavy or very heavy, a risk rating of "High" or "Very High" was assigned if no mitigating factors exist.
- **Slope**- The steeper the slope, the faster the fire will move. Slope also influences wildfire by preheating fuels ahead of the fire. Thus, wildfires burning up a slope burn with greater intensity and longer flame lengths. To determine slope, three measurements were taken near each road or area. Measurements were taken using ArcGIS mapping software. This software allows accurate measurements of distance. Elevation was derived from a digital contour map. Slope was calculated by dividing the rise in elevation by the distance measured. This result was multiplied by 100 to arrive at the percent of slope.
- **Structure density** – research shows when structure density exceeds one structure per acre, the fuel load of the structures begins to affect wildfire behavior. When structure density reaches fifteen or more per acre, the fuel load of the structures makes the predicted fire behavior for the fuel model unreliable. Structure density was determined by averaging the parcel size in each area. Each parcel was assumed to have one structure. Three categories were used to describe the affect of structures on expected fire behavior within a given fuel model. These are:
    - **Rural** – Less than one structure per acre. No affect on fire behavior as described in the dominate fuel model for the area
    - **Suburban** – One to four structures per acre. Some affect on fire behavior expected
    - **Urban** – more than four structures per acre. The number of structures invalidate the predictive fuel model for the area

  Some adjustment was made in structure density designation where lots are large but the structures are clustered closely together. One issue with high density is structure-to-structure ignition. Where locations of structures mimic a suburban or urban setting, these areas received that rating.

- **Dead-end roads** – Dead-end roads create life safety issues especially when these roads are narrow and lack turnouts and/or cul-de-sacs. Current fire safety regulations address this issue by limiting the length of dead-end roads based on size of the parcel served by the road. For example, where parcels are zoned 5 acres or larger, turnouts shall be provided at a maximum of 5280 foot intervals. Each dead-end road must have a cul-de-sac constructed at its terminus.

  The idea is that longer roads have more people to evacuate. By increasing the required parcel size as the road length increase, the population is held to a manageable number. Most roads in this study were created long before these regulations were enacted. Each road is compared to this new standard for informational purposes only. Residents living on long dead-end roads that do not meet current fire standards should consider early evacuation whenever a wildfire could remotely threaten their area.

Parcel Size	Length
parcels zoned for less than one acre	800 ft
parcels zoned for 1 acre to 4.99 acres	1320 ft
parcels zoned for 5 acres to 19.99 acres	2640 ft
parcels zoned for 20 acres or larger	5280 ft

- **Roadside Fuels** – Roadside fuels along narrow roads or roads located on steep side slopes can make evacuation difficult. Residents trying to evacuate can be faced with a wall of flames blocking their evacuation route. Reducing or eliminating the fuels within a minimum of 20 feet from the road edge can improve access for emergency vehicle and egress for residents evacuating the area. Some roads will require greater clearances. The table below can be used as a guide.

Slope	Clearance
Less than 10%	20 feet on either side of the road
Greater than 10%	1.5 time the height of the fuels or 40 feet, whichever is greater on the downhill side of the road. Twenty feet on the uphill side of the road.

Other factors such as aspect, road width, turnouts, and water supplies were noted and calculated in the overall risk rating for an area. Some of these deficiencies do not affect fire behavior but are life safety issues. Life safety issues are covered in the project list for each area surveyed. Life safety issues are just as important as the wildfire risk rating. Project lists provide landowners with a list of projects that can help protect their land and homes or improve evacuation during a wildfire. Responsible parties are identified for each project. Where responsible parties are government agencies or non-profits like the Amador Fire Safe Council, these entities will work from a priority list and the work will be based on budgeted funds.

3.2.2 RISK RATING DEFINITIONS

Risk ratings described in this document are intended to give homeowners and government planners a sense of the wildfire risk and the factors that contribute to that risk. These ratings reflect the relative risk during normal summer weather patterns. Wildfires occurring during foehn wind events can increase the risk significantly. Several landscape scale projects designed to help reduce the damage from fires burning under strong east wind conditions. These are listed in Chapter 8, Plan Objectives. While every effort was made to be consistent, these risk ratings are subjective in nature. Readers should keep this in mind when viewing these ratings.

The risk ratings are color-coded. The color codes are:

Low	
Moderate	
High	
Very High	

Low risk: strict compliance with defensible space will protect most homes from wildfires occurring during the normal summer weather pattern and foehn wind events.

Moderate risk: Strict compliance with defensible space will protect most homes from wildfires occurring during the normal summer weather patterns. There is a greater risk of home loss during foehn wind conditions. Where structure density is urban, structures may be lost from radiant heat generated from nearby burning structures.

High risk: There is significant risk of structure loss during normal weather patterns and foehn wind events. Risk increases significantly as structure density increases. Where structures density is urban, the structure fuel load invalidates the fire model. These areas need additional protection beyond homeowner defensible space.

Very High: Combinations of structure density, slope, fuels, fuel load, and/or life safety issues create this rating. Where structures density is urban, the structure fuel load invalidates the fire model. Multiple structure loss can occur regardless of weather patterns. Life safety issues relating to evacuation also can create this rating. These areas need additional protection beyond homeowner defensible space.

(Note: urban structure density can be reached if placement of structures on parcels regardless of parcel size creates an urban density because of the proximity of structures to each other.)

3.2.2 PLANNING UNIT WIDE ISSUES

Rather than comment on each of these items by community or road, several common deficiencies were observed throughout the study area. These common problems are presented here.

SIGNAGE

Throughout this risk assessment, there are references to poor address signs and poor road signs. Many people do not realize that during a large wildfire or other large emergency, emergency services personnel come from many areas of the state and in the case of wildfires, come from other states. These people do not know the area. Good street signage and good address signage is extremely important if these resources are to be effective. Street and address signage was almost universally poor.

Street signs and address made of wood or on wooden posts are likely to be destroyed in a large wildfire. The follow pictures contrast good and poor address and street signs.

ADDRESS SIGNS

Current State Fire Codes for high hazard wildland areas require that every building or structure must be provided with an appropriate noncombustible marker, located with respect to the nearest public highway, street or road, servicing such building or structure to be clearly visible at all times to an approaching vehicle for a distance of not less than 100 feet.

Poor, unreadable under most conditions

Good, readable under all conditions

Structure identification numbers should be at least 3 inches in height, with a 3/8-inch stroke. In lieu of providing a separate marker for a separate building or close grouping of several buildings or a structure identification number, the fire protection agency may recommend that a cluster of buildings comprising a single occupancy use one marker and one identification number as a location identifier. The following pictures illustrate the two extremes of address signs found in the study area. Poor address signs such as the first example; can delay response times of all emergency services, not just the fire service.

Difficulty in locating an unnamed or poorly signed road during an emergency, especially under smoky conditions, is a major problem to wildland and structural firefighters. Beyond this, many jurisdictions have allowed duplicate numbering and naming for roads and access, further compounding the location problem. The potential losses of resources, property, and life are greater without an adequately visible and consistent addressing and numbering system.

Poor

Good

Street signs and building addresses are necessary to facilitate the location of a fire and to avoid delays in response. All existing and newly constructed or approved roads, streets and buildings shall be designated by names or numbers posted on signs clearly visible and legible from the roadway.

Street sign numbers must be not less than 3 inches high and not less than 3/8 inch in stroke. All numbers and/or names required must be located or positioned not less than 3 feet, or more than 6 feet above the ground level, to be visible to emergency equipment for a distance of not less than 100 feet from either direction on the traveled road. Numbers and/or names must also be reflectorized, with contrasting background.

Sign indicating water source. Unfortunately, because the valves and fitting are not correct, this water source is unusable.

This 5400-gallon tank was installed as a cooperative effort between the fire department and residents. Total cost $3174

WATER SOURCES

Many residents have installed water tanks on their property. Others have above ground or in-ground swimming pools. Some properties have ponds that could be used for fire protection. These sources are of little use if the fire department cannot locate them, they are empty, or lack the proper type of valves and fittings. During this risk analysis, many tanks were examined. A significant number of tanks lacked the proper fire service fittings thus rendering them useless for fire protection. Residents should contact their local fire department to determine the proper fitting and signage.

GATED DRIVEWAYS (AMADOR COUNTY ORDINANCE 15.30.120)

Numerous gated driveways exist in this planning unit. Many do not have an emergency service key box or other type of override system. Installation of a emergency services override on your property will not only allow emergency service personnel faster access in case of an emergency, but will prevent expensive forcible entry should emergency service be required while the premises are unoccupied or you cannot open the door or gate because of a medical problem. Costly front door entryways and electronic gates need not be harmed if entry keys are available on-site.

Gate entrances must be at least two feet wider than the width of the traffic lane serving that gate. All gates providing access from a road to a driveway should be located at least 30 feet from the roadway to allow a vehicle to stop without obstructing traffic. Where a one-way road with a single traffic lane provides access to a gated entrance, a 40-foot-turning radius should be used.

DEFENSIBLE SPACE (PUBLIC RESOURCE CODE 4291)

Compliance with defensible space regulations varies greatly throughout the study area. Providing adequate defensible space is the ***single most important action*** homeowners can take to prevent their property from wildfire. If reducing vegetative fuel load in forests around communities and individual homes is the most logical strategy to reduce the risk from wildfire and to give firefighters an opportunity to protect structures, why do so many people not comply?

Good defensible space

At risk structure

This question has been studied extensively. Much of the resistance relates to individual homeowner values that include things like creating habitat for wildlife, providing screening from neighbors, and maintaining the natural environment. Most of these issues can be accommodated within the defensible space law. As for the environment issue, the historic “natural” Sierra forest is fire resistant with little underbrush and can provide better wildlife viewing opportunities.

Defensible space requirements vary for each individual property. All homeowners and business must meet the minimum requirements stated in the law. However depending on slope, vegetation density, and fuel type (model), some property owners need to exceed the minimum standards to improve the chances of surviving a wildfire. Complying with defensible space requirements not only protects an individual’s property but also can improve the protection of a neighbor’s property. Where entire neighborhoods comply with the law, the protective value of complying is multiplied. By actively managing their property, landowners become an important partner in wildfire preparedness.

3.3 SUMMARIZING RISKS IN THE GREATER PINE GROVEPLANNING UNIT

Based on the assets at risk analysis, the following table lists relative risk by street.

Road Name	Area	Risk
Alder Lane	Gala Manor Unit 2	MODERATE
Amber Way	Shake Ridge Road Area	HIGH
Andrews Road	Lupe Road Area	HIGH
Aqueduct Circle	Aqueduct Grove Area	HIGH
Aqueduct Grove Road	Aqueduct Grove Area	HIGH
Aqueduct Road	Volcano Road Area	MODERATE
Arden Court	Upper Ridge Road Area	MODERATE
Arrowhead Road	Pine Acres (North)	HIGH
Autumn Court	Shake Ridge Road Area	HIGH
Autumn Drive	Shake Ridge Road Area	HIGH
Baker Lane	Shake Ridge Road Area	HIGH
Banks Road	Upper Ridge Road Area	LOW
Bates Road	Lower Ridge Road	MODERATE
Baumann Road	Irishtown Road Area	MODERATE
Berry Street	Pine Grove Area	LOW
Big Oak Court	Pine Acres (South)	MODERATE
Blackberry Lane	Gala Manor Unit 2	MODERATE
Blackwell Road	Sutter Creek Road Area	MODERATE
Bluff court	Peterson Ranch Area	Moderate
Bonavera Way	Surrey Junction Area	LOW
Bonnefoy Road	Irishtown Road Area	MODERATE
Booger Hollow Road	Sutter Highlands Area	VERY HIGH
Bourbon Street	Climax Road Area	MODERATE
Bowman Road	Bowman Tract Area	HIGH
Brandon (north)	Homestead Area	HIGH
Brandon (south)	Homestead Area	HIGH
Brewba Court	Sutter Highlands Area	VERY HIGH
Brook Court	Ranch House Estates	MODERATE
Brookwood Lane	Gold Mine Road Area	VERY HIGH
Bryson Lane	Volcano Road Area	MODERATE
Buckeye Drive	Shake Ridge Road Area	LOW

Road Name	Area	Risk
Buckhouse Road	Shake Ridge Road Area	HIGH
Burnt Cedar Lane	Pine Acres (North)	HIGH
Canal Way	KC Ranchettes Area	MODERATE
Caribou Drive	Pine Acres (North)	HIGH
Carpenter Gulch	Sutter Creek Road Area	VERY HIGH
Cedar Drive	Irishtown Road Area	MODERATE
Cedar Pines Lane	Mt Zion Road Area	MODERATE
Century Lane	Shake Ridge Road Area	MODERATE
Charleston Court	Charleston Road Area	LOW
Charleston Road	Charleston Road Area	LOW
Chase Road	Climax Road Area	MODERATE
Chester's Place	Lupe Road Area	VERY HIGH
Chestnut Lane	Sutter Highlands Area	VERY HIGH
Climax Road	Climax Road Area	MODERATE
Clinton Bar (North of the intersection of Gold Strike Road)	Pine Acres (South)	MODERATE
Clinton Bar (South of the intersection of Gold Strike Road)	Pine Acres (South)	HIGH
Clinton Peak Court	Jackson Pines Area	MODERATE
Contini Mine Road	Jackson Pines Area	VERY HIGH
Cookie Way (unable to locate)	Climax Road Area	UNRATED
Cottonwood Lane	Gala Manor Unit 2	HIGH
Country Court	Pine Acres (North)	MODERATE
Crestview Drive	Pine Grove Area	MODERATE
Dapple Court	Surrey Junction Area	LOW
Dapple Drive	Surrey Junction Area	MODERATE
Darling Court	Shake Ridge Road Area	MODERATE
Darling View Court	Shake Ridge Road Area	MODERATE
Dawn Ridge	East Clinton Road Area	HIGH
Debbie Lane	East Clinton Road Area	HIGH
Diamond View Drive	Pioneer/Volcano Road	MODERATE
Dogwood Court	Ranch House Estates	MODERATE
Dove Court	Pine Acres (South)	HIGH
Druid Lane	Druid Lane Area	HIGH
Dunshee Road	Pine Acres (South)	HIGH
Eaton Road	Irishtown Road Area	MODERATE
Eldel (between Peck and Kevkie)	Pine Acres (North)	HIGH
Eldel (south of Kevkie)	Pine Acres (North)	MODERATE
Eldel Road (Tabeaud to Peck)	Pine Acres (North)	MODERATE
Elderberry Court	Gala Manor Unit 2	MODERATE
Elderberry Drive	Gala Manor Unit 2	MODERATE
Ellinwood Way	Jackson Pines Area	MODERATE
Emily Way	Surrey Junction Area	MODERATE
F Street	Pine Grove Area	LOW
Foothill Pines Court	Gala Manor Unit 1	LOW
Fredricks Drive	Peterson Ranch Area	LOW
French Gulch Road	Palamino Road Area	HIGH
Gala Drive (Unit 2 – see nearest cross street)	Gala Manor Unit 2	LOW

Road Name	Area	Risk
Gala Manor Unit 1 (all streets)	Gala Manor Unit 1	LOW
Garbo Lane	Pine Acres (North)	HIGH
Gen Court	Climax Road Area	MODERATE
Gloria Lane	Lupe Road Area	HIGH
Gold Mine Road	Gold Mine Road Area	VERY HIGH
Gold Nugget Court	Pine Acres (South)	HIGH
Gold Strike Road	Pine Acres (South)	HIGH
Gold View Way	Pine Acres (South)	HIGH
Golden Oaks Court	Jackson Pines Area	HIGH
Goldmine Road	Goldmine Road Area	VERY HIGH
Greenleaf Court	Homestead Area	HIGH
Gy Tan	Bowman Tract Area	MODERATE
Hadaka Way	Sutter Highlands Area	VERY HIGH
Hale Drive	Upper Ridge Road Area	LOW
Highview Way	Sutter Highlands Area	VERY HIGH
Hilltop Court	Pine Acres (North)	HIGH
Hilltop Road	Pine Acres (North)	HIGH
Hilltop Street	Pine Grove Area	LOW
Holly Place	Druid Lane Area	HIGH
Homestead Road (County road portion)	Homestead Area	MODERATE
Homestead Road (Private road portion)	Homestead Area	HIGH
Hooper Court	Irishtown Road Area	MODERATE
Hooper Drive	Irishtown Road Area	MODERATE
Horse Canyon Road	Volcano Road Area	MODERATE
Hummingbird (east)	Shake Ridge Road Area	VERY HIGH
Hummingbird (west)	Shake Ridge Road Area	HIGH
Indian Rock Road	Volcano Road Area	MODERATE
Irish Court	Jackson Pines Area	HIGH
Irish Court	KC Ranchettes Area	HIGH
Irishtown Road	Irishtown Road Area	HIGH
Jackson Pines Drive	Jackson Pines Area	MODERATE
Johnny's Way	Lower Ridge Road	LOW
June Way	Climax Road Area	MODEERATE
Kennedy Hill Drive	Climax Road Area	MODERATE
Kestrel Lane	Shake Ridge Road Area	HIGH
Kevkie Court	Pine Acres (North)	MODERATE
Kimber Court	Hidden Acres Area	MODERATE
Kit Lane	KC Ranchettes Area	MODERATE
Knoll Court	Pine Grove Area	HIGH
Kyle Court	Irishtown Road Area	HIGH
La Colina Road	Shake Ridge Road Area	HIGH
Lady Bug Lane	Gold Mine Road Area	VERY HIGH
Lagunita Way	Lower Ridge Road	MODERATE
Lake Canyon Road	Sutter Creek Road Area	HIGH
Lake Marie Lane	Shake Ridge Road Area	HIGH
Laurel Road	Sutter Creek Road Area	HIGH
Leona Lane	Lupe Road Area	HIGH
Live Oak Court	Druid Lane Area	HIGH

Road Name	Area	Risk
Live Oak Lane	Pine Acres (North)	HIGH
Logans Alley	Peterson Ranch Area	LOW
Lomo Ranchos Road	Charleston Road Area	LOW
Lonesome Lane	Volcano Road Area	MODERATE
Lookout Road	Pine Acres (North)	HIGH
Lookout Ridge Lane	Pine Acres (North)	MODERATE
Lorna Lane	Surrey Junction Area	HIGH
Louise Lane	Shake Ridge Road Area	HIGH
Lovers Lane	Highway 88 West Area	MODERATE
Lowenthal Lane	Irishtown Road Area	HIGH
Lowry Lane	Shake Ridge Road Area	HIGH
Lunar Trail	Shake Ridge Road Area	HIGH
Lupe Road (from Ponderosa Way to its end as county road)	Lupe Road Area	VERY HIGH
Lupe Road (private road section)	Lupe Road Area	HIGH
Lupe Road (south of Ponderosa Way)	Lupe Road Area	MODERATE
Lynn Way	Bowman Tract Area	MODERATE
Maico Gulch	Volcano Road Area	HIGH
Mamre Road	Pine Acres (North)	MODERATE
Manzanita (between Meadowview to Sutter Highlands Road)	Sutter Highlands Area	VERY HIGH
Manzanita (North of Meadowview)	Shake Ridge Road Area	HIGH
Manzanita (south of Sutter Highlands Road)	Sutter Highlands Area	VERY HIGH
Manzanita Court	Druid Lane Area	HIGH
Manzanita Place	Druid Lane Area	HIGH
Manzanita Way	Druid Lane Area	HIGH
Maranatha Road	Sutter Highlands Area	VERY HIGH
Marble Quarry Road	Lupe Road Area	VERY HIGH
Marc Drive	Bowman Tract Area	MODERATE
Margot Court	Lupe Road Area	HIGH
Matson Drive	Pine Grove Area	LOW
Maude Court	Pine Acres (North)	MODERATE
Maudern Lane	Pine Acres (North)	MODERATE
Mc Ln Ranch road	Pioneer/Volcano Road	MODERATE
McKinna Road	Shake Ridge Road Area	VERY HIGH
Meadow Lark Lane	Sutter Highlands Area	VERY HIGH
Meadow View Drive	Sutter Highlands Area	VERY HIGH
Meadowbrook Drive	Ranch House Estates	LOW
Meadowood Court	East Clinton Road Area	HIGH
Meadowood Drive	East Clinton Road Area	HIGH
Mella Drive	Shake Ridge Road Area	LOW
Merimac Lane	Pine Acres (North)	MODERATE
Mierkey Court	Jackson Pines Area	Moderate
Mierkey Road (North)	Irishtown Road Area	HIGH
Mierkey Road (south)	Jackson Pines Area	HIGH
Mine Court	Druid Lane Area	HIGH
Mineral Ridge Court	Peterson Ranch Area	MODERATE

Road Name	Area	Risk
Mineral Ridge Drive	Peterson Ranch Area	MODERATE
Mitchell Mine Road	Mitchell Mine Rd Area	VERY HIGH
Molfino Road	Highway 88 West Area	LOW
Moonlight Ridge	Mitchell Mine Rd Area	VERY HIGH
Mountain View Drive	Druid Lane Area	HIGH
Mt Zion Road	Mt Zion Road Area	HIGH
Murphy Road	Irishtown Road Area	MODERATE
Narcissus Road	Jackson Pines Area	HIGH
Neilson Road	Mt Zion Road Area	HIGH
Niles Road	KC Ranchettes Area	MODERATE
Nills Way	Climax Road Area	MODERATE
No Name Road #1	Shake Ridge Road Area	HIGH
North Cedar Lane	Mt Zion Road Area	HIGH
North Hill Drive	KC Ranchettes Area	MODERATE
North Point Court	Homestead Area	HIGH
Northstar Court	Lower Ridge Road	MODERATE
Oak Lane	Mt Zion Road Area	HIGH
Oak Road	KC Ranchettes Area	MODERATE
Old Spring Road	Pine Acres (North)	MODERATE
Owl Road	Pioneer/Volcano Road	MODERATE
Paelo Lane	Mt Zion Road Area	HIGH
Paint Brush Lane	Gala Manor Unit 2	HIGH
Palamino Road	Pine Acres (North)	HIGH
Parkside Lane	Volcano Road Area	MODERATE
Patel Lane	Pine Acres (North)	MODERATE
Payton Lane	Volcano Road Area	MODERATE
Peck Court	Pine Acres (North)	HIGH
Penrose Way	Toyon Road Area	VERY HIGH
Peterson Ranch Drive	Peterson Ranch Area	MODERATE
Pine Cone Lane	Volcano Road Area	HIGH
Pine Glen Trail	Pine Acres (North)	MODERATE
Pine Park Loop	Homestead Area	HIGH
Pine View Drive	Irishtown Road Area	MODERATE
Pinebrook Court	Sutter Highlands Area	VERY HIGH
Pinto Road	Pine Acres (North)	HIGH
Pioneer Drive	KC Ranchettes Area	MODERATE
Pitts Court	Irishtown Road Area	HIGH
Pitts Drive	Irishtown Road Area	HIGH
Ponderosa Annex	Shake Ridge Road Area	HIGH
Ponderosa Trail	Charleston Road Area	MODERATE
Ponderosa Way – Section 1	Shake Ridge Road Area	VERY HIGH
Ponderosa Way – Section 2	Charleston Road Area	MODERATE
Ponderosa Way (between Peterson Ranch Drive and Ridge)	Peterson Ranch Area	MODERATE
Ponderosa Way (between Taves and Climax Roads)	Climax Road Area	MODERATE
Ponderosa Way (off of Lupe Road)	Lupe Road Area	HIGH
Pony Brown Lane	Tanyard Hill Road Area	HIGH
Primrose Lane	Homestead Area	HIGH
Prospect Street	Irishtown Road Area	MODERATE

Road Name	Area	Risk
Quail Drive	Pine Acres (South)	MODERATE
Quail Lane	Homestead Area	HIGH
Quail Trail	KC Ranchettes Area	LOW
Quartz Way	Toyon Road Area	VERY HIGH
Rainbow Lane	Lupe Road Area	HIGH
Rainbow Mine Road	Lupe Road Area	HIGH
Ranch Drive	Ranch House Estates	LOW
Rancheria Trail	Shake Ridge Road Area	HIGH
Rancho Canyon Road	Sutter Creek Road Area	VERY HIGH
Rapini Court	Peterson Ranch Area	LOW
Rebel Road	Sutter Highlands Area	VERY HIGH
Red Hill Mine Road	Lupe Road Area	HIGH
Redberry Lane	Climax Road Area	HIGH
Redbud Lane	Gala Manor Unit 2	HIGH
Richard Road	Shake Ridge Road Area	LOW
Ridge Court	Lower Ridge Road	HIGH
Ridge View Drive	Lower Ridge Road	LOW
Robin Lane	Pine Acres (South)	MODERATE
Robinson Road	Bowman Tract Area	MODERATE
Rockola Road	Volcano Road Area	MODERATE
Rolling Hills Court	Ranch House Estates	MODERATE
Rose Court	Peterson Ranch Area	LOW
Sandar Road	Lupe Road Area	HIGH
Sander Road	Tanyard Hill Road Area	MODERATE
Sequoia Lane	Gala Manor Unit 2	HIGH
Shadow Glenn Court	Ranch House Estates	LOW
Shake Ridge Court	Shake Ridge Road Area	HIGH
Sharon Court	Bowman Tract Area	MODERATE
Sierra Court	Surrey Junction Area	HIGH
Sierra View Lane	Sutter Highlands Area	VERY HIGH
Silver Court	Pioneer/Volcano Road	VERY HIGH
Silver Ridge Road	Pioneer/Volcano Road	VERY HIGH
Skyhigh Blvd	Aqueduct Grove Area	VERY HIGH
Sleepy Hollow	Druid Lane Area	HIGH
Snooks Lane	Pine Acres (North)	MODERATE
Soke Spring Ranch	Shake Ridge Road Area	HIGH
Sonshine Lane	Shake Ridge Road Area	HIGH
South Cedar Lane	Mt Zion Road Area	HIGH
Spagnoli Mine Road	Irishtown Road Area	HIGH
Spring Canyon Lane	Homestead Area	HIGH
Spurlock Lane	Pine Grove Area	HIGH
Stage Road (private road section)	Shake Ridge Road Area	MODERATE
Stage Road (UNPR)	Shake Ridge Road Area	HIGH
Starview Lane	Sutter Highlands Area	VERY HIGH
Stell Court	Climax Road Area	MODERATE
Steven Lane	Bowman Tract Area	MODERATE

Road Name	Area	Risk
Stone Jug Road	Shake Ridge Road Area	MODERATE
Sugar Loaf Road	Highway 88 West Area	HIGH
Sugar Pine Drive (Off of Chase Road)	Climax Road Area	HIGH
Sugar Pine South Drive (Off of Mountain View Drive)	Druid Road Area	HIGH
Sunrise Court	Bowman Tract Area	MODERATE
Sunset Drive	Bowman Tract Area	MODERATE
Surrey Court	Surrey Junction Area	HIGH
Surrey Junction Lane (Between Ridge Road and Dapple Drive)	Surrey Junction Area	MODERATE
Surrey Junction Lane (North of Dapple Drive)	Surrey Junction Area	HIGH
Surrey Place	Surrey Junction Area	LOW
Susan Road	Sutter Highlands Area	VERY HIGH
Sutter Creek Road	Sutter Creek Road Area	HIGH
Sutter Highland Drive	Sutter Highlands Area	VERY HIGH
Sylvia Court	Lupe Road Area	MODERATE
Tabeaud Court	Pine Acres (North)	HIGH
Tabeaud Road	Pine Acres (North)	MODERATE
Tank Court	Irishtown Road Area	HIGH
Tank Drive	Irishtown Road Area	HIGH
Tannery Lane	Tanyard Hill Road Area	HIGH
Tanyard Hill Rd (Tanyard West to Surrey Junction lane)	Tanyard Hill Road Area	HIGH
Tanyard Hill Rd. (Tannery Lane To Tanyard Hill West Rd.)	Tanyard Hill Road Area	MODERATE
Tanyard Hill Road (Ridge to Tannery – incl. Pony Brown)	Tanyard Hill Road Area	HIGH
Tanyard Hill West Road	Tanyard Hill Road Area	HIGH
Tanyard Lane	Tanyard Hill Road Area	HIGH
Taves Road	Climax Road Area	MODERATE
Tellurium Drive	Pine Grove Area	HIGH
Timber Ridge Road	Pine Acres (South)	HIGH
Tobacco Road	Volcano Road Area	HIGH
Toma Lane (Road Two section)	Toma Lane Area	LOW
Toma Lane (Upper section)	Toma Lane Area	HIGH
Tony Lane	Surrey Junction Area	HIGH
Toyon Court	Shake Ridge Road Area	HIGH
Toyon Peak	Toyon Road Area	VERY HIGH
Toyon Road	Toyon Road Area	VERY HIGH
Trent Way	Lower Ridge Road	LOW
Trent Court	Lower Ridge Road	LOW
Tuggie Drive	Shake Ridge Road Area	HIGH
Valley Bottom Road	Sutter Creek Road Area	HIGH
Valley Boulevard	KC Ranchettes Area	MODERATE
Valley View Court	Ranch House Estates	LOW
Valley Vista Court	Irishtown Road Area	HIGH
View Terrace Street	KC Ranchettes Area	MODERATE
Vista Amarosa Court	Pine Acres (North)	HIGH
Vista Court	Pine Grove Area	HIGH
Vista Sierra Court	Pine Acres (North)	HIGH
W View Drive	Lower Ridge Road	HIGH
W View Road	Druid Lane Area	HIGH

Road Name	**Area**	**Risk**
Walnut Street	Pine Grove Area	MODERATE
Warner Road East	Volcano Road Area	MODERATE
Warner Road West	Volcano Road Area	MODERATE
West Court	Druid Lane Area	HIGH
West Diamond View Drive	Pioneer/Volcano Road	HIGH
West Hill Drive	KC Ranchettes Area	MODERATE
West Mitchell Mine Road	Mitchell Mine Rd Area	VERY HIGH
W View	Druid Lane Area	HIGH
Wild Iris Lane	Mitchell Mine Rd Area	VERY HIGH
Wild Pine Drive	Gold Mine Road Area	VERY HIGH
Wilderness	KC Ranchettes Area	MODERATE
Wildflower Lane	Pine Acres (South)	HIGH
Wildwood Court	Pine Acres (North)	HIGH
Windmill Court	Toma Lane Area	MODERATE
Woodroof Road	Pine Acres (North)	MODERATE
Woodside Lane	Lower Ridge Road	MODERATE

3.4 DEVELOPING COMMUNITY PRIORITIES

Two sets of community actions were identified during this planning process. The first set are those actions and priorities that the landowner individually or working as neighborhood groups can accomplish without financial assistance from government. Of these actions, none is more important than defensible space. It cannot be stressed enough that the key to preventing loss of homes is strict compliance with *defensible space regulations.*

Question: Does having a defensible space guarantee my house will survive a wildfire?

- No. Under extreme conditions, almost any house can burn. However, having a defensible space will significantly improve the odds of your home surviving a wildfire. The reality today is that fire agencies cannot solve the problem alone.
    - Firefighters do not have the resources to defend every home during a wildfire. Personal responsibility is key.
    - Residents can take steps to reduce their risks. We know that using Firewise strategies can increase the likelihood of our homes surviving a wildland fire threat.
- There are no guarantees that our communities will be fire***proof*** – some fires just get too big and too hot. However, homeowners can take action to protect their communities that greatly increase the chances that their homes and communities will withstand a wildfire.
- Residents of older homes should consider upgrading their home to meet the 2007 WUI building standards. *(See Chapter 8 section 8.3)*

In addition to defensible space, there are other actions landowners can take to improve wildfire protection in their neighborhood. Table 1 *Community Projects in Chapter 8, Plan Objectives Section 8.1* lists those actions, and their relative priority. Readers should review the risk analysis for their street and the risk factors described in this chapter and Appendix D, *Risk Analysis*. This review will assist homeowners' to determine how best to protect their property and neighborhood.

The second set of actions identified by the risk analysis is a list of existing and proposed fuel modification projects. These projects are listed in *Chapter 4 Section 4.2.1, Table 2 Landscape-scale Projects*. Plate 7 in Chapter 5 is a map of these projects. These projects are designed to provide protection from the historic large fire event and the normal summer wildfire. These projects are part of a larger multi-agency system of fire defenses known as the *Cooperative Fire Defense System.* The Cooperative Fire Defense System originates from the Countywide Community Wildfire Protection Plan created in 2005. The new projects proposed in this plan update are in addition to the projects proposed in the 2005

3.5 RISK RATINGS

LOWER RIDGE ROAD (WEST OF CLIMAX)

TRENT WAY (COUNTY ROAD)

1. Trent Way is a wide two lane paved dead-end County Road 3985 feet in length with a wide cul-de-sac at its terminus.
2. This area is well served by fire hydrants.
3. Some roadside fuels are present along the first third of this road. Heavy brush along some roadsides makes evacuation during wildfire difficult and dangerous.
4. The dominate fuel model is FM2 along with lesser amount of fuel model FM1. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. In FM1, fire spread is governed by the fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber is present, generally less than one third of the area. Grasslands and savanna are represented along with stubble, grass-tundra, and grass-shrub combinations that met the above area constraint. Annual and perennial grasses are included in this fuel model.
6. Fuel loads are light to moderate with pockets of heavier concentrations closer to the intersection of Trent Way and New York Ranch Road.
7. Most homes have easily read address signs.
8. Compliance with defensible space is very good. Continued compliance with defensible space law will provide protection from all but the most destructive wildfires (foehn wind driven fire). Even in a wind driven fire, most homes complying with defensible space requirements will survive.
9. The average is 5.0 acres. The structure density rating for this area is rural.
10. Slopes average 16%. Slopes this steep will adversely affect fire behavior.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowner's
Reduction of roadside fuels (40' per side)	Home owners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random sample	Fuel Model(s)	Average fine fuel load tons/ac	Expected flame length in 5 mph	Expected Flame length in 20 mph	Expected rate of spread Feet/hr	Expected Rate of spread in foehn wind (20 mph)	Relative risk rating
Rural	No	16%	FM1 (GR4)	2.15	High	Very High	Very High	Extreme	Low
			FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	

TRENT COURT (SEE TRENT WAY)

RIDGE VIEW DRIVE (PRIVATE ROAD)

1. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
2. Fuel loads are moderate with pockets of heavier concentrations.
3. Heavy brush along some roadsides makes evacuation during wildfire difficult and dangerous. This brush can also make it difficult for fire fighters to enter the area.
4. This is a looped road providing two ingress and egress routes.
5. Ridge View Drive is a paved but narrow road without turnouts.
6. Two hydrants were observed. These were not painted to the NFPA standard. Because most Amador Water Agency hydrants have not been flow tested, these hydrants should be painted yellow indicating a fire flow less than 500 GPM.
7. Most homes do not have easily read address signs. Existing address signs are non-standard and poorly placed for emergency services.
8. Compliance with defensible space law will provide protection from all but the most destructive wildfires (foehn wind driven fire). Even in a wind driven fire, most homes complying with defensible space requirements will survive.
9. Most lots exceed one acre in size; thus, any structure that does ignite is not a threat to structures on adjoining parcels (see Chapter 3 Section Changing Fuels in Wildland urban Interface). However, these structures could affect fire behavior during large fires.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowner's
County standard road signs	Homeowner's
Periodic turnout (400' spacing)	Homeowner's
Reduction of roadside fuels (40' per side)	Grant or homeowner's
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	15%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Low

RIDGE COURT (PRIVATE ROAD)

1. This is a graded graveled road 3516 feet (2/3 of a mile) in length. The road width is less than 20 feet and lacks turnouts along its length.
2. There is only one ingress and egress.
3. Most structures are located near its northern terminus.
4. Most homes do not have easily read address signs. Existing address signs are non-standard and poorly placed for emergency services.
5. Lot size along the road average ten acres.
6. The large lot size and few structures give this area a structure density rating of rural. Structures ignited during wildfires are unlikely to affect structures on adjoining properties.
7. Heavy roadside fuels make evacuation from the interior of this area difficult and dangerous.
8. The primary forest fuels are in fuel models FM2 and FM10. Fuel load within this area, in both these models, tend to be heavy.
9. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands.
10. In FM10, fires burn in the surface and ground fuels with greater fire intensity than the other timber litter models. Dead-down fuels include greater quantities of 3-inch (7.6-cm) or larger limbwood resulting from over maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees are more frequent in this fuel situation, leading to potential fire control difficulties. Any forest type may be considered if heavy down material is present; examples are insect- or disease-ridden stands, windthrown stands, overmature situations with deadfall, and aged light thinning or partial-cut slash
11. Slopes range from nearly flat in the drainage bottoms to over 72% on the hillsides.
12. The fuels around most structures are lighter in volume.
13. Poor road and address signage was noted throughout the area.
14. Steep slopes combined with fuels will increase fire intensity and rates of spread beyond that predicted in the fuel models.

15. Dense fuels line the roadside and numerous small drainages cross the road. These drainages form small chimneys that will funnel the fire up and across the roadbed making evacuation more difficult.
16. There is not in-ground water system. However, there are swimming pools and a pond in the area.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowner's
County standard road signs	Homeowner's
Periodic turnout (400' spacing)	Homeowner's
Reduction of roadside fuels (40' per side)	Grant or homeowner's association
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	28%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

WEST VIEW DRIVE (PRIVATE ROAD)

1. West View Drive is a narrow (<20 foot) dead-end road approximately 3040 feet in length.
2. There are no turnouts along its length making evacuation difficult.
3. No water sources for fire protection were observed.
4. Average lot size is slightly less than six acres. This lot size is large enough to give this area a 'rural' rating for structure density
5. The dominate fuel model is FM2 and fuel loads are heavy. Some FM 10 is also present.
6. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands.
7. Roadside fuels are heavy in places making evacuation difficult during wildfires.
8. Some residences have very steep driveways, which can make it difficult for fire agencies to protect these homes.
9. No water sources for fire protection were observed.
10. Most homes do not have easily read address signs. Existing address signs are non-standard and poorly placed for emergency services.
11. Fuels are heavy in areas particularly near the end of the road.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowner's
County standard road signs	Homeowner's
Periodic turnout (400' spacing)	Homeowner's
Reduction of roadside fuels (40' per side)	Grant or homeowner's association
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	46%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

BATES ROAD (PRIVATE ROAD)

1. Bates Road is a narrow (<20 foot) dead-end road approximately 2307 feet in length. Bates does have a 3 to 4 foot drivable shoulder in places along its length. These areas allow evacuating residents and fire apparatus to pass each other
2. Most homes do not have easily read address signs. Existing address signs are non-standard and poorly placed for emergency services.
3. There is a cul-de-sac at the end of Bates but it is too small to accommodate most fire apparatus.
4. The dominate fuel model is FM6. Fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. Some FM 10 is present in small patches.
5. Fuel load tends to be moderate with many areas of open grassland interspersed with the heavier brush and oaks stands.
6. Much of the fire risk can be eliminated by strict compliance with defensible space requirements
7. Average lot size is 3.8 acres. Because of the large lot size, there is little concern about structures ignited by wildfire influencing fire behavior. This area has a structural density rating of 'rural'.
8. Slopes throughout are moderate averaging 16%.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowner's
County standard road signs	Homeowner's
Periodic turnout (400' spacing)	Homeowner's
Reduction of roadside fuels (40' per side)	Grant or homeowner's association
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	17%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

NORTHSTAR (PRIVATE ROAD)

1. This is a wide (> 20 feet) paved dead-end road with a large cul-de-sac at its terminus.
2. Fuels along the roadside are heavy in some areas making evacuation difficult.
3. No water sources for fire protection were observed.
4. The primary forest fuel is in fuel models FM2 with some small patches of fuels in FM10. Fuel load within this area, in both these models, tend to be moderate.
5. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands.
6. In FM10, fires burn in the surface and ground fuels with greater fire intensity than the other timber litter models. Dead-down fuels include greater quantities of 3-inch (7.6-cm) or larger limbwood resulting from over maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees are more frequent in this fuel situation, leading to potential fire control difficulties. Any forest type may be considered if heavy down material is present; examples are insect- or disease-ridden stands, windthrown stands, overmature situations with deadfall, and aged light thinning or partial-cut slash
7. Most homes do not have easily read address signs. Existing address signs are non-standard and poorly placed for emergency services.
8. Much of the fire risk can be eliminated by strict compliance with defensible space requirements
9. Average lot size is 3.8 acres. Because of the large lot size, there is little concern about structures ignited by wildfire influencing fire behavior. This area has a structural density rating of 'rural'.
10. Some homes in the area have gated driveways. Some of these gates have keyed enter system with an emergency services override. These types of systems eliminate damage to gates by emergency service personnel entering the property during emergency conditions.

11. Slopes are moderate throughout

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowner's
County standard road signs	Homeowner's
Periodic turnout (400' spacing)	Homeowner's
Reduction of roadside fuels (40' per side)	AFSC grant or homeowner's association
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	<17%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

LAGUNITA WAY (PRIVATE ROAD)

1. Lagunita Way is a narrow (<20 foot) dead-end road approximately 1409 feet in length.
2. Most homes do not have easily read address signs. Existing address signs are non-standard and poorly placed for emergency services.
3. There is no cul-de-sac at the end of Lagunita way.
4. The primary forest fuel is in fuel models FM2 with some small patches of fuels in FM10. Fuel load within this area, in both these models, tend to be moderate.
5. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands.
6. Fuel load tends to be moderate with many areas of open grassland interspersed with the heavier brush and oaks stands.
7. Much of the fire risk can be eliminated by strict compliance with defensible space requirements
8. Average lot size is 5 acres. Because of the large lot size, there is little concern about structures ignited by wildfire influencing fire behavior. This area has a structural density rating of 'rural'.
9. Most homes do not have easily read address signs. Existing address signs are non-standard and poorly placed for emergency services.
10. Slopes throughout are moderate averaging <7%.
11. No water sources dedicated to fire protection were observed

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowner’s
County standard road signs	Homeowner’s
Periodic turnout (400’ spacing)	Homeowner’s
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	<7%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

JOHNNY’S WAY (PRIVATE ROAD)

1. Short paved road without structures
2. Primary fuel is FM1 grass
3. No significant fire risk

WOODSIDE LANE (PRIVATE ROAD)

1. Woodside lane is a narrow (<20 foot) dead-end road approximately 1428 feet in length.
2. Most homes do not have easily read address signs. Existing address signs are non-standard and poorly placed for emergency services.
3. The primary forest fuel is in fuel models FM2 with some small patches of fuels in FM10. Fuel load within this area, in both these models, tend to be moderate.
4. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands.
5. Fuel load tends to be moderate with many areas of open grassland interspersed with the heavier brush and oaks stands.
6. Much of the fire risk can be eliminated by strict compliance with defensible space requirements
7. Average lot size is 4 acres. Because of the large lot size, there is little concern about structures ignited by wildfire influencing fire behavior. This area has a structural density rating of ‘rural’.
8. Slopes throughout are moderate averaging 14%.
9. No water sources dedicated to fire protection were observed

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowner's
County standard road signs	Homeowner's
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	14%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

PINE ACRES (NORTH)

TABEAUD ROAD

Residents fronting along Tabeaud Road can determine their relative risk by reading the risk level of the closest cross street.

SNOOKS LANE (PRIVATE ROAD)

1. This is a narrow paved road less than 20' in width. There are no turnouts nor is there a cul-de-sac at its terminus. This road has only one ingress and egress. However, there is a large open area in front of the last residence suitable as a turnaround for fire apparatus.
2. Most of this road is within Fuel Model 1 grass. This fuel model is characterized by fine, very porous, and continuous herbaceous fuels that are cured or are nearly cured. These fine fuels govern fire spread. Fires burning in this fuel model are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber overstory is present, generally less than 1/3 of the area. Both annual and perennial grasses are included; grasslands and savannas are represented along with grass-shrub combinations that meet the above area constraint.
3. The dominate fuel model west of Tabeaud Road and west of the terminus of Snooks lane is fuel model 10. Fuel model 10 is the most hazardous fuel in the Sierra. In FM10, fires burn in the surface and ground fuels with greater fire intensity than the other timber litter models. Dead-down fuels include greater quantities of 3-inch (7.6-cm) or larger limbwood resulting from over maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees are more frequent in this fuel situation, leading to potential fire control difficulties. Any forest type may be considered if heavy down material is present; examples are insect- or disease-ridden stands, windthrown stands, overmature situations with deadfall, and aged light thinning or partial-cut slash. This fuel can be problematic to residents on any road intersecting Tabeaud during fires occurring on the normal summer weather patterns.
4. The average lot size is 1.2 acres. This area is classified as rural (see Chapter 3, Table 8 – Land Use Described by Tree and Housing Density). Because of the lot sizes, homes and other structures are

separated and do not represent threats to each other in a wildland fire. However, the structure density could affect wildfire behavior.

5. Address signage is poor throughout.
6. Compliance with defensible space requirements is generally good due to the surrounding fuel model.
7. The slope is almost flat and will not increase flame length.
8. This road is not served by hydrants. The nearest hydrant is approximately 600 feet south on west side of Tabeaud Road.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowner's
County standard road signs	Homeowner's
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Maintain and extend the Mt Zion Fuelbreak	CAL FIRE and Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	3%	FM1 (GR4)	2.15	High	Very High	Very High	Extreme	Moderate
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

MAUDERN LANE (PRIVATE ROAD)

1. Maudern is a narrow (less than 20) gravel road without turnouts.
2. There is only one egress and ingress. However, there is a space usable for a turnaround at its western terminus.
3. Lot sizes range for .38 acres to slightly over one acre in size. While these structures are unlikely to represent a threat to each other, they do add to the fuel load. Thus, the housing density for this area rates as suburban.
4. This area is represented by two fuel models, FM 2 and FM 10. Fuel Model 2 exists along the first two thirds of Maudern lane and Fuel Model 10 is along the last one-third of Maudern.
5. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
6. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a

large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.

7. The slope is almost flat and will not increase flame length.
8. Compliance with defensible space requirements is generally poor.
9. Address signage is poor and non-standard.
10. This area is not served by fire hydrants. The nearest hydrant is 250 feet south on Tabeaud Road.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowner's
County standard road signs	Homeowner's
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Maintain and extend the Mt Zion Fuelbreak	CAL FIRE and Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Suburban	No	3%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

MERIMAC LANE (PRIVATE ROAD)

1. This is a wide paved road (20 foot) without turnouts. This road has only one ingress and egress.
2. There is a turnaround at the western terminus that is suitable for use by heavy equipment.
3. This area is served by a single fire hydrant near its western terminus. The next nearest hydrant is located along Tabeaud Road approximately 400 feet north of the intersection of Tabeaud Road and Merimac Lane.
4. Compliance with defensible space regulations is generally poor.
5. Address signage is poor and non-standard.
6. The north three quarters of Merimac from Tabeaud Road is characterized by Fuel Model 1. The south side of Merimac Lane is in Fuel Model 10. The western terminus is both Fuel models 10 and 5.
7. Fuel model 1 is characterized by fine, very porous, and continuous herbaceous fuels that are cured or are nearly cured. These fine fuels govern fire spread. Fires are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber overstory is present, generally less than 1/3 of the area. Both annual and perennial grasses are included; grasslands and savannas are represented along with grass-shrub combinations that meet the above area constraint.
8. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.

9. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
10. Slopes are almost flat and will not have an adverse affect on fire behavior.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowner's
County standard road signs	Homeowner's
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Maintain and extend the Mt Zion Fuelbreak	CAL FIRE and Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	3%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate
			FM 5 (SH5)	6.5	Low	High	High	Extreme	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

PATEL LANE (PRIVATE ROAD)

1. Patel Road is paved dead-end road less than 20 feet in width and approximately 425 feet in length without a turnaround or cul-de-sac at its terminus.
2. The average lot size is less than an acre. The structure density rating for this area is suburban.
3. Slopes average less than 5% over most the area. Slope has no affect on fire behavior in this area.
4. Dominate fuel models in this are FM5and FM10.
5. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
6. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
7. Fuel load in FM5 is light while fuel load in FM10 is moderate.

8. The closest hydrant to this area is located at the intersection of Mamre Road and Tabeaud Road.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowner's
County standard road signs	Homeowner's/Road association
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Maintain and extend the Mt Zion Fuelbreak	CAL FIRE and Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	3%	FM 5 (SH5)	6.5	Low	High	High	Extreme	Moderate
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

MAMRE ROAD (PRIVATE ROAD)

1. Mamre Road is a short (575 feet) narrow paved street connecting Tabeaud Road with Lookout and Old Spring Roads.
2. Road signage is poor.
3. The slope surrounding Mamre Road is nearly flat.
4. Average parcel size is 0.87 acre. The structure density rating for this area is suburban.
5. Two fuel models dominate this area. They are FM 10 and FM 6.
6. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
7. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. Even hardwood slash that has cured can be considered.
8. There is a hydrant located at the intersection of Tabeaud Road and Mamre Road.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowner's
County standard road signs	Homeowner's/Road association
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Maintain and extend the Mt Zion Fuelbreak	CAL FIRE and Amador Fire Safe Council
Reduce fuel load on Mt Zion State Forest	CAL FIRE

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Suburban	No	0%	FM 6 (SH7)	6.9	Very High	Very High	High	Very High	Moderate
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

LOOKOUT ROAD (PRIVATE ROAD)

1. Lookout Road is a narrow partially paved road approximately 2885 feet in length. This road exits onto Mt Zion Road on the west and Mamre Road on the east.
2. The western end is dirt and of poor quality.
3. Roadside fuels are heavy in areas and could make evacuation difficult.
4. Slopes average 18 % and will affect fire behavior.
5. Average lot size is 1.2 acres. The structure density rating for this area is rural.
6. The dominate fuel model is FM6 with lesser areas of FM5 and FM10.
7. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
8. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. Even hardwood slash that has cured can be considered.
9. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.

10. Fuel load is moderate throughout.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowner's
County standard road signs	Homeowner's
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Maintain and extend the Mt Zion Fuelbreak	CAL FIRE and Amador Fire Safe Council
Reduce fuel load on Mt Zion State Forest	CAL FIRE

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	18%	FM 5 (SH5)	6.5	Low	High	High	Extreme	High
			FM 6 (SH7)	6.9	High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

LOOKOUT RIDGE LANE (PRIVATE ROAD)

1. Lookout Ridge Lane is a narrow partially paved dead-end road with no cul-de-sac at its terminus.
2. Compliance with defensible space regulations is good.
3. Slopes average 18%. Slopes this great will affect fire intensity and flame length.
4. Parcel size is 4.6 acres. The structure density rating for this road is rural.
5. Lookout Ridge Lane is 2124 feet in length.
6. Three fuel models are present. These are FM 5, FM 6, and FM 10.
7. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
8. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
9. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.

10. Fuel load ranges from light to moderate.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowner's
County standard road signs	Homeowner's/Road association
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Maintain and extend the Mt Zion Fuelbreak	CAL FIRE and Amador Fire Safe Council
Reduce fuel load on Mt Zion State Forest	CAL FIRE

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	18%	FM 5 (SH5)	6.5	Low	High	Low	High	Moderate
			FM 6 (SH7)	6.9	Moderate	High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

WOODROOF ROAD (PRIVATE ROAD)

1. Woodroof Road is a 1.5 lane paved dead-end road 659 feet in length with a cul-de-sac at its terminus. The cul-de-sac does not meet county standards.
2. Street signs are constructed from flammable materials.
3. Compliance with defensible space regulations is good.
4. Slopes average 13%. Slopes this steep will affect fire intensity and flame length.
5. Parcel size is 1.5 acres. The structure density rating for this road is rural.
6. Two fuel models are present, FM 6 and FM 10. In FM6 fuels, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
7. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
8. Fuel load ranges from light to moderate.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowner's
County standard road signs	Homeowner's/Road association
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Maintain and extend the Mt Zion Fuelbreak	CAL FIRE and Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	13%	FM 6 (SH7)	6.9	Moderate	High	High	Very High	Moderate
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

PINE GLEN TRAIL

1. Pine Glen Trail is a 1.5 lane paved dead-end road 318 feet in length without a cul-de-sac at its terminus. Street signs are constructed from flammable materials.
2. Compliance with defensible space regulations is good.
3. Slopes average 13%. Slopes this steep will affect fire intensity and flame length.
4. Parcel size is 1.1 acres. The structure density rating for this road is rural.
5. Two fuel models are present, FM 6 and FM 10. In FM6 fuels, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
6. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
7. Fuel load ranges from light to moderate.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowner's
County standard road signs	Homeowner's/Road association
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Maintain and extend the Mt Zion Fuelbreak	CAL FIRE and Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	13%	FM 6 (SH7)	6.9	Moderate	High	High	Very High	Moderate
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

OLD SPRING (PRIVATE ROAD)

1. Old Spring Road is a narrow paved dead-end road approximately 1623 long.
2. There are no turnouts along its length.
3. The dominate fuel model is FM 6. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
4. Crown closure is nearly complete in some areas. However, surface fuels have been largely eliminated by landowners. The greatest threat to this area is a crown fire. Crown fires in this fuel model require significant winds to sustain the movement from tree to tree. Eliminating the continuity of tree crowns (aerial fuel) by removing trees should reduce this potential significantly.
5. Slopes average 13%. These slopes will influence fire behavior.
6. Average lots size is 1.7 acres. This area rates as a rural structure density.
7. Most homes do not have easily read address signs. Existing address signs are non-standard and poorly placed for emergency services.
8. There are two standpipes along the roadside. These are properly color coded yellow.
9. Compliance with defensible space requirements is good throughout the area. Continued compliance is the best protection from wildfire. This fuel type does not carry fire well without the presence of surface fuels.

PROJECTS

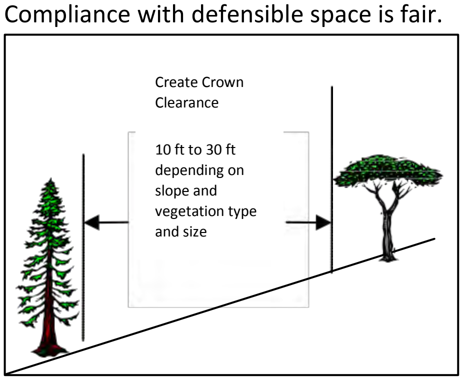
Project List	Method/responsible party
Standardized street and address signs	Homeowners/Road association
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible and creation of additional crown clearance	Homeowners
Provide turnouts every 400 feet along Old Spring Road	Road Association
Maintain and extend the Mt Zion Fuelbreak	CAL FIRE and Amador Fire Safe Council
Reduce fuel load on Mt Zion State Forest	CAL FIRE

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	13%	FM 6 (SH7)	6.9	Moderate	High	High	Very High	Moderate

MAUDE COURT (PRIVATE ROAD)

1. Maude is a short narrow paved dead-end road approximately 576 feet in length.
2. Maude begins at the end of Old Spring Road.
3. There are no turnouts along its length
4. There is one hydrant near the southern end of this road.
5. Poor address and road signage throughout.
6. Compliance with defensible space is fair.



7. The dominate fuel model is FM 6. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
8. Crown closure is nearly complete in some areas. However, surface fuels have been largely eliminated by landowners. The greatest threat to this area is a crown fire. Crown fires in this fuel model require significant winds to sustain the movement from tree to tree. Eliminating the continuity of tree crowns (aerial fuel) by removing trees should reduce this potential significantly.
9. Slopes average 13% and will affect fire behavior.
10. Average lot size is over one acre. The structural density rating for this area is rural.

PROJECTS

Project List	Method/responsible party
Standardized street and address signs	Homeowners/Road association
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Reduce crown continuity	Homeowners
Maintain and extend the Mt Zion Fuelbreak	CAL FIRE and Amador Fire Safe Council
Reduce fuel load on Mt Zion State Forest	CAL FIRE

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	13%	FM 6 (SH7)	6.9	Moderate	High	High	Very High	Moderate

COUNTRY COURT (PRIVATE ROAD)

1. Country Court is a narrow paved dead-end road approximately 421 feet in length.
2. The average lot size is 0.87 acres. The structure density rating for this area is suburban.
3. The dominate fuel model is FM6
4. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
5. Fuel load is moderate.
6. Slopes average 15%. Slopes of this magnitude will affect fire behavior.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowner’s
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Rehab and extend the Pine Acres Fuelbreak	CAL FIRE and Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Suburban	No	15%	FM 6 (SH7)	6,9	Moderate	High	High	Very High	Moderate

ELDEL ROAD (TABEAUD ROAD TO PECK)

1. This section of Eldel Road is a wide paved road capable of two-way traffic.
2. Three fuel models are present. These are FM 5, FM 6, and FM 10.
3. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
4. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
5. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
6. Fuel load is moderate in all models.
7. Slopes are gentle averaging less than 10%. Slope will not affect fire behavior.
8. One fire hydrant is located approximately half way between Tabeaud Road and Peck Court.
9. Parcel sizes average 6.4 acres. The structure density rating is rural. Structures will not affect fire behavior.
10. Address signage is nonstandard and not always easily seen.
11. Residents have multiple evacuation routes on to Tabeaud Road.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowner's
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Rehab and extend the Pine Acres Fuelbreak	CAL FIRE and Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	<10%	FM 5 (SH5)	6.5	Low	High	High	Very High	Moderate
			FM 6 (SH7)	6.9	Moderate	High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

PECK COURT

1. Peck Court is a very short road approximately 200 feet in length.
2. The dominate fuel model is FM 5.
3. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
4. Most of FM 5 fuel load in the Eldel Road area is moderate. The fuel load in the Peck Court area is heavier.
5. Compliance with defensible space is fair.
6. The average lot size is 0.63 acres. The structure density rating for this area is suburban.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowner's
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Rehab and extend the Pine Acres Fuelbreak	CAL FIRE and Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Suburban	Yes	<10%	FM 5 (SH5)	6.5	Low	High	High	Very High	High

LIVE OAK LANE

1. This is a narrow paved dead-end road approximately 730 feet in length.
2. There is a small cul-de-sac at its terminus. This cul-de-sac does not meet current State Fire Marshall standards for turnarounds.

3. Heavy concentrations of fuel along roadsides make evacuation difficult.
4. The dominate fuel model is FM 6.
5. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
6. Fuel load is heavier that the surrounding area. These heavier fuel loads will increase the intensity wildfires in the area.
7. Average lot size is 1.2 acres. The structure density rating for this area is rural.
8. There is a streambed (drainage) on the south side of the road between Live Oak Lane and Garbo Lane. Another streambed is located to the west of Live Oak Lane. Fuels appear heavier in these areas. These drainages will act as a chimney for wildfires approaching from the south and west. Chimneys funnel wildfire upslope with greater intensity and rate of spread. The greatest impact of the chimney effect will be on the homes at the end of the road and those on the south side of the road.
9. Slopes average over 36%. These steep slopes are a result of the presence of the two streambeds. Slopes of this magnitude will affect fire behavior as described in item 8.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowner's
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Create a turnout at the midpoint of the road	Homeowner's
Remove fuels along roadside	Homeowners/Amador Fire Safe Council
Rehab and extend the Pine Acres Fuelbreak	CAL FIRE and Amador Fire Safe Council
Maintain and extend the Mt Zion Fuelbreak	CAL FIRE and Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	36%	FM 6 (SH7)	6.9	High	Very High	High	Very High	High

GARBO LANE

1. Garbo Lane is a narrow partially paved road approximately 1414 feet in length.
2. There are no turnouts along its length.
3. Fuel load is heavier than the surrounding area.
4. The dominate fuel model is FM 10.
5. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood

resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.

6. This road is located near the bottom of a streambed (drainage). This drainage will act as a chimney for wildfires approaching from the south and west. Chimneys funnel wildfire upslope with greater intensity and rate of spread. The greatest impact of the chimney effect will be on the homes at the end of the road and those on the south side of the road.
7. Lot size averages 1.2 acres. The structure density rating for this area is rural.
8. The slope of the drainage is 14%. The sides of the drainage range from 27% to 37%. Slopes of this magnitude will affect fire behavior as described in item 6.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowner's
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Remove fuels along roadside	Homeowners/Amador Fire Safe Council
Rehab and extend the Pine Acres Fuelbreak	CAL FIRE and Amador Fire Safe Council
Maintain and extend the Mt Zion Fuelbreak	CAL FIRE and Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	36%	FM 10 (TU5)	7.0	High	Very High	High	Very High	High

EDEL (BETWEEN PECK AND KEVKIE)

1. Eldel is a wide paved road.
2. Compliance with defensible space regulations is fair.
3. The dominate fuel model is FM 5
4. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
5. Fuel loads are heavy behind the homes on either side of Eldel.
6. The average lot size is 0.94. The structure density rating for this area is suburban. However, these homes are located on the top a ridge and are in close proximity to each other. This close proximity may affect fire behavior as if this area was rated urban. Random measurements were taken of the distance between homes between. These ranged from 40 to 120 feet. Most lots are deeper than they are wide. Reducing fuel volumes in backyards will help protect these homes.
7. Slopes average 25%.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowner's
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Remove fuels along roadside	Homeowners/Amador Fire Safe Council
Rehab and extend the Pine Acres Fuelbreak	CAL FIRE and Amador Fire Safe Council
Maintain and extend the Mt Zion Fuelbreak	CAL FIRE and Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Suburban	Yes	25%	FM 5 (SH5)	6.5	Very High	Very High	Very High	Extreme	High

KEVKIE COURT

1. Kevkie Court is a short narrow paved road approximately 725 feet in length with drivable shoulders. There is a small cul-de-sac at its terminus.
2. Street sign is wooden and readable form one direction only.
3. Average lot size is 0.99 acres. The structure density rating for this area is suburban.
4. A hydrant is located at the intersection of Eldel Road and Kevkie Ct.
5. Two fuel models are present in this area. These are FM5 and FM10.
6. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
7. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
8. Fuel load is moderate in both models.
9. Slopes average 29% with the steepest slopes (45%) locate behind the parcels on the west and the flattest (11%) near the intersection of Eldel and Kevkie. Slopes of this magnitude will affect fire behavior. The greatest risk is to the homes on the west side of Kevkie near the end of the road.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowner's
County standard road signs	Homeowner's/Road association
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Maintain and extend the Pine Acres Fuelbreak	CAL FIRE and Amador Fire Safe Council
Maintain reduced fuel load on Mt Zion State Forest	CAL FIRE

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Suburban	Yes	29%	FM 5 (SH5)	6.5	Low	High	High	Very High	Moderate
			FM 10 (TU5)	7.0	Moderate	High	Moderate	High	

ELDEL (SOUTH OF KEVKIE)

1. Eldel is a narrow paved dead-end road approximately 950 feet in length.
2. Slopes average 27%. Slopes of this magnitude will affect fire behavior.
3. Average lot size is 1.7 acres. The structure density rating for this area is rural.
4. Lots are very deep (400 feet plus). Some residents appear to have reduced vertical and horizontal fuel continuity on their entire lot. Others have not. Reducing fuel load and continuity will provide protection to these homes during all but the most sever fire weather conditions. The PG&E right-away and generally, lighter fuels east of Tabeaud Road will reduce the intensity of wildfires approach from the east and southeast. Fire intensity will increase once it crosses the PG&E right away. Reducing fuel load and continuity will help reduce the fire intensity before it reaches the structures.
5. The dominate fuel model is FM5.
6. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
7. Fuel loads are moderate with the heaviest concentrations located downslope from the structures.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowner
County standard road signs	Homeowner/Road association
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowner
Maintain and extend the Pine Acres Fuelbreak	CAL FIRE and Amador Fire Safe Council
Maintain reduced fuel load on Mt Zion State Forest	CAL FIRE

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	27%	FM 5 (SH5)	6.5	Low	High	High	Very High	Moderate

KIMBER COURT

1. Kimber is a narrow paved dead-end road approximately 569 feet in length with a cul-de-sac at its terminus.
2. Heavy patches of brush on the south side of Kimber will make evacuation difficult.
3. Lot size averages 2.7 acres. The structure density rating for this area is rural.
4. There are no turnouts along this road.
5. Slopes average 27%. Slopes of this magnitude will affect fire behavior.
6. The dominate fuel model is FM5.
7. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
8. Fuel loads are moderate with the heaviest concentrations located downslope from the structures.
9. A small drainage paralleling the south side of Kimber will act as a chimney channeling fire up into the heaviest fuels. Fuel loads are lighter on the State Forest at the west end of Kimber.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowner
County standard road signs	Homeowner/Road association
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowner
Maintain and extend the Pine Acres Fuelbreak	CAL FIRE and Amador Fire Safe Council
Maintain reduced fuel load on Mt Zion State Forest	CAL FIRE

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	27%	FM 5 (SH5)	6.5	Low	High	High	Very High	Moderate

PALAMINO ROAD (PRIVATE ROAD)

1. Palamino Road between Eldel Rd and east of Pinto Road is a narrow paved road with turnouts approximately 1146 feet in length.
2. Lot size along this section of Palamino average 0.9 acres. The structure density rating for this section of Palamino is suburban. Structure density can affect fire behavior.
3. The dominate fuel model on the western half (between Eldel and Pinto) is FM5. The dominate fuel model east of Pinto is FM 10.
4. Palamino has a branch that runs south approximately 1000 feet. This section is a wide dirt and gravel roadway. There is a streambed (drainage) on the east side of this road section. This drainage will act as a chimney funneling a fire upslope, up drainage.
5. This section of Palamino appears to serve a single 9.29-acre parcel. The section of Palamino is rated as rural. It also is represented by two fuel models, FM5 and FM10
6. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
7. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
8. Fuel load is moderate throughout. However, there is a significant amount of Scotch Broom (*Cytisus scoparius)* along the roadsides. It is a major fire hazard. It is filled with oils that ignite easily, which especially risky along roadways.
9. Slopes vary from nearly flat to as high as 25 %. The average is 13%. Slopes above 105 will affect fire behavior.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowner's
County standard road signs	Homeowner's/Road association
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Eradicate Scotch Broom	Homeowner's/Road association
Maintain and extend the Pine Acres Fuelbreak	CAL FIRE and Amador Fire Safe Council
Maintain reduced fuel load on Mt Zion State Forest	CAL FIRE

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Suburban	No	25%	FM 5 (SH5)	6.5	Low	High	High	Very High	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

PINTO ROAD (PRIVATE ROAD)

Pinto Road appears to be a right away that exits onto Tabeaud Road from Palamino Road.

FRENCH GULCH ROAD (PRIVATE ROAD)

1. French Gulch Road is a long narrow dead-end road approximately 1838 feet in length.
2. The average parcel size is 9.9 acres. The structure density rating is rural.
3. The dominate fuel model is FM6.
4. Heavy concentrations of fuel along roadside will make evacuation difficult.
5. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
6. Fuel load is moderate over most of the surrounding area with the heavier fuel load being located on the eastern half. This portion of the road is located near the bottom of a streambed. This drainage will act as a chimney funneling a fire upslope, up drainage.
7. Most homes are located nearer to Tabeaud Road while little development is evident on the eastern half of this road.
8. Slopes average 14%. Slopes of this magnitude will affect fire behavior.
9. This area risk rating is high simple because of the heavy fuels below the structures. A completed fuel reduction project (Amador Fire Safe Council project) on Pine Acres Resort's property could be connected to an existing water agency fuel management project on the south. This would bring down the risk rating to moderate.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowner's
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Remove fuels along roadside	Homeowners/Amador Fire Safe Council
Rehab and extend the Pine Acres Fuelbreak	CAL FIRE and Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	14%	FM 6 (SH7)	6.9	Very High	Very High	High	Very High	High

TABEAUD COURT (PRIVATE ROAD)

1. Tabeaud Court is a narrow paved dead-end road approximately 618 feet in length. There is no cul-de-sac at its terminus.
2. The county's GIS parcel layer indicates the right away for this road is wider than its current width and there is space for a cul-de-sac.
3. Lot size average 0.49. This structure density rating for this area is urban. Urban structure density in validates fuel model predictions. Structure to structure ignition during wildfire may occur.
4. Slopes range from 7% to 15%. Slopes average 12%. Slopes of this magnitude will affect fire behavior.
5. The dominate fuel models are FM5 and FM6.
6. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
7. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
8. Fuel load is moderate within the parcels. Fuel load is heavier below the structures at the east end of Tabeaud Court. These heavy fuel concentrations extend north and east to Highway 88.
9. Extending the Pine Acres Fuelbreak between the Water Agency septic field and the managed fuels area behind Pine Acres Resort will reduce the wildfire risk substantially if combined with strict adherence to defensible space regulation.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowner's
Create cul-de-sac at end of road	Homeowner's
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Maintain and extend the Pine Acres Fuelbreak	CAL FIRE and Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Suburban	No	12%	FM 5 (SH5)	6.5	Low	High	High	Very High	High
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	

WILDWOOD COURT (PRIVATE ROAD)

1. Wildwood Court is a narrow paved dead-end road approximately 618 feet in length. There is a cul-de-sac at its terminus.
2. The county's GIS parcel layer indicates the right away for this road is wider than its current width and there is space for a cul-de-sac.
3. Lot size average 0.49. This structure density rating for this area is urban. Urban structure density in validates fuel model predictions. Structure to structure ignition during wildfire may occur.
4. Slopes range from 7% to 15%. Slopes average 12%. Slopes of this magnitude will affect fire behavior.
5. The dominate fuel models are FM5, FM6, and FM10.
6. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
7. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
8. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
9. Fuel load is moderate within the parcels. Fuel load is heavier below the structures at the east end of Wildwood Court. These heavy fuel concentrations extend north and east to Highway 88.
10. Extending the Pine Acres Fuelbreak between the Water Agency septic field and the managed fuels area behind Pine Acres Resort will reduce the wildfire risk substantially if combined with strict adherence to defensible space regulation.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowner's
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Manage fuels on green belt parcels	Homeowners/AFSC grant
Maintain and extend the Pine Acres Fuelbreak	CAL FIRE and Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Urban	Yes	12%	FM 5 (SH5)	6.5	Low	High	High	Very High	High
			FM 6 (SH7)	6.9	High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

BURNT CEDAR LANE (PRIVATE ROAD)

1. Burnt Cedar lane is a wide paved dead-end road approximately 1362 feet in length. There is cul-de-sac at its terminus.
2. Lot size average 0.58. This structure density rating for this area is urban. Urban structure density in validates fuel model predictions. Structure to structure ignition during wildfire may occur.
3. Slopes average 23%. Slopes of this magnitude will affect fire behavior.
4. The dominate fuel model is FM10.
5. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
6. Fuel load is moderate within the parcels. Fuel load is heavier below the structures at the east end of Burnt Cedar Lane. These heavy fuel concentrations extend north and east to Highway 88.
7. Three parcels non-residential parcels surround this area on the north, east, and south. These parcels join each other to form a potential fuel management zone (FMZ). Managing the fuel on these parcels and extending the Pine Acres Fuelbreak between the Water Agency septic field and the managed fuels area behind Pine Acres Resort will reduce the wildfire risk substantially if combined with strict adherence to defensible space regulation.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowner's
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Manage fuels on green belt parcels	Homeowners/Amador Fire Safe Council grant
Maintain and extend the Pine Acres Fuelbreak	CAL FIRE and Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Urban	Yes	23%	FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	High

VISTA SIERRA COURT (SEE BURNT CEDAR)

VISTA AMAROSA (SEE BURNT CEDAR)

HILLTOP ROAD (PRIVATE ROAD)

1. Hilltop Road is a narrow, steep paved dead-end road without turnouts approximately 1362 feet in length. There is no cul-de-sac at its terminus.
2. Lot size average 1.3 acres. This structure density rating for this area is rural.
3. Slopes average 23%. Slopes of this magnitude will affect fire behavior.
4. The dominate fuel model is FM10.
5. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
6. Fuel load is heavier than the surrounding area. Fuel load is heavier below the structures at the east end of Burnt Cedar Lane. These heavy fuel concentrations extend north and east to Highway 88.
7. Three parcels non-residential parcels surround this area on the north, east, and south. The ownership of these parcels is the Amador Water Agency, Wildwood Estates Homeowners, and the Bureau of Land Management. These parcels join each other to form a potential fuel management zone (FMZ). Managing the fuel on these parcels and extending the Pine Acres Fuelbreak between the Bureau of Land Management land on the south and the managed fuels area behind Pine Acres Resort on the north will reduce the wildfire risk substantially if combined with strict adherence to defensible space regulation.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowner's
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Manage fuels on green belt parcels	Homeowners/Amador Fire Safe Council grant
Maintain and extend the Pine Acres Fuelbreak	CAL FIRE and Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	23%	FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	High

HILLTOP COURT (SEE HILLTOP ROAD)

ARROWHEAD ROAD (PRIVATE ROAD)

1. Arrowhead Road is a wide paved dead-end road 1472 feet in length. There is cul-de-sac at its terminus.
2. Lot size average 0.57 acres. This structure density rating for this area is urban.
3. Slopes average 34%. Slopes of this magnitude will affect fire behavior.
4. Defensible space compliance is fair.
5. Road signs are poor.
6. The dominate fuel models are FM5, FM6, and FM10.
7. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
8. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
9. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.

10. Fuel load is moderate with heavier fuels concentrations in the draws on either side of Arrowhead Road west of the intersection of Arrowhead Road and Caribou Drive.
11. This area benefits from the PG&E right away on the south and the generally lighter fuels southeast of Tabeaud Road. These areas provide an opportunity to stop fires originating the Mokelumne River Canyon. However if such fires cross these lighter fuel load areas, the intensity and rates of spread will increase rapidly due to the slope, fuel model characteristics, and fuel load.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Install non-flammable standard street signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Maintain and extend the Pine Acres Fuelbreak	CAL FIRE and Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Urban	Yes	37%	FM 5 (SH5)	6.5	Low	High	High	Very High	High
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

CARIBOU DRIVE

1. Caribou Drive is a wide paved dead-end road 1472 feet in length. There is cul-de-sac at its terminus.
2. Lot size average 1.47 acres. This structure density rating for this area is rural.
3. Slopes average 34%. Slopes of this magnitude will affect fire behavior.
4. Defensible space compliance is good.
5. Road signs are poor.
6. The dominate fuel models is FM5.
7. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
8. Fuel load is moderate with heavier fuels concentrations in the draws on either side of Arrowhead Road west of the intersection of Arrowhead Road and Caribou Drive.
9. This area benefits from the PG&E right away on the south and the generally lighter fuels southeast of Tabeaud Road. These areas provide an opportunity to stop fires originating the Mokelumne River Canyon. However if such fires cross these lighter fuel load areas, the intensity and rates of spread will increase rapidly due to the slope, fuel model characteristics, and fuel load.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Install non-flammable standard street signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Maintain and extend the Pine Acres Fuelbreak	CAL FIRE and Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	34%	FM 5 (SH5)	6.5	High	Very High	Very High	Very High	High

TOYON ROAD AREA

AREA WIDE ISSUES

1. The entire area lacks standardized address signs. Many signs area wooden and will be destroyed during a fire.
2. Interior street signs (with the exception of Quartz Way) are likewise wooden and not likely to survive during a wildfire. Lack of road signs and address signs make it difficult for emergency service personnel to provide service during wildfires.
3. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands.

FIGURE 1 HOMEOWNER PROVIDED COMMUNITY WATER SOURCE

4. The fuel load on the surrounding area is quite heavy. This combination on slope, fuel type, and fuel load makes this entire area (Toyon Road, Quartz Drive, and Penrose Way) extremely vulnerable to damage from even small wildfires. This area is particularly vulnerable to fires starting near the intersection of Toyon and Highway 88 and from wildfires occurring during foehn wind conditions. Fires occurring under these conditions can block the only exit for the residents of all roads in the area.
5. The parcels served by roads in this area total two hundred sixty four acres in size. The average parcel size is eleven acres. For the purpose of assessing the impact of structures on the total fuel load, this area is classified a rural.

6. The large parcel sizes make this area ideal for a large multi-parcel fuel reduction project. This combined with the development of additional means of egress can provide this area with a significant improvement in fire safety and life safety.
7. Slopes range from 10 percent to greater than 30 percent.

TOYON PEAK (SEE TOYON ROAD)

TOYON ROAD (PRIVATE ROAD)

1. Narrow paved road without turnouts along most of its one and one-half mile length.
2. Toyon follows a ridge top for most of its length. The slopes along the upper half of this road are steep. The roadside fuels are heavy brush. This combination of fuels and slope make evacuation difficult and dangerous.
3. Water for firefighting is located at the intersection of Toyon Road and Quartz Drive. A landowner has placed a large metal tank with a discharge near the road's edge. This tank can supply up to 6400 gallons of water when full.

FIGURE 2 TYPICAL ROADSIDE FUELS

4. There is only one ingress and egress for Toyon and the roads branching off it. The landowner at the end of Toyon indicated there is a private road that could be improved to provide a second egress. This road crosses the landowner's property and connects to View Terrace Street
5. Lot size average 13 acres. The structural density rating for this area is rural.
6. The slopes below Toyon Road range from 20 to more than30 percent.
7. Fuel load on the south side of Toyon are heavy
8. Fuel load on the north side of Toyon are moderate.

PROJECTS

Project	Method/responsible party
Standardized address signs	Homeowner's association
County standard road signs	Homeowner's association
Periodic turnout (400' spacing)	Homeowner's association
Reduction of roadside fuels (40' per side)	Homeowner's association
Emergency egress from terminus of Toyon Road	Grant or homeowner's association
Emergency egress from Penrose	Grant or homeowners' associations
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Landscape scale fuel reduction	Grant

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	20-30%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Very High

QUARTZ WAY (PRIVATE ROAD)

FIGURE 3 - ROADSIDE FUELS

1. Quartz Way is a narrow dead-end dirt road slightly less than ¼ miles in length.
2. There are no turnouts nor is there a cul-de-sac at the terminus of Quartz Drive. However, the home at the end has sufficient area to turn around.
3. Heavy brush inhabits much of the length of Quartz Drive.
4. No water sources were observed.
5. Slopes below homes average 25%. These steep slopes will increase flame lengths.
6. Downslope fuel loads are heavy.

PROJECTS

Project	Method/responsible party
Standardized address signs	Homeowner's association
County standard road signs	Homeowner's association
Periodic turnout (400' spacing)	Homeowner's association
Reduction of roadside fuels (40' per side)	Homeowner's association
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Landscape scale fuel reduction	Grant

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	25%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Very High

Penrose Way (Private Road)

1. Penrose is a steep narrow dead-end dirt road (0.16 miles in length) without turnouts or a cul-de-sac at its terminus. There is a pre-school at the terminus that has a large parking area that can accommodate up to two or three fire apparatus at a time.

2. There are two 2500-gallon water tanks near the terminus. These tanks are not marked with a standard fire service placard but are clearly visible from the road.
3. According to a resident, there is a road easement between two parcels (APN 038450023000 and APN 038450005000). This road easement could be improved to provide an emergency exit from Penrose to Climax Road.
4. Average lot size is 2.8 acres. The structure density rating is rural.
5. Slopes average 19%. Slopes this steep will adversely affect fire behavior.

PROJECTS

Project	Method/responsible party
Standardized address signs	Homeowner's association
County standard road signs	Homeowner's association
Periodic turnout (400' spacing)	Homeowner's association
Reduction of roadside fuels (40' per side)	Homeowner's association
Emergency egress from Penrose	Grant or homeowners' associations
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Landscape scale fuel reduction	Grant

RELATIVE RISK FROM WILDFIRE

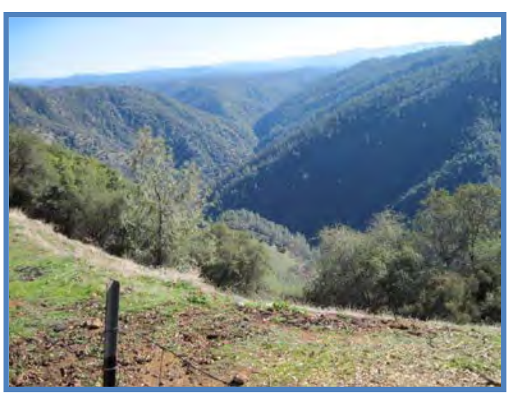
Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	19%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Very High

PINE ACRES (SOUTH)

AREA WIDE ISSUES

1. Compliance with defensible space requirements is very high throughout.
2. The dominate fuel models are FM5 and FM6. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. The fires are generally not very intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they

FIGURE 4 FUEL LOAD IN MOKELUMNE DRAINAGE



contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. Even hardwood slash that has cured can be considered.

3. Because the compliance with defensible space is so high, much of the fire behavior normally associated with these fuel models no longer apply. The greatest threat to this area is from foehn wind driven wildfires and the associated
4. The average lot size is 0.8 acres. Homes on these small lots will affect fire behavior. The closeness of one structure to another can cause adjoining structures to ignite by radiant heat from nearby burning structures. The average number of structures is greater than one per acre. Thus, this area rates as suburban. In suburban and urban areas, structures are a significant part of the fuel load.
5. The eastern edge of this subdivision overlooks the Mokelumne River drainage. This drainage contains a heavy fuel load of FM 5 and FM 6 fuels. In a foehn wind driven fire, this drainage will act as a funnel in which the fire will travel. CAL FIRE has recognized the potential of a damaging wildfire affecting this area and has constructed a fuelbreak along the eastern edge of the development. This fuelbreak was recently sprayed with herbicide to maintain its integrity.
6. The entire area is served by standpipes.
7. Address signs are non-standard and often constructed from combustible materials.

GOLD STRIKE ROAD

1. This is a paved private road between 20 and 24 feet in width and 4828 feet in length.
2. Street signs are constructed from combustible materials and are non-standard.
3. Fuels are light primarily due to very high compliance with defensible space regulations.
4. The average lot size is 0.66 acres with some lots as small as 0.33 acres. This structure density rating for this area is urban. Urban structure density invalidates fuel model predictions. Structure to structure ignition during wildfire may occur.
5. The dominate fuel model is FM6. This fuel model exists on the slopes of the Mokelumne River Canyon. Fuel model 5 exists among the homes. However, fuels have been modified by human activities to such an extent that this fuel model is likely not a factor.
6. Fuel load on the slopes below Gold Strike is heavy.
7. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
8. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
9. Slopes within the development are nearly flat and will have little effect on fire behavior. However, the slopes behind structures on the east side of Gold Strike are nearly 50 percent.
10. This combination of fuel, slope, and structure density gives this area its high-risk rating.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Install non-flammable standard street signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Maintain and extend the Pine Acres Fuelbreak	CAL FIRE and Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Urban	Yes	46%	FM 5 (SH5)	6.5	Very High	Very High	Very High	Extreme	High
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	

GOLD VIEW WAY

1. This is a paved private road between 20 and 24 feet in width and 1555 feet in length
2. Street signs are constructed from combustible materials and are non-standard.
3. Fuels are light primarily due to very high compliance with defensible space regulations.
4. The average lot size is 0.71 acres. This structure density rating for this area is urban. Urban structure density invalidates fuel model predictions. Structure to structure ignition during wildfire may occur.
5. The dominate fuel model is FM6. This fuel model exists on the slopes of the Mokelumne River Canyon. Fuel model 5 exists among the homes. However, fuels have been modified by human activities to such an extent that this fuel model is likely not a factor.
6. Fuel load on the slopes below Gold View Way is heavy.
7. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
8. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
9. Slopes within the development are nearly flat and will have little effect on fire behavior. However, the slopes behind structures on the east side of Gold Strike are nearly 50 percent.
10. This combination of fuel, slope, and structure density gives this area its high-risk rating.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Install non-flammable standard street signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Maintain and extend the Pine Acres Fuelbreak	CAL FIRE and Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Urban	Yes	46%	FM 5 (SH5)	6.5	Very High	Very High	Very High	Extreme	High
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	

GOLD NUGGET COURT

1. This is a dead-end paved private road between 20 and 24 feet in width and 482 feet in length. It has one ingress and egress.
2. Street signs are constructed from combustible materials and are non-standard.
3. Fuels are light primarily due to very high compliance with defensible space regulations.
4. This road does not have drivable shoulders.
5. Fuels are light primarily due to very high compliance with defensible space regulations.
6. Fuel load on the slopes below Gold Nugget Court is heavy.
7. The average lot size is 0.80 acres. This structure density rating for this area is urban. Urban structure density invalidates fuel model predictions. Structure to structure ignition during wildfire may occur.
8. The dominate fuel model is FM6. This fuel model exists on the slopes of the Mokelumne River Canyon. Fuel model 5 exists among the homes.
9. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
10. Slopes within the development are nearly flat and will have little effect on fire behavior. However, the slopes behind structures on the east side of Gold Strike are nearly 50 percent.
11. This combination of fuel, slope, and structure density gives this area its high-risk rating.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Install non-flammable standard street signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Maintain and extend the Pine Acres Fuelbreak	CAL FIRE and Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Urban	Yes	46%	FM 5 (SH5)	6.5	Very High	Very High	Very High	Extreme	High
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	

CLINTON BAR (SOUTH OF THE INTERSECTION OF GOLD STRIKE ROAD)

1. This is a paved private road between 20 and 24 feet in width and 2373 feet in length. Street signs are constructed from combustible materials and are non-standard.
2. Fuels are light primarily due to very high compliance with defensible space regulations.
3. There is no cul-de-sac at the southern end of this road. However, there is a circle turnaround and numerous driveways to provide turnarounds for fire apparatus.
4. Fuels are light primarily due to very high compliance with defensible space regulations.
5. Fuel load on the slopes below Clinton bar is heavy.
6. The average lot size is 0.90 acres. This structure density rating for this area is suburban. Suburban structure density invalidates fuel model predictions. Structure to structure ignition during wildfire may occur.
7. The dominate fuel model is FM6. This fuel model exists on the slopes of the Mokelumne River Canyon. Fuel model 5 exists among the homes.
8. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
9. Slopes within the development are nearly flat and will have little effect on fire behavior. However, the slopes behind structures on the east side of Clinton Bar are nearly 50 percent.
10. This combination of fuel, slope, and structure density gives this area its high-risk rating.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Install non-flammable standard street signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Maintain and extend the Pine Acres Fuelbreak	CAL FIRE and Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Suburban	Yes	46%	FM 5 (SH5)	6.5	Low	High	Moderate	High	High
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	

CLINTON BAR (NORTH OF THE INTERSECTION OF GOLD STRIKE ROAD)

1. This is a paved private road between 20 and 24 feet in width and 3523 feet in length. Street signs are constructed from combustible materials and are non-standard.
2. Fuels are light primarily due to very high compliance with defensible space regulations.
3. The average lot size is 0.92 acres. This structure density rating for this area is suburban. Suburban structure density invalidates fuel model predictions. Structure to structure ignition during wildfire may occur.
4. The dominate fuel model is FM6. This fuel model exists on the slopes of the Mokelumne River Canyon. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
5. Slopes within the development are nearly flat and will have little effect on fire behavior
6. This combination of fuel, slope, and structure density gives this area its moderate-risk rating.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Install non-flammable standard street signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Maintain and extend the Pine Acres Fuelbreak	CAL FIRE and Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Suburban	Yes	Flat	FM 5 (SH5)	6.5	Low	High	Moderate	High	Moderate
			FM 6 (SH7)	6.9	High	Very High	High	Very High	

DOVE COURT

1. This is a paved dead-end road between 20 and 24 feet in width and 319in length.
2. There is a small cul-de-sac at it terminus
3. Street signs are constructed from combustible materials and are non-standard.
4. Fuels are light primarily due to very high compliance with defensible space regulations.
5. The average lot size is 1.4 acres. This structure density rating for this area is rural.
6. Fuel load in the Mokelumne River canyon is heavy.
7. The dominate fuel model is FM6. This fuel model exists on the slopes of the Mokelumne River Canyon. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
8. Slopes within the development are nearly flat. However, the slope below this road is 51%.
9. This combination of fuel, slope, and structure density gives this area its high-risk rating.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Install non-flammable standard street signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Maintain and extend the Pine Acres Fuelbreak	CAL FIRE and Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	51%	FM 6 (SH7)	6.9	Very High	Very High	High	Very High	High

ROBIN LANE

1. This is a paved private road between 20 and 24 feet in width and 1740in length.
2. Street signs are constructed from combustible materials and are non-standard.

3. Fuels are light primarily due to very high compliance with defensible space regulations.
4. The average lot size is 1.1 acres. This structure density rating for this area is rural.
5. The dominate fuel model is FM6. This fuel model exists on the slopes of the Mokelumne River Canyon. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
6. Slopes within the development are 14%.
7. This combination of fuel, slope, and structure density gives this area its moderate-risk rating.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Install non-flammable standard street signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Maintain and extend the Pine Acres Fuelbreak	CAL FIRE and Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	Flat	FM 6 (SH7)	6.9	Very High	Very High	High	Very High	Moderate

QUAIL DRIVE

1. This is a paved dead-end road between 20 and 24 feet in width and 2884 feet in length.
2. Street signs are constructed from combustible materials and are non-standard.
3. Fuels are light primarily due to very high compliance with defensible space regulations.
4. This road does not have a qualifying cul-de-sac at its south end but multiple driveways and circular turnaround at end are sufficient for fire apparatus to use. Quail does have a cul-de-sac at its north terminus.
5. The average lot size is 1.06 acres. This structure density rating for this area is rural.
6. The dominate fuel model is FM6. This fuel model exists on the slopes of the Mokelumne River Canyon. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate

stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.

7. Slopes within the development are nearly flat and will have little effect on fire behavior
8. This combination of fuel, slope, and structure density gives this area its moderate risk rating.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Install non-flammable standard street signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Maintain and extend the Pine Acres Fuelbreak	CAL FIRE and Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	Flat	FM 6 (SH7)	6.9	Very High	Very High	High	Very High	Moderate

BIG OAK COURT

1. This is a paved private road between 20 and 24 feet in width and 2031 feet in length. It has one ingress and egress.
2. Street signs are constructed from combustible materials and are non-standard.
3. Fuels are light primarily due to very high compliance with defensible space regulations.
4. The length 2031 feet exceeds the current state fire standard for the average lot size along a dead-end road.
5. This road has drivable shoulders that add to the effective width of the road surface.
6. Fuels are light primarily due to very high compliance with defensible space regulations.
7. This road does not have a qualifying cul-de-sac at its south end but multiple driveways and circular turnaround at end are sufficient for fire apparatus to use. Quail does have a cul-de-sac at its north terminus.
8. The average lot size is 1.2 acres. This structure density rating for this area is rural.
9. The dominate fuel model is FM5. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
10. Slopes within the development are nearly flat and will have little effect on fire behavior
11. This combination of fuel, slope, and structure density gives this area its moderate-risk rating.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Install non-flammable standard street signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Maintain and extend the Pine Acres Fuelbreak	CAL FIRE and Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	Flat	FM 5 (SH5)	6.5	Low	High	Moderate	High	Moderate

DUNSHEE ROAD (PRIVATE ROAD)

1. This is a single lane paved dead-end road 1818 feet in length without a cul-de-sac at its terminus.
2. The street sign at the intersection of Tabeaud Road and Dunshee Road does not meet county standards.
3. Roadside fuels are present. Roadside fuels make evacuation difficult.
4. Fuel loads are moderate to very heavy.
5. The dominate fuel model is FM10. Fuel models FM5 and FM6 are also present. In fuel model FM10, Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. FM10 fuels are concentrated in the drainages west of this road.
6. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
7. In fuel model FM6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. Even hardwood slash that has cured can be considered FM6.
8. The average lot size is 3.4 acres. This structure density rating for this area is rural.
9. Slopes average 31%. Slopes this steep will adversely affect fire behavior.
10. This combination of fuel, slope, and structure density gives this area its high-risk rating.

11. This road is located on a ridge with very hazardous fuels located in the steep drainages on either side of the road. This combination of high-risk fuels and steep slopes makes this area most vulnerable to wildfires occurring in the drainages below the road during normal summer weather patterns.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Install county standard street sign	Homeowners
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	31%	FM 5 (SH5)	6.5	Low	High	Moderate	High	High
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

TIMBER RIDGE ROAD

1. This is a single lane dead-end gravel road 4478 feet in length without a cul-de-sac at its terminus. However, ample turnaround exists at the last home.
2. The street sign at the intersection of Tabeaud Road and timber Ridge Road meets county standard.
3. Roadside fuels are present. Roadside fuels make evacuation difficult.
4. Fuel loads are light to moderate.
5. The dominate fuel model is FM10. Fuel models FM5 and FM6 are also present. In fuel model FM10, Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. FM10 fuels are concentrated in the drainages west of this road.
6. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
7. In fuel model FM6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. Even hardwood slash that has cured can be considered FM6.
8. The average lot size is 4.4 acres. This structure density rating for this area is rural.

9. Slopes average 17%. Slopes this steep will adversely affect fire behavior.
10. Compliance with defensible space regulations is good.
11. This combination of fuel, slope, and structure density gives this area its high-risk rating.
12. This road is located on a ridge with very hazardous fuels located in the steep drainages on either side of the road. This combination of high-risk fuels and steep slopes makes this area most vulnerable to wildfires occurring in the drainages below the road during normal summer weather patterns.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	17%	FM 5 (SH5)	6.5	Low	High	Moderate	High	High
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

WILDFLOWER LANE

1. This is a very steep single lane dead-end gravel road 845 feet in length without a cul-de-sac at its terminus.
2. The street sign at the intersection of Tabeaud Road and timber Ridge Road meets county standard.
3. Roadside fuels are present. Roadside fuels make evacuation difficult.
4. Fuel loads are light to heavy.
5. The dominate fuel model is FM2. Fuel models FM5 and FM6 are also present. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
6. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
7. In fuel model FM6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not

as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. Even hardwood slash that has cured can be considered FM6.

8. The average lot size is 2.4 acres. This structure density rating for this area is rural.
9. Slopes average 20%. Slopes this steep will adversely affect fire behavior.
10. Compliance with defensible space regulations is poor.
11. This combination of fuel, slope, and structure density gives this area its high-risk rating.
12. This road is located on a ridge with very hazardous fuels located in the steep drainages on either side of the road. This combination of high-risk fuels and steep slopes makes this area most vulnerable to wildfires occurring in the drainages below the road during normal summer weather patterns.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	20%	FM 5 (SH5)	6.5	Low	High	Moderate	High	High
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

JACKSON PINES AREA

GENERAL

1. Slopes in Jackson Pines range from 11 to 29 percent. Slope affects fire behavior. Wildfires burning on steep slopes have longer flame length and greater fire intensity (See Chapter 3 Wildfire Environment, sections 3.3.3 and 3.3.5).
2. Fuels are generally light within the Jackson Pines subdivision west of Clinton Road.
3. Most fuels are described by fuel model FM6. Fire intensity and fast-spreading fires involve the foliage and live and dead fine woody material in the crowns of a nearly continuous secondary overstory. Stands of mature shrubs, six or more feet tall, such as California mixed chaparral. Besides flammable foliage, dead woody material in the stands significantly contributes to the fire intensity. Height of stands qualifying for this model depends on local conditions. A deep litter layer may also hamper suppression efforts. However, significant modification of the fuel bed was evident because of the high degree of compliance with defensible space requirements and wide roadways.
4. The entire area is well served by fire hydrants.
5. Very good compliance with defensible space requirements exists throughout this area.

6. The area covers approximately 64 acres with an average lot size of 1.3 acres. Based on the lot size this area is classified as rural.
7. Street signs are county standard signs.
8. Address signs are non-standard and constructed of various flammable materials.

ELLINWOOD WAY

1. It should be noted that there is a large fuel reduction project (approximately 32 acres) directly west of the end of Ellinwood Way. This project will help fire agencies dealing with wildfires approaching from the west.
2. Ellinwood is a wide paved county road.
3. There is not an approved cul-de-sac at its terminus.
4. This road has only one ingress and egress. However, it is very short and the lack of a second egress should not hamper evacuation.
5. The steepest slopes are 28%.
6. The average lot size is 1.4 acres. This average lot size combined with the 500-foot road length places this area well within the current state fire regulations for subdivisions.
7. Beyond the terminus of Ellinwood is a large open area that could serve as a turnaround or cul-de-sac during an emergency.
8. The dominate fuel model is FM6. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.

PROJECTS

Project list	Method/responsible party
Install standard address signs	Individual homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Manage fuels on BLM lands east of Jackson Pines	BLM and Amador Fire Safe Council
Maintain fuel management efforts on the west side of the subdivision.	Landowner with assistance from CAL FIRE and Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	28%	FM 6 (SH7)	6.9	Very High	Very High	High	Very High	Moderate

IRISH COURT

1. Irish court is a very short dead-end road of approximately 260 feet in length with a large cul-de-sac at its terminus.
2. Irish Court is a wide paved county road.
3. Slope below the cul-de-sac is 27 percent. Several small heavily wooded drainages were noted along side of the homes along the cul-de-sac. Flame length is increased with increased slope. Drainages act as chimneys that funnel wildfires upslope with increased intensity. Homeowners along this cul-de-sac will significantly improve the survivability of these homes by reducing surface and aerial fuels in these drainages.
4. Lot size (1.2 acres average size) and the road length place this street well within current state fire regulations for subdivisions. It should be noted that the average lot size is distorted by one lot of over 3 acres in size. Without this lot, the average lot size is less than an acre. Discarding the large lot, which is vacant, yields a suburban structure density rating. For the purpose of this analysis, this area is rate suburban.
5. Heavy fuel concentrations exist below the backyard of all homes. These fuels are FM5 and FM10.
6. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
7. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
8. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
9. This combination of fuel, slope, and structure density gives this area its moderate-risk rating.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Standardized address signs	Homeowners
Manage fuels on BLM lands east of Jackson Pines	BLM and Amador Fire Safe Council
Maintain fuel management efforts on the west side of the subdivision.	Landowner with assistance from CAL FIRE and Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Suburban	Yes	27%	FM 5 (SH5)	6.5	Low	High	Moderate	High	High
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

CLINTON PEAK COURT

1. Clinton Peak Court is a wide dead-end paved county road slightly less than 800 feet in length.
2. There is a large cul-de-sac at its terminus.
3. Homes along this road derive significant protection from the fuel management project at the end of Ellinwood.
4. Lot size average 1.2 acres. The road length and average lot size place this road within the current state regulations for subdivisions.
5. Slopes average 22%. Slopes this steep can adversely affect fire behavior.

PROJECTS

Project list	Method/responsible party
Install standard address signs	Individual homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Manage fuels on BLM lands east of Jackson Pines	BLM and Amador Fire Safe Council
Maintain fuel management efforts on the west side of the subdivision.	Landowner with assistance from CAL FIRE and Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	22%	FM 6 (SH7)	6.9	Very High	Very High	High	Very High	Moderate

JACKSON PINES DRIVE

1. Jackson Pines Drive is a looped road connecting to other roads in the development. This road provides two means of ingress and egress for the residents of the subdivision. It is a wide paved county standard road.
2. Average lot is 1.2 acres.
3. Slopes average 22%. Slopes this steep can adversely affect fire behavior.

PROJECTS

Project list	Method/responsible party
Install standard address signs	Individual homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners
Manage fuels on BLM lands east of Jackson Pines	BLM and Amador Fire Safe Council
Maintain fuel management efforts on the west side of the subdivision.	Landowner with assistance from CAL FIRE and Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	22%	FM 6 (SH7)	6.9	Very High	Very High	High	Very High	Moderate

GOLDEN OAKS COURT

1. Golden Oaks Court is a wide dead-end paved county road approximately 950 feet in length.
2. There is a large cul-de-sac at its terminus.
3. Lot size average 1.5 acres. The road length and average lot size place this road within the current state regulations for subdivisions.
4. Fuels near the terminus of this road are heavier than in most other areas of this development.
5. At the terminus of this road several long driveways where noted. The homes located on these driveways

PROJECTS

Project	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Maintain fuel management efforts on the west side of the subdivision.	Landowner with assistance from CAL FIRE and Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	27%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High
			FM 5 (SH5)	6.5	Low	High	Moderate	High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

CONTINI MINE ROAD

1. Contini Mine Road unmaintained dead-end dirt road approximately 2955 feet in length without a cul-de-sac at its terminus. There are no turnouts along this road.
2. Address signs are missing or difficult to read.
3. The street sign at the intersection of Contini Maine Road and West Clinton Road is of poor quality and difficult to see.
4. Fuel load is heavy with abundant roadside fuels. Roadside fuels make evacuation difficult during wildfires.
5. Three fuel models are present in equal amounts, FM5, FM6, and FM10. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
6. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
7. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
8. Slopes average 31%. Slopes this steep adversely affect fire behavior.
9. Lot size average 4.7 acres. The structure density rating for this road is rural.
10. Road length and average lot size place this road outside the current state fire safe regulations for subdivisions. Residents should immediately evacuate when threatened by wildfire.

PROJECTS

Project	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Create cul-de-sac at terminus of this road	Homeowners
Create turnouts every 400 feet	Homeowners
Install county standard street sign	Homeowners
Remove roadside fuels	Homeowners and Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	31%	FM 5 (SH5)	6.5	Low	High	Moderate	High	Very High
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

NARCISSUS ROAD (PRIVATE ROAD)

1. Narcissus Road is wide paved dead-end road 5887 feet in length without a cul-de-sac at its terminus. However, there is a driveway on the west side creating a modified hammerhead turnaround. This turnaround can handle one fire apparatus at a time.
2. Fuel load is light to heavy. The heaviest fuels are located along the first half of this road. The lighter fuels are located along the second half of the road.
3. The dominate fuel model is FM5. Other fuel models present are FM1, FM6, and FM10. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
4. In FM1 fuels, fire spread is governed by the fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber is present, generally less than one third of the area. Grasslands and savanna are represented along with stubble, grass-tundra, and grass-shrub combinations that met the above area constraint. Annual and perennial grasses are included in this fuel model.
5. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
6. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Fuels in this model are the least represented fuels and are primarily located near the end of Narcissus Road.
7. Lot size average 5.3 acres. This structure density rating for this area is rural.
8. Slopes average over 17%. Slopes will adversely affect fire behavior

PROJECTS

Project List	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

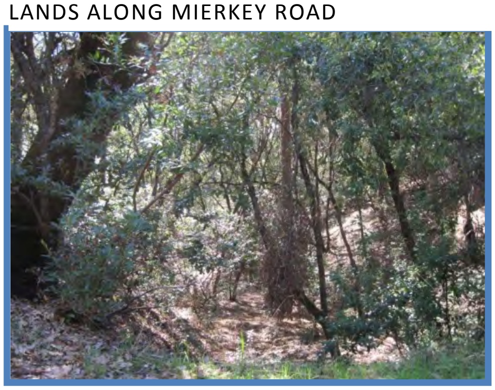
RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	17%	FM1 (GR4)	2.15	High	Very High	Very High	Extreme	High
			FM 5 (SH5)	6.5	Low	High	Moderate	High	
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

MIERKEY ROAD

1. A thirty-four acre BLM parcel lies directly east of the improved section of Mierkey Road. Mierkey Road bisects this parcel.
2. Fuel model FM 5 dominates this area. With the heavy concentrations located on the BLM parcel. Lesser concentrations of FM 6 are scattered throughout the same area.
3. Fires in fuel model FM 5 is characterized as generally carried in the surface fuels that are made up of litter cast by the shrubs and the grasses or forbs in the understory. The fires are generally not very intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material. Usually shrubs are short and almost totally cover the area. Young, green stands with no dead wood would qualify (laurel, vine maple, alder, or even chaparral, manzanita, or chamise).
4. In fuel model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. Even hardwood slash that has cured can be considered FM6.

FIGURE 5 - TYPICAL FUEL LOAD ON BLM LANDS ALONG MIERKEY ROAD



5. The threat to residents along Mierkey Court and Mierkey Road is from wildfires occurring during foehn wind conditions. Management of fuels on the BLM parcel can reduce this threat significantly.
6. The eastern terminus of Mierkey Road is within fuel model FM10. The fires burn in the surface

and ground fuels with greater fire intensity than the other timber litter models. Dead-down fuels include greater quantities of 3-inch (7.6-cm) or larger limbwood resulting from over maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees are more frequent in this fuel situation, leading to potential fire control difficulties. Any forest type may be considered if heavy down material is present; examples are insect- or disease-ridden stands, windthrown stands, overmature situations with deadfall, and aged light thinning or partial-cut slash.

7. The existence of FM10 at the east of the other fuels means that fires burning in this fuel bed during foehn wind events will affect the fire behavior in FM 5 and 6. The reason this will occur is due to the intensity of the fire in FM10 increases the likelihood that fire will be very intense when it reaches the FM 5 and FM 6 fuels. Fires of this intensity are likely to carry through these models especially during high winds.
8. Average parcel size is 8.1 acres. The structure density rating for this area is rural.
9. Slopes average 18%. Slopes this steep will adversely affect fire behavior.

PROJECTS

Project	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Reduce fuels on BLM parcel	Bureau of Land Management
Create a fuelbreak extending from Mt Zion west toward the BLM lands	CAL FIRE/Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	18%	FM 5 (SH5)	6.5	Low	High	Moderate	High	High
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

MIERKEY COURT

1. Fuel model FM 5 dominates this area. With the heavy concentrations located on the BLM parcel. Lesser concentrations of FM 6 are scattered throughout the same area.
2. Fires in fuel model FM 5 is characterized as generally carried in the surface fuels that are made up of litter cast by the shrubs and the grasses or forbs in the understory. The fires are generally not very intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material. Usually shrubs are short and almost totally cover the area. Young, green stands with no dead wood would qualify (laurel, vine maple, alder, or even chaparral, manzanita, or chamise).
3. In fuel model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not

as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. Even hardwood slash that has cured can be considered FM6.

4. The threat to residents along the new road section or along the unimproved road(s) section is from wildfires occurring during foehn wind conditions. Management of fuels on the BLM parcel can reduce this threat significantly.
5. A small amount of fuel model FM10 is also present. The fires burn in the surface and ground fuels with greater fire intensity than the other timber litter models. Dead-down fuels include greater quantities of 3-inch (7.6-cm) or larger limbwood resulting from over maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees are more frequent in this fuel situation, leading to potential fire control difficulties. Any forest type may be considered if heavy down material is present; examples are insect- or disease-ridden stands, windthrown stands, overmature situations with deadfall, and aged light thinning or partial-cut slash.
6. The existence of FM10 at the east of the other fuels means that fires burning in this fuel bed during foehn wind events will affect the fire behavior in FM 5 and 6. The reason this will occur is due to the intensity of the fire in FM10 increases the likelihood that fire will be very intense when it reaches the FM 5 and FM 6 fuels. Fires of this intensity are likely to carry through these models especially during high winds.
7. The average parcel size is 5.1 acres. Parcels this size normally creates a rural structure density. However, structures in this area are located near the front of each lot creating a more suburban structure density.
8. Compliance with defensible space regulations is very good.
9. Slopes average 18%. Slopes this steep will adversely affect fire behavior.

PROJECTS

Project	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Reduce fuels on BLM parcel	Bureau of Land Management
Create a fuelbreak extending from Mt Zion west toward the BLM lands	CAL FIRE/Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Suburban	Yes	18%	FM 5 (SH5)	6.5	Low	High	Moderate	High	Moderate
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

CLIMAX ROAD AREA

CLIMAX ROAD

1. Climax Road is a two lane county road that connects with Ridge Road and Highway 88. This road provides two safe exits for residences living along its length and for the roads that branch off it.
2. Multiple fuel models are represented along its length with FM 2 being the most dominate followed by FM 10. Fuel loading varies from moderate to heavy in FM 2 and from moderate to very heavy in FM 10. Additional fuel models present are FM 1 and FM 6.
3. Slopes are gentle on parcels abutting the road ranging from nearly flat to 17%.
1. While the fuel models indicate high-risk fuels, many homes fronting on Climax Road are in small areas of FM 1 (grass/meadow). In FM1, fire spread is governed by the fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber is present, generally less than one third of the area. Grasslands and savanna are represented along with stubble, grass-tundra, and grass-shrub combinations that met the above area constraint. Annual and perennial grasses are included in this fuel model.
2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
4. In fuel model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. Even hardwood slash that has cured can be considered FM6.
5. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Fuels in this model are the least represented fuels and are primarily located near the end of Narcissus Road
6. Much of the risk from wildfire can be mitigated by strict compliance with defensible space regulations. On parcels with stands of brush, oak, and/or mixed conifer, risk can be reduced by thinning the trees to increase the distance between tree crowns and by eliminating intermediate ladder fuels.
7. The parcels along Climax Road contain about 340 acres. The average lot size is 4.9 acres with the largest parcel 45.5 acres and the smallest less than .5 acres. Based on these statistics, the structure density rating for this area is rural.

PROJECTS

Project	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	0-17%	FM1 (GR4)	2.15	High	Very High	Very High	Extreme	Moderate
			FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

COOKIE WAY

This road appears in Amador County's GIS road layer and in Compass Maps map book for Amador County. The assessment team was unable to locate this road on the ground. This road is unrated.

PONDEROSA WAY (BETWEEN CLIMAX AND TAVES ROADS)

1. Ponderosa Way is a two lane county road that connects with Taves Road and Climax Road. This road provides two safe exits for residences living along its length.
2. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
3. Slopes average 18%. Slopes this steep will adversely affect fire behavior.
4. Fuel load is moderate to heavy. The heaviest concentrations are to the northeast between Ponderosa Way and Highway 88.
5. The average lot size is 2.4 acres. Based on these statistics, the structure density rating for this area is rural.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Maintain vertical and horizontal separation of fuels by eliminating surface fuels and pruning tree limbs 12 to 20 feet above the ground.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	18%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate

TAVES ROAD

1. Taves Road is a two lane county road that connects with Highway 88 and Climax Road. This road provides two safe exits for residences living along its length.
2. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
3. Fuel load is moderate to heavy. The heaviest concentrations are to the southeast between Ponderosa Way and Highway 88.
4. Slopes average 18%. Slopes this steep will adversely affect fire behavior.
5. The average lot size is 6.78 acres. Based on this lot size, the structure density rating for this area is rural.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Maintain vertical and horizontal separation of fuels by eliminating surface fuels and pruning tree limbs 12 to 20 feet above the ground.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	18%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate

BOURBON STREET

1. Bourbon Street is a wide dead-end gravel road with a large cul-de-sac at its terminus.
2. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
3. The fuel load is light to heavy. Fuel load is heaviest along the inner two-thirds of this road.
4. Heavy roadside fuel concentrations exist along portions of this road.
5. Slopes average nearly 15%. Slopes this steep will adversely affect fire behavior.
6. The average lot size is 3.17 acres. Based on this lot size, the structure density rating for this area is rural.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Reduce roadside fuels	Homeowners/Amador Fire Safe Council
Maintain vertical and horizontal separation of fuels by eliminating surface fuels and pruning tree limbs 12 to 20 feet above the ground.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	15%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate

CHASE ROAD (PRIVATE ROAD)

1. Chase Road is a narrow paved road without turnouts approximately 1790 feet in length connecting to Sugar Pine Road and Niles Way.
2. Street sign is constructed from wood and is a non-standard design.

3. Slopes are steep averaging 19%. Slopes this steep will affect fire behavior.
4. Parcels are large averaging 3.14 acres in size. Based this lot size, the structure density rating for this area is rural.
5. Niles Way and Kennedy Drive branch off Chase Road. These are very short streets. Kennedy Drive is more like a driveway than a road. Fuels are heavier along these two roads.
6. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
7. Significant areas represented by FM1 are present. Fire spread is governed by the fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber is present, generally less than one third of the area. Grasslands and savanna are represented along with stubble, grass-tundra, and grass-shrub combinations that met the above area constraint. Annual and perennial grasses are included in this fuel model.
8. Fuel load is light over most of this area.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Install standard non-flammable street sign	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	157%	FM1 (GR4)	2.15	High	Very High	Very High	Extreme	Moderate
			FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	

KENNEDY HILL (SEE CHASE ROAD)

NILLS WAY (SEE CHASE ROAD)

SUGAR PINE DRIVE (OFF OF CLIMAX ROAD)

1. Maps of this road suggest it is a through road connecting with Peterson Ranch Drive. However, it is a dead-end road approximately 1679 feet in length. This length is also misleading because it connects

to Chase Road that is 1790 feet in length. The total distance for residents evacuating from the end of Sugar Pine Drive is 3469 feet or two-thirds of a mile.

2. This is a narrow paved road.
3. Street sign is constructed from wood and is a non-standard design.
4. Slopes are steep averaging 24%. Slopes this steep will affect fire behavior.
5. Parcels are large averaging 3.5 acres in size. Based on this lot size, the structure density rating for this area is rural.
6. There is no sign warning that this road is a dead-end road off Climax. This could lead to emergency services being routed incorrectly.
7. Numerous small ravines will funnel wildfires occurring during normal summer weather patterns, upslope with increased intensity.
8. The dominate fuel model in the western half of Sugar Pine Drive is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
9. The eastern portion of Sugar Pine Drive is within fuel model FM10. The fires burn in the surface and ground fuels with greater fire intensity than the other timber litter models. Dead-down fuels include greater quantities of 3-inch (7.6-cm) or larger limbwood resulting from over maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees are more frequent in this fuel situation, leading to potential fire control difficulties. Any forest type may be considered if heavy down material is present; examples are insect- or disease-ridden stands, windthrown stands, overmature situations with deadfall, and aged light thinning or partial-cut slash.
10. Fuel load is moderate to heavy in this area.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Install sign indicating road is a dead-end	Homeowners
Install standard non-flammable street sign	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	24%	FM1 (GR4)	2.15	High	Very High	Very High	Extreme	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

REDBERRY LANE (PRIVATE ROAD)

1. Redberry is a narrow dead-end road approximately 1222 feet in length.
2. There is no cul-de-sac at its terminus.
3. Lot size for lots accessed off Redberry Lane average 4 acres. Based on this lot size, the structure density rating for this area is rural.
4. The street sign at the intersection of Climax and Redberry lane is made of flammable materials and is non-standard in design.
5. Slopes are very steep ranging from 20% to 45% with the average being 27%. Slopes this steep will adversely affect fire behavior.
6. FM2 is present over half this area. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
7. The remaining half is within fuel model FM10. The fires burn in the surface and ground fuels with greater fire intensity than the other timber litter models. Dead-down fuels include greater quantities of 3-inch (7.6-cm) or larger limbwood resulting from over maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees are more frequent in this fuel situation, leading to potential fire control difficulties. Any forest type may be considered if heavy down material is present; examples are insect- or disease-ridden stands, windthrown stands, overmature situations with deadfall, and aged light thinning or partial-cut slash.
8. Fuel load varies from moderate to heavy.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Install sign indicating road is a dead-end	Homeowners
Install standard non-flammable street sign	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	27%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

JUNE WAY (OFF CLIMAX ROAD)

1. June Way is a wide paved dead-end road approximately 2138 feet in length with a cul-de-sac at its terminus.
2. Fuel is light to moderate along most it length with heavier fuel loads occurring on the southeast side near its terminus.
3. Lot size average 2.4 acres. Based on this lot size, the structure density rating for this area is rural.
4. Slope averages 22%. Slopes this steep will adversely affect fire behavior.
5. The dominate fuel model is FM2. FM2 is present over half this area. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	22%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate

STELL COURT (OFF JUNE WAY)

1. Stell Court is a wide paved dead-end road approximately 434 feet in length with a cul-de-sac at its terminus.
2. Fuel is light to moderate along most it length with heavier fuel loads occurring on the east side near its terminus.
3. Lot size average 2.4 acres. Based on this lot size, the structure density rating for this area is rural.
4. Slope averages 22%. Slopes this steep will adversely affect fire behavior.
5. The dominate fuel model is FM2. FM2 is present over half this area. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	22%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate

GEN COURT (OFF JUNE WAY)

1. Gen Court is a wide paved dead-end road approximately 434 feet in length with a cul-de-sac at its terminus.
2. Fuel is light along most it length.
3. Lot size average 2.4 acres. Based on this lot size, the structure density rating for this area is rural.
4. Slope averages 22%. Slopes this steep will adversely affect fire behavior.
5. The dominate fuel model is FM2. FM2 is present over half this area. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	22%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate

SURREY JUNCTION AREA

BONAVERA WAY

1. Bonavera Way is a wide paved dead-end road approximately 625 feet in length with a cul-de-sac at its terminus.
2. Gentle slopes will not affect fire behavior.
3. The dominate fuel model is FM1. In Fuel Model 1, fire spread is governed by the fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber is present, generally less than one third of the area. Grasslands and savanna are represented along with stubble, grass-tundra, and grass-shrub combinations that met the above area constraint. Annual and perennial grasses are included in this fuel model.
4. Parcels average over 5 acres in size. The structural density rating for this area is rural.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	0%	FM1 (GR4)	2.15	High	Very High	Very High	Extreme	Low

TONY LANE

1. Tony Lane is a wide paved dead-end road 3451 feet in length without a cul-de-sac at its terminus.
2. Fuel load is light between Surrey Junction Lane and Sierra Court. Fuel load is heavy west of Sierra Court.
3. The dominate fuel model is FM2. FM2 is present over half this area. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
4. Brush was noted along roadsides.
5. Good compliance with defensible space throughout.
6. The average parcel size is 10.9 acres. The structural density rating for this area is rural.
7. This area is most vulnerable to wildfires burning during normal summer weather patterns (southwest winds).

8. Slopes are quite steep averaging 36%. The steepest slopes and heaviest fuels are on western two thirds of Tony Lane. Slopes this step will adversely affect fire behavior. The combination of slope, fuel type, and fuel load combine to rate the risk from wildfire as high.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Create cul-de-sac at terminus of this road	Homeowners
Roadside fuel removal (chipping)	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	36%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High

SIERRA COURT

1. Sierra Court is a wide paved dead-end road 3451 feet in length with a cul-de-sac at its terminus.
2. Fuel load is light around homes but is heavy on the slopes to the west of Sierra Court.
3. The dominate fuel model is FM2. FM2 is present over half this area. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
4. The average parcel size is 5.7 acres. The structural density rating for this area is rural.
5. Good compliance with defensible space throughout.
6. Slopes are quite steep averaging 19%. The steepest slopes (42%) and heaviest fuels are on the west side near the terminus of Sierra Court. Slopes this step will adversely affect fire behavior. The combination of slope, fuel type, and fuel load combine to rate the risk from wildfire as high.
7. This area is most vulnerable to wildfires burning during normal summer southwest winds.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	19%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High

SURREY COURT

1. Surrey Court is a wide paved dead-end road 871 feet in length with a cul-de-sac at its terminus.
2. Fuel load is light.
3. The dominate fuel model is FM2. . FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
4. The average parcel size is 4.6 acres. The structural density rating for this area is rural.
5. Slopes are quite steep averaging 13%. Slopes this steep will adversely affect fire behavior.
6. This area is most vulnerable to wildfires burning during normal summer southwest winds.
7. Compliance with defensible space is good throughout.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Individual homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	13%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High

EMILY WAY

1. Emily Way is a paved dead-end road 1992 feet in length with a turnaround at its terminus.
2. Fuel load is light.
3. Roadside fuels towards the upper end of Emily Way may adversely affect ingress and egress during a wildfire.
4. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires

where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.

5. The average parcel size is 25 acres. The structural density rating for this area is rural.
6. Slopes are quite steep averaging 27%. Slopes this steep will adversely affect fire behavior. The steepest slopes are west of the end of Emily. Fuels on these slopes are FM10.
7. The remaining half is within fuel model FM10. The fires burn in the surface and ground fuels with greater fire intensity than the other timber litter models. Dead-down fuels include greater quantities of 3-inch (7.6-cm) or larger limbwood resulting from over maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees are more frequent in this fuel situation, leading to potential fire control difficulties. Any forest type may be considered if heavy down material is present; examples are insect- or disease-ridden stands, windthrown stands, overmature situations with deadfall, and aged light thinning or partial-cut slash.
8. The large lot size and the ability to create extensive defensible space or manage fuels over a large area results in a moderate risk rating.
9. This area is most vulnerable to wildfires burning during normal summer southwest winds.
10. Compliance with defensible space is good throughout.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Reduce/eliminate roadside fuels	Homeowners/Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	27%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

SURREY PLACE

1. Surrey Place is a wide paved dead-end road 640 feet in length with a turnaround at its terminus.
2. Fuel load is light.
3. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs

and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.

4. The average parcel size is 4.75 acres. The structural density rating for this area is rural.
5. Slopes are quite steep averaging 27%. Slopes this steep will adversely affect fire behavior.
6. This area is most vulnerable to wildfires burning during normal summer southwest winds.
7. Compliance with defensible space is extremely good throughout.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	27%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Low

DAPPLE DRIVE

1. Dapple Drive is a wide paved county road connecting Surrey Junction Lane to Ridge Road.
2. Fuel loads are moderate to heavy.
3. Roadside fuels are heavy.
4. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. The average parcel size is 4.7 acres. The structural density rating for this area is rural.
6. Slopes are quite steep averaging 20%. Slopes this steep will adversely affect fire behavior.
7. This area is most vulnerable to wildfires burning during normal summer southwest winds.
8. Compliance with defensible space is good throughout.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	20%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate

DAPPLE COURT

1. Dapple Court is a wide paved dead-end road 574 feet in length with a turnaround at its terminus.
2. Fuel load is light.
3. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
4. The average parcel size is 4.7 acres. The structural density rating for this area is rural.
5. Slopes are quite steep averaging 23%. Slopes this steep will adversely affect fire behavior.
6. This area is most vulnerable to wildfires burning during normal summer southwest winds.
7. Compliance with defensible space is extremely good throughout.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	23%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Low

LORNA LANE

1. Lorna Lane is a narrow one unpaved road connecting Dapple Road to Surrey Junction Road.
2. Fuel load is moderate to heavy.
3. Roadside fuels are heavy. This brush combined with the narrow road width will make evacuation and ingress by fire difficult.
4. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-

thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.

5. The average parcel size is 5.28 acres. The structural density rating for this area is rural.
6. Slopes are gentle averaging 10%. Slopes this steep will not adversely affect fire behavior.
7. This area is most vulnerable to wildfires burning during normal summer southwest winds.
8. Compliance with defensible space regulations is variable.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Remove roadside fuels	Homeowners/Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	10%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High

SURREY JUNCTION LANE (BETWEEN RIDGE ROAD AND DAPPLE DRIVE - SEE CLOSEST CROSS STREET FOR MORE ACCURATE DESCRIPTION OF RISK)

1. Surrey Junction Lane is a wide paved county road connecting Dapple Road to Surrey Junction Road.
2. Fuel load is light to heavy.
3. Roadside fuels are present in some areas. However, the adjacent slopes and the road width combine to eliminate any ingress or egress difficulties associated with these fuels.
4. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. The average parcel size is 4.8 acres. The structural density rating for this area is rural.
6. Slopes are gentle averaging 10%. Slopes this steep will not adversely affect fire behavior.
7. This area is most vulnerable to wildfires burning during normal summer southwest winds.
8. Compliance with defensible space regulations is generally good.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	23%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate

SURREY JUNCTION LANE (NORTH OF DAPPLE DRIVE - SEE CLOSEST CROSS STREET FOR MORE ACCURATE DESCRIPTION OF RISK)

1. Surrey Junction Lane north of Dapple is a long (3062 feet) wide paved county road that dead-ends into a large cul-de-sac.
2. Fuel load is light to heavy.
3. Roadside fuels are present in some areas. The adjacent slopes and heavy fuel loads below and above the road will make or egress difficult during large wildfires.
4. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. There is fuel model FM10 below the road about mid-way. Fuel load in this model is heavy to very heavy. Wildfires in FM10 burn in the surface and ground fuels with greater fire intensity than the other timber litter models. Dead-down fuels include greater quantities of 3-inch (7.6-cm) or larger limbwood resulting from over maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees are more frequent in this fuel situation, leading to potential fire control difficulties. Any forest type may be considered if heavy down material is present; examples are insect- or disease-ridden stands, windthrown stands, overmature situations with deadfall, and aged light thinning or partial-cut slash.
6. The average parcel size is 6.2 acres. The structural density rating for this area is rural.
7. Slopes are steep averaging 34%. Slopes this steep adversely affect fire behavior.
8. This area is most vulnerable to wildfires burning during normal summer southwest winds and wildfires burning during foehn wind events.
9. Compliance with defensible space regulations is good. Homeowners should use their large lots to create defensible space well in excess of the mandatory distance.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Remove roadside fuels	Homeowners/Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	34%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

KC RANCHETTES

AREA WIDE ISSUES

1. Poor address signage throughout the area
2. Inconsistent street signage
3. Signs made of wood or placed on wooden posts
4. Water tank and swimming pool locations lack roadside fire service placards.
5. Heavy fuel loads along some roadsides
6. Electric security gates without emergency services overrides were noted

PIONEER DRIVE

See nearest cross street for appropriate rating.

NILES ROAD (PRIVATE ROAD)

1. Average lot size is 2.8 acres. This area rates as rural.
2. Niles is a narrow paved dead-end road.
3. There is no qualifying cul-de-sac at the terminus of this road. However, the circular driveway at its end can accommodate a few fire apparatus at a time.
4. Residents along this road demonstrate good compliance with defensible space requirements.
5. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.

6. Slopes are moderate averaging 9.5%. These slopes may influence on rate of spread or flame length.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	9.5%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate

WILDERNESS WAY (PRIVATE ROAD)

1. Wilderness is a wide paved dead-end road 2016 feet in length.
2. Fuel load along some the roadsides has been reduced by roadside chipping. However, heavy roadside fuel load exists near the terminus. These fuels can make evacuation difficult for residents living near the road's end.
3. No water sources for fire protection were observed.
4. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. Some areas near the intersection of Wilderness and Pioneer Drive are in fuel model 1 (FM1). Fire spread is governed by the fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber is present, generally less than one third of the area. Grasslands and savanna are represented along with stubble, grass-tundra, and grass-shrub combinations that met the above area constraint. Annual and perennial grasses are included in this fuel model.
6. Slopes average 13%. Slopes this steep can affect fire behavior.
7. Fuel loads are moderate.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Remove roadside fuels near terminus	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	13%	FM1 (GR4)	2.15	High	Very High	Very High	Extreme	Moderate
			FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	

NORTH HILL DRIVE (PRIVATE ROAD)

1. North Hill Drive intersects Wilderness Drive. It is a wide (>20 feet) paved dead-end road with a turnaround at its terminus. It is less than 700 feet in length.
2. Most homes comply with defensible space requirements.
3. Lot size average 5 acres. The structure density factor for this area is rural.
4. Some residents have planned well and provided water sources for fire protection with the proper fittings and valves.
5. Slopes are mild averaging 7.5%. These slopes should not have a significant influence of rate of spread or flame length.
6. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
7. Fuel loads are moderate with large areas of grass interspersed among the trees and brush.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	7.5%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate

WEST HILL DRIVE (PRIVATE ROAD)

1. West Hill Drive is a narrow dead-end paved road 1318 feet in length. The roadside fuels have been reduced by cutting and chipping.
2. Lot size averages over five acres. With regard to structure density, this area rates as rural
3. Slopes range from 13% to 24% percent with an average slope of 19%. These slopes can have an impact on rate of spread and flame length. Residents should remove ground and ladder fuels that are downhill from their homes. Trees should be limbed up to prevent crowning. Where tree crowns form a continuous canopy, enough trees should be removed to prevent torching of tree crowns from other trees.
4. Strict compliance with defensible space regulations should provide protection for most homes.
5. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
6. Fuel loads are moderate with large areas of grass interspersed among the trees and brush.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	19%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate

KIT LANE (PRIVATE ROAD)

1. Kit Lane is a wide paved road with two ingresses and egresses on to Pioneer Drive. It is 2707 feet in length.
2. Heavy fuel heavy fuel loads exits in the interior of the loop formed by Kit Lane and Pioneer Drive.
3. Heavy fuel exists along the roadside. These heavy fuels make evacuation difficult and make it easier for a wildfire to cross the road.
4. Slopes average 12%. The steep slopes can affect rate of spread and flame length.
5. Fuel load is moderate but heavier than most surrounding areas.
6. Lot size averages over five acres. With regard to structure density, this area rates as rural
7. A number of homes have gated driveways. Some of these gates do not have an emergency service override. If closed during emergencies, these gates may be damaged by fire or other emergency agencies entering the property.

7\. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires

where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.

8. Fuel loads are moderate with large areas of grass interspersed among the trees and brush. A large grassy area (fuel model 1) is located behind the northern most lots on Kit Lane. This grassy area will bring any fire approaching from the north to the ground. Residents of these lots should take advantage of this feature. Strictly complying with defensible space regulations will keep the fire on the ground when the fire reaches fuels (FM2) around the structures.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Reduce fuel loads within the loop formed by Kit Lane	Homeowners
Remove brush along roadsides	Homeowners/Amador Fire Safe Council
Provide fire service overrides on lock gates	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	12%	FM1 (GR4)	2.15	High	Very High	Very High	Extreme	Moderate
			FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	

OAK ROAD (PRIVATE ROAD)

1. Oak Road is a paved dead-end road 1463 feet in length
2. There is a turnaround at its interior terminus
3. Heavy fuels were noted along some of the roadside
4. Lot size averages over five acres. With regard to structure density, this area rates as rural
5. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
6. A large grassy area (fuel model 1) is located west of Oak Road. This grassy area will bring any fire approaching from the west to the ground. Residents should take advantage of this feature. Strictly complying with defensible space regulations will keep the fire on the ground when the fire reaches fuels (FM2) around the structures.
7. Slopes average 25%. These slopes will affect rate of spread and flame length.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Remove fuels along roadside	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	25%	FM1 (GR4)	2.15	High	Very High	Very High	Extreme	Moderate
			FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	

VIEW TERRACE (PRIVATE ROAD)

1. View terrace is a wide dead-end paved road approximately 3181 feet in length with a turnaround at its interior end.
2. Lot size average nine acres. With regard to structure density, this area rates as rural.
3. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
4. Fuel loads are much lighter than found in other areas of KC Ranchettes.
5. Slopes average 29%. Slopes this steep will adversely affect fire protection.
6. Compliance with defensible space regulations is good throughout the area. Much of the risk from wildfire can be eliminated by continued strict compliance with defensible space regulations.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	29%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate

VALLEY BOULEVARD (PRIVATE ROAD)

1. Valley Boulevard is a wide paved dead-end road with a turnaround at its terminus.
2. Fuel loading on the north side of the road is very light.
3. Average lot size is five acres. With regard to structure density, this area rates as rural.
4. Compliance with defensible space regulations is good throughout the area. Much of the risk from wildfire can be eliminated by continued strict compliance with defensible space regulations.
5. Slopes average 20%. Normally, slopes of this degree will affect increase flame length. However, there is more grass than brush or trees. Flame length should more closely mirror that of FM1 than FM2 on similar slopes.
6. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
7. A large grassy area (FM1) is located at the west end of Valley Boulevard. This area grassy area and generally low fuel loading along Valley Boulevard provides good protection from wildfires occurring during the normal summer weather patterns.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	20%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate

QUAIL TRAIL (PRIVATE ROAD)

1. Quail Trail is a wide paved dead-end road approximately 2427 feet in length with a turnaround at its terminus.
2. This area can be described as park like.
3. Average lot size is nearly six acres. With regard to structure density, this area rates as rural.
4. Slopes are gentle and nearly flat for most of the area.
5. The dominate fuel model along the length of this road is FM1. In FH1, fire spread is governed by the fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber is present, generally less than one third of the area. Grasslands and savanna are represented

along with stubble, grass-tundra, and grass-shrub combinations that met the above area constraint. Annual and perennial grasses are included in this fuel model.

6. There is some brush fuels (FM5 andFM6). The fuel loads of these fuels range from light to moderate and are separated from most structures by areas of grass (FM1). Fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush
7. Compliance with defensible space regulations is good throughout the area. Much of the risk from wildfire can be eliminated by continued strict compliance with defensible space regulations.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	Flat	FM1 (GR4)	2.15	High	Very High	Very High	Extreme	Low
			FM 5 (SH5)	6.5	Low	High	Moderate	High	
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	

CANAL WAY (PRIVATE ROAD)

1. Quail Trail is short dead-end road approximately 421 feet in length with a turnaround at its terminus.
2. Average lot size is nearly sixteen acres. With regard to structure density, this area rates as rural.
3. Slopes average 9% for most of the area. Some homes have very long driveways that terminate in areas with steep slopes (40%). Where homes are located on these steeper slopes the expected rates of spreader will be greater and flame lengths longer.
4. The dominate fuels are brush (FM6). The fuel loads of these fuels range from light to moderate. In fuel model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush
5. Compliance with defensible space regulations is good throughout the area. Much of the risk from wildfire can be eliminated by continued strict compliance with defensible space regulations.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	9%	FM 5 (SH5)	6.5	Low	High	Moderate	High	Moderate
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	

HIGHWAY 88 WEST AREA (WEST OF TOYON)

MOLFINO ROAD

1. Narrow paved road that exits on to Highway 88 at each end.
2. Very light fuels
3. Two fuels dominate this area, FM1 and FM2. In FM1, fire spread is governed by the fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber is present, generally less than one third of the area. Grasslands and savanna are represented
4. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. Compliance with defensible space regulations is good throughout the area. Much of the risk from wildfire can be eliminated by continued strict compliance with defensible space regulations.
6. Slope is flat.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	0%	FM1 (GR4)	2.15	High	Very High	Very High	Extreme	Low
			FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	

LOVERS LANE (PRIVATE ROAD)

1. Lovers Lane is a short narrow unpaved dead-end road serving one residence.
2. The parcel served by this road is over 64 acres in size.
3. This road is protected by a gate near its intersection with Pioneer Drive.
4. This road appears to be abandoned and long a driveway off Pioneer Drive now serves the sole structure on the parcel.
5. The sole structure on the parcel is in FM2 and appears to have adequate defensible space.

SUGAR LOAF ROAD

1. This is a narrow (<20 foot) partially paved dead-end road approximately 2727 feet in length without a cul-de-sac or turnaround at its terminus.
2. Average lot size is nearly 4 acres. With regard to structure density, this area rates as rural.
3. Slopes average 20%. These slopes will affect rate of spread and flame length.
4. The first half of its length is in fuel model 2 (FM2). FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions. In FM1, fire spread is governed by the fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber is present, generally less than one third of the area. Grasslands and savanna are represented
5. The second half is in fuel model is in fuel model 6 (FM6). Fuel loads are moderate near the road but get heavier farther from the road surface. In fuel model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush
6. A large area of fuel model 1 (grass) lies just north and east from the first half of the road length. This area of lighter fuel provides some degree of protection from wildfires burning under foehn wind conditions.
7. Construction of a fuelbreak from the end of Toyon Road to Highway 88 will provide the same level of protection for all homes along this road. This fuelbreak is a priority for CAL FIRE and the Amador Fire Safe Council (See agency project list in Chapter 8).
8. Heavy concentrations of brush along the roadsides will make evacuation during wildfires difficult.
9. The lack of turnouts along this road further complicates ingress and egress for fire agencies and residents.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Provide turnouts at 400 foot intervals	Homeowners
Remove brush along roadsides	Homeowners/Amador Fire Safe Council
Create a cul-de-sac at the terminus of this road	Homeowners
Create a fuelbreak between Toyon Road and Sugar Pine Road	CAL FIRE and Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	20%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	

MT ZION ROAD AREA

MT ZION ROAD

See nearest cross street for the appropriate risk rating.

PAELO LANE

1. Paelo Lane is short narrow dead-end paved road approximately 305 feet in length without a cul-de-sac at its terminus. There is some space at this road's terminus to maneuver fire apparatus.
2. Average lot size is 1.9 acres. With regard to structure density, this area rates as rural.
3. The dominate fuel model is FM10. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
4. While this is a dead-end road, there is an egress to highway 88 through the church parking lot at the end of the road.
5. There are ample turnouts (drivable shoulders) along the road.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Remove brush along roadsides	Homeowners/Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	9%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

CEDAR PINES LANE

1. Cedar Pines Lane is short narrow dead-end paved road approximately 961 feet in length.
2. Average lot size is 1.48 acres. With regard to structure density, this area rates as rural.
3. Cedar Pines Lane averages 1.5 lanes in width.
4. The first half its length (from Mt Zion) is in fuel model FM10. The fuel load is heaviest along this section.
5. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
6. The second half is in fuel model FM2. Fuel load is light to moderate along this section. There is an abundance of roadside fuels. Some of these fuels are Scotch Broom, which is highly flammable non-native vegetation.
7. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
8. While this is a dead-end road, there is an egress to highway 88 through the church parking lot at the end of the road.
9. There are ample turnouts along the road.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Remove brush along roadsides	Homeowners/Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	9%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

NORTH CEDAR LANE (PRIVATE ROAD)

1. Poor street signage (wooden sign vulnerable to destruction from wildfire)
2. One lane paved approximately 1033 feet in length.
3. Brush along roadside can cause evacuation problems.
4. This road appears to be a dead-end road but it loops to South Cedar Lane.
5. No cul-de-sac at road's terminus but large private parking lot on the last parcel provides sufficient room for a turnaround for fire apparatus.
6. Compliance with defensible space is fair.
7. Lot size average 1.47 acres. With regard to structure density, this area rates as rural.
8. Lots on the south side appear to have ingress and egress on both North Cedar Land and South Cedar Lane.
9. Slopes vary from 9% to 20% with the average being 16%. Slopes will adversely affect fire behavior.
6. The dominate fuel model is FM10. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
7. Fuel load is heavy on surrounding parcels.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Standardized street sign	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Remove brush along roadsides	Homeowners/Amador Fire Safe Council
Maintain vertical and horizontal separation of fuels by eliminating surface fuels and pruning tree limbs 12 to 20 feet above the ground.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	16%	FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	High

SOUTH CEDAR LANE

1. Poor street signage (wooden sign vulnerable to destruction from wildfire)
2. One lane paved approximately 1595 feet in length with drivable shoulders.
3. Brush along roadside can cause evacuation problems.

4. This road appears to be a dead-end road but it loops to North Cedar Lane.
5. Compliance with defensible space is fair.
6. Lot size average 1.62 acres. With regard to structure density, this area rates as rural.
7. Lots on the south side appear to have ingress and egress on both North Cedar Land and South Cedar Lane.
8. Slopes vary from 18% to 39% with the average being 26%. Slopes will adversely affect fire behavior.
9. Three fuel models are present in equal proportions. These are FM2, FM6, and FM10.
10. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
11. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
12. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Standardized street sign	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Remove brush along roadsides	Homeowners/Amador Fire Safe Council
Maintain vertical and horizontal separation of fuels by eliminating surface fuels and pruning tree limbs 12 to 20 feet above the ground.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	26%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

NEILSON ROAD (PRIVATE ROAD)

1. Poor street signage (wooden sign vulnerable to destruction from wildfire)
2. One lane narrow dead-end paved road approximately 892 feet in length without turnouts or cul-de-sac.
3. No turnout at road's terminus but large private parking lot on the last parcel provides sufficient room for a turnaround for fire apparatus.
4. Compliance with defensible space good along the first half of this road's length
5. Lot size average 1.62 acres. With regard to structure density, this area rates as rural.
6. Lots on the south side appear to have ingress and egress on both North Cedar Land and South Cedar Lane.
7. Slopes vary from 18% to 39% with the average being 26%. Slopes will adversely affect fire behavior.
8. The dominate fuel model is FM6. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Standardized street sign	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Remove brush along roadsides	Homeowners/Amador Fire Safe Council
Maintain vertical and horizontal separation of fuels by eliminating surface fuels and pruning tree limbs 12 to 20 feet above the ground.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	26%	FM 6 (SH7)	6.9	Very High	Very High	High	Very High	High

OAK LANE (PRIVATE ROAD)

1. Good street sign
2. One lane narrow dead-end paved road approximately 1871 feet in length without turnouts.
3. No cul-de-sac at road's terminus

4. Lot size average 3.7 acres. With regard to structure density, this area rates as rural. Lot size average is influenced by a single fifteen-acre parcel bordering Mt Zion Road. Without this lot, lot size averages 2 acres. The fuel load on the fifteen-acre lot is heavy. Significant protection for residences on Oak Lane and Mt Zion Road can be achieved by reducing the fuel load on this single parcel.
5. Slopes average over 10%. Slopes will adversely affect fire behavior.
6. Three fuel models are present in equal proportions. These are FM5, FM6, and FM10.
7. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
8. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
9. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
10. Fuel load in all models is heavy.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Manage fuels on large 15 acre parcel	Amador Fire Safe Council grant
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Remove brush along roadsides	Homeowners/Amador Fire Safe Council
Maintain vertical and horizontal separation of fuels by eliminating surface fuels and pruning tree limbs 12 to 20 feet above the ground.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	10%	FM 5 (SH5)	6.5	Low	High	Moderate	High	High
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

IRISHTOWN ROAD AREA

PROSPECT STREET

1. Good street sign
2. One lane narrow dead-end paved road approximately 729 feet in length.
3. Lot size average 0.33 acres. This structure density rating for this area is suburban. Suburban structure density invalidates fuel model predictions. Structure to structure ignition during wildfire may occur.
4. Slopes average over 10%. Slopes will adversely affect fire behavior.
5. Two fuel models are present in equal proportions. These are FM6, and FM10. Additionally, some of the fuel in this area has been so modified that it no longer fits into any of the fuel models.
6. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
7. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
8. Fuel load in all models is moderate.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Maintain vertical and horizontal separation of fuels by eliminating surface fuels and pruning tree limbs 12 to 20 feet above the ground.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Suburban	Yes	10%+	FM 6 (SH7)	6.9	Very High	Very High	High	Very High	Moderate
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

HOOPER COURT

1. Wide dead-end paved road approximately 267 feet in length with cul-de-sac at road's terminus
2. Lot size average 0.33 acres. This structure density rating for this area is suburban. Suburban structure density invalidates fuel model predictions. Structure to structure ignition during wildfire may occur.
3. Slopes average over 10%. Slopes will adversely affect fire behavior.
4. Two fuel models are present in equal proportions. These are FM6, and FM10. Additionally, some of the fuel in this area has been so modified that it no longer fits into any of the fuel models.
5. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
6. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
7. Fuel load in all models is light to moderate.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Maintain vertical and horizontal separation of fuels by eliminating surface fuels and pruning tree limbs 12 to 20 feet above the ground.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Suburban	Yes	10%+	FM 6 (SH7)	6.9	Very High	Very High	High	Very High	Moderate
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

CEDAR DRIVE

1. Single lane paved road approximately 1058 feet in length with a large turnaround at road's terminus.
2. Heavy brush along some roadsides makes evacuation during wildfire difficult and dangerous. This brush can also make it difficult for fire fighters to enter the area.

3. Some Scotch Broom exists along roadside. This invasive non-native species is highly flammable.
4. Lot size average 2.0 acres. This structure density rating for this area is rural.
5. Slopes average over 13%. Slopes will adversely affect fire behavior.
6. The dominate fuel model is FM10. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
7. Fuel load is heaviest on the lots lining the southwest side of the road.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Remove Scotch Broom and brush from roadside	Homeowners (tool available from Amador Fire Safe Council)
Maintain vertical and horizontal separation of fuels.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	13%	FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	Moderate

HOOPER DRIVE (SEE CEDAR DRIVE)

BAUMANN ROAD

1. Single lane paved road approximately 611 feet that loops onto Pine View Drive.
2. Heavy brush along some roadsides makes evacuation during wildfire difficult and dangerous. This brush can also make it difficult for fire fighters to enter the area.
3. Lot size average 2.60 acres. This structure density rating for this area is rural.
4. Slopes average over 16%. Slopes will adversely affect fire behavior.
5. The dominate fuel model is FM6. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
6. Fuel load is moderate. The heaviest fuels are located northwest of this road.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Maintain vertical and horizontal separation of fuels by eliminating surface fuels and pruning tree limbs 12 to 20 feet above the ground.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	Yes	16%	FM 6 (SH7)	6.9	Very High	Very High	High	Very High	Moderate

PINE VIEW DRIVE

1. Very narrow one lane paved road approximately 832 feet that loops onto Baumann Road.
2. While this road is very narrow, there are turnouts along its length.
3. The street sign is wooden and may be destroyed in a wildfire.
4. Heavy brush along some roadsides makes evacuation during wildfire difficult and dangerous. This brush can also make it difficult for fire fighters to enter the area.
5. Lot size average 1.16 acres. This structure density rating for this area is rural.
6. Slopes average over 26%. Slopes will adversely affect fire behavior.
7. The dominate fuel model is FM6. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
8. Fuel load is moderate. The heaviest fuels are located northwest of this road.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Remove roadside brush	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Replace street sign with standardized street sign	Homeowners
Maintain vertical and horizontal separation of fuels by eliminating surface fuels and pruning tree limbs 12 to 20 feet above the ground.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	Yes	26%	FM 6 (SH7)	6.9	Very High	Very High	High	Very High	Moderate

MURPHY ROAD

1. One lane paved dead-end road approximately 587 feet in length without a cul-de-sac but does have a circular drive at it terminus.
2. Lot size average 0.6 acres. This structure density rating for this area is suburban.
3. Slopes average over 9%. Slopes will not adversely affect fire behavior.
4. The dominate fuel model is FM6. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
5. Fuel load is moderate.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Maintain vertical and horizontal separation of fuels by eliminating surface fuels and pruning tree limbs 12 to 20 feet above the ground.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Suburban	Yes	9%	FM 6 (SH7)	6.9	Very High	Very High	High	Very High	Moderate

EATON ROAD

1. One lane paved dead-end road approximately 394 feet in length without a cul-de-sac.

2. Lot size average 0.6 acres. This structure density rating for this area is suburban.
3. Slopes average over 9%. Slopes will not adversely affect fire behavior.
4. The dominate fuel model is FM6. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
5. Fuel load is moderate.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Maintain vertical and horizontal separation of fuels by eliminating surface fuels and pruning tree limbs 12 to 20 feet above the ground.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Suburban	Yes	9%	FM 6 (SH7)	6.9	Very High	Very High	High	Very High	Moderate

KYLE COURT (COUNTY ROAD)

1. Kyle Court is a very short (87 feet) county road that is essentially a large cul-de-sac servicing a small number of parcels.
2. Fuel load is light to moderate.
3. The dominate fuel model is FM6. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
4. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
5. Lot size average 4.8 acres. This structure density rating for this area is rural.
6. Slopes average over 17%. Slopes will adversely affect fire behavior

PROJECTS

Project List	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	17%	FM 5 (SH5)	6.5	Low	High	Moderate	High	High
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

BONNEFOY ROAD (PRIVATE ROAD)

1. Bonnefoy Road is a narrow paved dead-end road 2663 feet in length with a very small cul-de-sac at its terminus.
2. The street sign is not county standard.
3. Fuel load is heavy.
4. The dominate fuel model is FM10. Some fuel model FM6 is also present. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
5. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
6. Lot size average 6.6 acres. This structure density rating for this area is rural.
7. Slopes average over 30%. Slopes will adversely affect fire behavior

PROJECTS

Project List	Method/responsible party
Install county standard street sign	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	30%	FM 6 (SH7)	6.9	Very High	Very High	High	Very High	Moderate
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

LOWENTHAL ROAD

1. Lowenthal Road is a very short narrow paved dead-end road 539 feet in length without turnouts or a cul-de-sac at its terminus. However, there is sufficient turnaround space in the yard of the last residence.
2. Heavy concentrations of roadside fuels exist along this road's length.
3. Fuel load is heavy.
4. The dominate fuel models is FM10. Some fuel model FM6 is also present. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
5. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
6. Lot size average 19.6 acres. This structure density rating for this area is rural.
7. Slopes average less than 5%. Slopes will not adversely affect fire behavior

PROJECTS

Project List	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	5%	FM 6 (SH7)	6.9	Very High	Very High	High	Very High	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

MIERKEY ROAD (NORTH)

1. This section of Mierkey Road is a narrow paved dead-end road 1954 feet in length without turnouts or a cul-de-sac at its terminus. This road has no turnouts to allow vehicles to pass in opposite directions. There is barely enough room at the end for one engine to turnaround.
2. Heavy concentrations of roadside fuels exist along this road's length.
3. Fuel load is moderate to heavy.
4. The dominate fuel models are FM5 and FM6. Some fuel model FM10 is also present. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
5. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
6. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
7. Lot size average 6.3 acres. This structure density rating for this area is rural.
8. Slopes average over 26%. Slopes will adversely affect fire behavior

PROJECTS

Project List	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Create turnouts every 400 feet	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	26%	FM 5 (SH5)	6.5	Low	High	Moderate	High	High
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

PITTS COURT

1. Pitts Court is a gravel dead-end road 1172 feet in length without a cul-de-sac at its terminus. However, there is a large area where fire apparatus can turn around.
2. Fuel load is moderate to heavy.
3. This road has no street sign at its intersection with Pitts Drive. There is a small wooden sign posted on a tree.
4. The dominate fuel models are FM5, FM6, and FM10. The dominate fuel model is FM6. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
5. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
6. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
7. Lot size average 3.2 acres. This structure density rating for this area is rural.
8. Slopes average over 24%. Slopes will adversely affect fire behavior

PROJECTS

Project List	Method/responsible party
Install county standard street sign	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	24%	FM 5 (SH5)	6.5	Low	High	Moderate	High	High
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

PITTS DRIVE

1. Pitts Drive is a paved road 1879 feet in length connecting Spagnoli Mine Road and Tank Court. There are no turnouts along its length.
2. Fuel load is moderate to heavy.
3. There are roadside fuels along the middle and upper portion of this road. Roadside fuels make evacuation difficult during wildfires.
4. This road has no street sign at its intersection with Spagnoli Mine Road, Tank Court, Tank Drive, or Pitts Court.
5. The dominate fuel models are FM5, FM6, and FM10. These fuel models occur in equal amounts. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
6. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
7. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
8. Lot size average 2 acres. This structure density rating for this area is rural.
9. Slopes average over 24%. Slopes will adversely affect fire behavior.
10. Compliance with defensible space regulations is fair.

PROJECTS

Project List	Method/responsible party
Install county standard street signs	Homeowners
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	24%	FM 5 (SH5)	6.5	Low	High	Moderate	High	High
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

SPAGNOLI MINE ROAD (COUNTY ROAD)

1. Spagnoli Mine Road forms a long loop (8422 feet) starting near the southern end of Irishtown Road and reconnecting to Irishtown Road just north of the intersection of Pine View Drive and Irishtown Road. .
2. Fuel load is heavy along most of the length of this road.
3. The dominate fuel model is FM10. Fuel Model 10 represents the most hazardous Fuel Model. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
4. Other fuel models present are FM 5 and FM6. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
5. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
6. Lot size average 4.6 acres. This structure density rating for this area is rural.
7. Slopes average over 27%. Slopes will adversely affect fire behavior.

PROJECTS

Project List	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	27%	FM 5 (SH5)	6.5	Low	High	Moderate	High	High
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

IRISHTOWN ROAD (COUNTY ROAD)

1. Irishtown Road connects Highway 88 in Pine Grove to Highway 88 near the intersection of Highway 88 and Sugar Loaf Road. This is a wide paved two lane county road. Irishtown Road parallels a drainage for most its length.
2. Fuel load is heavy along most of the length of this road.
3. The dominate fuel models are FM5 and FM10 in equal amounts. Fuel Model 10 represents the most hazardous Fuel Model. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
4. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
5. Lot size average 7 acres. This structure density rating for this area is rural.
6. Slopes average over 18%. Slopes will adversely affect fire behavior.

PROJECTS

Project List	Method/responsible party
Remove roadside fuels along county right-away	Amador County
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	18%	FM 5 (SH5)	6.5	Low	High	Moderate	High	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

TANK COURT

1. Tank Drive is a very narrow gravel dead-end road 550 feet in length without a cul-de-sac at its terminus. However, two large open flat areas near the terminus will allow fire apparatus to turn around.
2. Fuel load is light to moderate with some roadside fuels present.
3. This road has no street sign at its intersection with Pitts Drive or Tank Court.
1. The dominate fuel models are FM2 and FM10. These fuel models occur in equal amounts. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands.
4. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
5. Lot size average 3.9 acres. This structure density rating for this area is rural.
6. Slopes average over 24%. Slopes will adversely affect fire behavior.

PROJECTS

Project List	Method/responsible party
Install county standard street signs	Homeowners
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	24%	FM 6 (SH7)	6.9	Very High	Very High	High	Very High	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

TANK DRIVE

1. Tank Drive is a very narrow paved dead-end road 1879 feet in length without a cul-de-sac at its terminus. This road turns to gravel towards its terminus. There is a small cul-de-sac positioned about halfway from its terminus.
2. Fuel load is light to heavy. The heaviest fuels are located nearest the end of this road.
3. There are roadside fuels along this road. Roadside fuels make evacuation difficult during wildfires.
4. This road has no street sign at its intersection with Pitts Drive or Tank Court.
5. The dominate fuel models are FM6 and FM10. These fuel models occur in equal amounts. Fires in FM6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this

requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.

6. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
7. Lot size average 4.4 acres. This structure density rating for this area is rural.
8. Slopes average over 24%. Slopes will adversely affect fire behavior.

PROJECTS

Project List	Method/responsible party
Install county standard street signs	Homeowners
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	24%	FM 6 (SH7)	6.9	Very High	Very High	High	Very High	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

VALLEY VISTA COURT

1. Valley Vista Court is a narrow paved dead-end road 1993 feet in length with drivable shoulders (turnouts) and a cul-de-sac at its terminus. Most homes are located near the end of this road.
2. There appears to be a second route out via interconnected driveways of homes beyond the end of this road (aerial photo view). This route appears to exit onto Irishtown Road.
3. Heavy concentrations of roadside fuels exist along this road's length.
4. Fuel load is heavy.
5. The dominate fuel model is FM10. Some fuel model FM6 is also present. In Fuel Model 10, Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.

6. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
7. Lot size average 8.8 acres. This structure density rating for this area would normally be rural. However, most homes are bunched together along a narrow ridge top. Thus, this area is rated suburban.
8. Slopes average over 33%. Slopes will adversely affect fire behavior.
9. The greatest danger to this area is from wildfires approaching from the west during normal summer weather patterns. Residents should increase their downslope defensible space as far as their property lines allow.

PROJECTS

Project List	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Suburban	Yes	33%	FM 6 (SH7)	6.9	Very High	Very High	High	Very High	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

UPPER RIDGE ROAD AREA (BETWEEN HIGHWAY 88 IN PINE GROVE AND PETERSON RANCH DRIVE)

HALE DRIVE (PRIVATE ROAD)

1. A short road not recorded on the County's GIS road layer.
2. Lot size average 2.5 acres. This structure density rating for this area is rural.
3. Slopes are nearly flat. Slopes will not adversely affect fire behavior.
4. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands.
5. Fuel load is very light.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	0%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Low

BANKS ROAD (PRIVATE ROAD)

1. A short road not recorded on the County's GIS road layer.
2. This structure density rating for this area is rural.
3. Slopes are nearly flat. Slopes will not adversely affect fire behavior.
4. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands.
5. Fuel load is very light.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	0%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Low

ARDEN COURT (PRIVATE ROAD)

1. Arden court is a short gravel road 402 feet in length without a cul-de-sac at its length.
2. The street sign is constructed of flammable materials.
3. The average parcel size is 1.5 acres. The structure density rating for this area is rural.
4. Slopes average 14%. Slopes will adversely affect fire behavior.
5. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands.
6. Fuel load is very light.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	14%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate

GOLDMINE ROAD AREA (OFF OF HIGHWAY 88 IN PINE GROVE)

GOLDMINE ROAD

1. Very narrow one lane dead-end partially paved road approximately 3535 feet in length that loops onto its self near the end.
2. This road is very rough road without turnouts.
3. Street signs are wooden and may be destroyed in a wildfire.
4. Heavy brush along some roadsides makes evacuation during wildfire difficult and dangerous. This brush can also make it difficult for fire fighters to enter the area.
5. Lot size average 2.3 acres. This structure density rating for this area is rural.
6. Slopes average over 25%. Slopes will adversely affect fire behavior.
7. The dominate fuel model is FM10. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.

8. A trailer park is also served by this road. This trailer park structural density is urban. Trailers within this park may ignite from radiant heat generated by other trailers (Urban density).
9. Fuel load is heavy. The heaviest fuels are located north of this road.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Replace street sign with standardized street sign	Homeowners
Roadside fuel removal and chipping	Homeowners/Amador Fire Safe Council
Maintain vertical and horizontal separation of fuels by eliminating surface fuels and pruning tree limbs 12 to 20 feet above the ground.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural/Urban	Yes	25%	FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	Very High

BROOKWOOD LANE

1. Very narrow one lane dead-end partially paved road approximately 572 feet in length.
2. This road is very rough road without turnouts.
3. Street signs are wooden and may be destroyed in a wildfire.
4. Heavy brush along some roadsides makes evacuation during wildfire difficult and dangerous. This brush can also make it difficult for fire fighters to enter the area.
5. Lot size average 4.3 acres. This structure density rating for this area is rural.
6. Slopes average over 25%. Slopes will adversely affect fire behavior.
7. The dominate fuel model is FM10. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
8. Fuel load is heavy. The heaviest fuels are located north of this road.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Replace street sign with standardized street sign	Homeowners
Roadside fuel removal and chipping	Homeowners/Amador Fire Safe Council
Maintain vertical and horizontal separation of fuels by eliminating surface fuels and pruning tree limbs 12 to 20 feet above the ground.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	25%	FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	Very High

LADYBUG LANE

1. Very narrow one lane dead-end partially paved road approximately 2425 feet in length.
2. This road is very rough road without turnouts.
3. Street signs are wooden and may be destroyed in a wildfire.
4. Heavy brush along some roadsides makes evacuation during wildfire difficult and dangerous. This brush can also make it difficult for fire fighters to enter the area.
5. Lot size average 0.67 acres. This structure density rating for this area is suburban.
6. Slopes average over 25%. Slopes will adversely affect fire behavior.
7. The dominate fuel model is FM10. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
8. Fuel load is heavy. The heaviest fuels are located north of this road.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Replace street sign with standardized street sign	Homeowners
Roadside fuel removal and chipping	Homeowners/Amador Fire Safe Council
Maintain vertical and horizontal separation of fuels by eliminating surface fuels and pruning tree limbs 12 to	Homeowners

20 feet above the ground.	

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Suburban	Yes	25%	FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	Very High

WILD PINE DRIVE

1. Very narrow one lane dead-end partially paved road approximately 631 feet in length.
2. This road is very rough road without turnouts.
3. Street signs are wooden and may be destroyed in a wildfire.
4. Heavy brush along some roadsides makes evacuation during wildfire difficult and dangerous. This brush can also make it difficult for fire fighters to enter the area.
5. Lot size average 1.35 acres. This structure density rating for this area is rural.
6. Slopes average over 25%. Slopes will adversely affect fire behavior.
7. The dominate fuel model is FM10. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
8. Fuel load is heavy. The heaviest fuels are located north of this road.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Replace street sign with standardized street sign	Homeowners
Roadside fuel removal and chipping	Homeowners/Amador Fire Safe Council
Maintain vertical and horizontal separation of fuels by eliminating surface fuels and pruning tree limbs 12 to 20 feet above the ground.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	25%	FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	Very High

BOWMAN TRACK AREA

ROBINSON ROAD

1. Robinson is a long (3864 feet) dead-end graded gravel road.
2. There is no cul-de-sac at its terminus.
3. The street sign at the intersection of Ridge Road and Robinson Road is non-standard and constructed of flammable materials.
4. There are no turnouts on the steeper portions of this road. The lack of turnouts may affect the ability of emergency service apparatus to access this area while residents are attempting to evacuate.
5. The average lot size is 2.8 acres. The structure density rating is rural.
6. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands.
7. Slopes range from 10% to 30%. The average slope is 18%. The steeper slopes are along the second half of the road. The areas where the slope is 10%, slope will not affect fire behavior. The areas where slope exceeds 10%, slope will adversely affect fire behavior.
8. Fuel load is very light on the flatter areas near Ridge Road. Fuel load is moderate on the steeper slopes.
9. This area is rated moderate risk because of the slopes and heavier fuels along the inner half of the roads length. Those residents along the half of the road length starting at Ridge Road would normally be rated low.

PROJECTS

Project List	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Replace street sign with standardized street sign	Homeowners
Develop turnouts at 400 foot intervals along steeper section of Robinson Road	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	18%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate

BOWMAN ROAD

1. Bowman Road is a narrow paved road that dead-ends without a large cul-de-sac.
2. Fuel load is light to moderate.
3. Roadside fuels are present in some areas. The adjacent slopes and heavy fuel loads below and above the road will make or egress difficulties during large wildfires.
4. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. The average parcel size is 1.7 acres. The structural density rating for this area is rural. However, structures are placed near the road instead of in the center of the lot and lots are narrower along the road frontage. Some structures are within 27 feet of each other. This arrangement gives this area a more urban than rural atmosphere. While from the structure per acre analysis structures would not invalidate the fire behavior predicted by the dominate fuel model, it is likely that structure-to-structure ignition will occur where structures are in close proximity.
6. Slopes are steep averaging 20%. Slopes this steep adversely affect fire behavior.
7. This area is most vulnerable to wildfires burning during normal summer southwest winds.
8. This area has numerous fire hydrants.
9. Compliance with defensible space regulations is good. Homeowners should use their large lots to create defensible space well in excess of the mandatory distance.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Remove roadside fuels	Homeowners/Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural/urban	Yes	20%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High

SUNSET DRIVE

1. Sunset Drive is a short (793 feet) narrow paved road that dead-ends without a cul-de-sac.
2. Fuel load is light to moderate.
3. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
4. The average parcel size is 2.9 acres. The structural density rating for this area is rural.
5. Slopes are steep averaging 20%. Slopes this steep adversely affect fire behavior.
6. This area is most vulnerable to wildfires burning during normal summer southwest winds.
7. This area has numerous fire hydrants.
8. Compliance with defensible space regulations is good. Homeowners should use their large lots to create defensible space well in excess of the mandatory distance.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	20%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate

SHARON COURT

1. Sharon Court is a short (231 feet) narrow paved road that dead-ends without a cul-de-sac.
2. Fuel load is light to moderate.
3. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute

to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.

4. The average parcel size is 0.6 acres. The structural density rating for this area is suburban.
5. Slopes are steep averaging 20%. Slopes this steep adversely affect fire behavior.
6. This area is most vulnerable to wildfires burning during normal summer southwest winds.
7. This area has numerous fire hydrants.
8. Compliance with defensible space regulations is good. Homeowners should use their large lots to create defensible space well in excess of the mandatory distance.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Suburban	Yes	20%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate

STEVEN LANE

1. Steven Lane is a short (423 feet) narrow paved road that dead-ends without a cul-de-sac.
2. Fuel load is light to moderate.
3. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
4. The average parcel size is 1.5 acres. The structural density rating for this area is rural.
5. Slopes are steep averaging 20%. Slopes this steep adversely affect fire behavior.
6. This area is most vulnerable to wildfires burning during normal summer southwest winds.
7. This area has numerous fire hydrants.
8. Compliance with defensible space regulations is good. Homeowners should use their large lots to create defensible space well in excess of the mandatory distance.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	20%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate

GY TAN LANE

1. Gy Tan Lane is a short (507 feet) narrow paved road that dead-ends without a cul-de-sac. However, Gy Tan Lane loops back on itself creating a good turnaround for fire apparatus.
2. Fuel load is light to moderate.
3. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
4. The average parcel size is 5.2 acres. The structural density rating for this area is rural.
5. Slopes are steep averaging 20%. Slopes this steep adversely affect fire behavior.
6. This area is most vulnerable to wildfires burning during normal summer southwest winds.
7. This area has numerous fire hydrants.
8. Compliance with defensible space regulations is good. Homeowners should use their large lots to create defensible space well in excess of the mandatory distance.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	20%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate

LYNN WAY

1. Lynn Way is a narrow paved road that connects to Bowman Road and Marc Drive
2. Fuel load is light.
3. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
4. The average parcel size is 0.9 acres. The structural density rating for this area is suburban.
5. Slopes are steep averaging 20%. Slopes this steep adversely affect fire behavior.
6. This area is most vulnerable to wildfires burning during normal summer southwest winds.
7. This area has numerous fire hydrants.
8. Compliance with defensible space regulations is good. Homeowners should use their large lots to create defensible space well in excess of the mandatory distance.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Suburban	Yes	20%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate

SUNRISE COURT

1. Sunrise Court is a short (376 feet) narrow paved road that dead-ends without a cul-de-sac.
2. Fuel load is moderate.

3. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
4. The average parcel size is 0.8 acres. The structural density rating for this area is suburban.
5. Slopes are steep averaging 20%. Slopes this steep adversely affect fire behavior.
6. This area is most vulnerable to wildfires burning during normal summer southwest winds.
7. This area has numerous fire hydrants.
8. Compliance with defensible space regulations is fair. Homeowners should use their large lots to create defensible space well in excess of the mandatory distance.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Suburban	Yes	20%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate

MARC DRIVE

1. Marc Drive is a narrow paved road looping between Bowman Road and Lynn Way. The southern portion of Marc Drive (south of the intersection of Marc Drive and Lynn way) is a dead-end road approximately 680 feet in length without a cul-de-sac.
2. Fuel load is moderate to heavy.
3. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
4. The average parcel size is 1.2 acres. The structural density rating for this area is rural.
5. Slopes are steep averaging 20%. Slopes this steep adversely affect fire behavior.
6. This area is most vulnerable to wildfires burning during normal summer southwest winds.
7. This area has numerous fire hydrants.
8. Compliance with defensible space regulations is fair. Homeowners should use their large lots to create defensible space well in excess of the mandatory distance.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	20%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate

TOMA LANE AREA

Note: the county GIS road layer lists Toma Lane as two separate roads, Road Two and Toma Lane. Road Two begins at Ridge Road and ends at Windmill Court. Toma Lane begins at Windmill Court and runs south to the ridge top then west to its terminus. Most people do not refer to the lower section as Road Two. In fact, the street sign at the intersection with Ridge Road reads Toma Lane. This difference in road names is used here because of the differences in slope and fuel types.

TOMA LANE (ROAD TWO SECTION)

1. This section of Toma Lane is a narrow paved without turnouts approximately 953 feet in length. Fuel load is light.
2. The street sign at Ridge Road is a non-standard street sign.
3. The dominate fuel model is FM1. Fuel model 1 is characterized by fine, very porous, and continuous herbaceous fuels that are cured or are nearly cured. These fine fuels govern fire spread. Fires are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber overstory is present, generally less than 1/3 of the area. Both annual and perennial grasses are included; grasslands and savannas are represented along with grass-shrub combinations that meet the above area constraint.
4. The average parcel size is 4.3 acres. The structural density rating for this area is rural.
5. Slopes are nearly flat. Slopes this steep do not adversely affect fire behavior.
6. This area has numerous fire hydrants.
7. Compliance with defensible space regulations will protect homes in this area. Homeowners should use their large lots to create defensible space well in excess of the mandatory distance.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Install county standard street sign	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	0%	FM1 (GR4)	2.15	High	Very High	Very High	Extreme	Low

TOMA LANE (UPPER SECTION)

1. This section of Toma Lane is a narrow dead-end paved without turnouts or cul-de-sac approximately 2553 feet in length. Fuel load is moderate to heavy.
2. Roadside brush is heavy in areas. Roadside brush can make ingress and egress difficult during wildfires.
3. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
4. Fuel Model 10 fuels exist to the south of this section of Toma Road. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. These fuels are in the drainages south of this area. The normal summer wind patterns are from the southwest. Wildfires spread upslope faster. When in drainages, wildfires are funneled upslope with greater intensity. Homeowners, at the top and on the south side of Toma Lane should use their deep lots to create defensible space greater than the required 100 feet.
5. The average parcel size is 2.4 acres. The structural density rating for this area is rural.
6. Slopes average 20%. Slopes this steep adversely affect fire behavior.
7. This area has numerous fire hydrants.
8. Compliance with defensible space regulations will protect homes in this area. Homeowners should use their large lots to create defensible space well in excess of the mandatory distance.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Reduce roadside brush	Homeowners/Amador Fire Safe Council
Strict compliance with defensible space requirements	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	20%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

WINDMILL COURT

1. Windmill Court a narrow dead-end unpaved without a cul-de-sac approximately 1208 feet in length. Fuel load is moderate.
2. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
3. Fuel Model 10 fuels exist to the southeast. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. These fuels are in the drainages south of this area. The normal summer wind patterns are from the southwest. Wildfires spread upslope faster. When in drainages, wildfires are funneled upslope with greater intensity. Homeowners, at the top and on the south side of Toma Lane should use their deep lots to create defensible space greater than the required 100 feet.
4. The average parcel size is 8.2 acres. The structural density rating for this area is rural.
5. Slopes average 19%. Slopes this steep adversely affect fire behavior.
6. This area has numerous fire hydrants.
7. Compliance with defensible space regulations will help protect homes in this area. Homeowners should use their large lots to create defensible space well in excess of the mandatory distance.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	19%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

DRUID LANE AREA

DRUID LANE

1. Druid Lane is a wide paved road 2156 feet in length. It crosses Mountain View Drive and terminates as a dead-end road with a cul-de-sac.
2. There is roadside brush along much of its length.
3. Fuel load is heavy along most of its length.
4. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. Fuel Model 10 fuels exist near the northeast corner of Druid Lane and Mountain View Drive. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
6. The average parcel size is 1.2 acres. The structural density rating for this area is rural.
7. Slopes average 9%. Slopes this flat do not adversely affect fire behavior.
8. This area has numerous fire hydrants.
9. Compliance with defensible space regulations will help protect homes in this area. Homeowners should use their large lots to extend and link defensible space between homeowners to create a fuel reduction zone.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Remove roadside brush	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	9%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

MOUNTAIN VIEW DRIVE

1. Mountain View Drive is a paved road 1470 feet in length. It crosses Druid Lane and terminates as a dead-end road with a cul-de-sac at its west end. Mountain View Drive is a through road on its east end where it connects to Sugar Pine Drive.
2. Fuel load is heavy in most areas.
3. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
4. The average parcel size is 1.3 acres. The structural density rating for this area is rural.
5. Slopes average 15 %. Slopes this steep adversely affect fire behavior.
6. This area has numerous fire hydrants.
7. Compliance with defensible space regulations will help protect homes in this area. Homeowners should use their large lots to extend and link defensible space between homeowners to create a fuel reduction zone.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	15%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High

SUGAR PINE SOUTH DRIVE

1. Sugar Pine South Drive is a paved road 3477 feet in length terminating at the intersection of Live Oak Court.
2. Nonstandard wooden street signs are present throughout.
3. Roadside brush is present in some areas.
4. Fuel load is heavy in most areas, with the heaviest fuel loads in the drainages to the south of the road.
5. These concentrations of fuel will increase the intensity of wildfires burning upslope from Climax Road. Residents along the south side of Sugar Pine Drive should increase the size of their defensible space below their homes.
6. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
7. The average parcel size is 1.19 acres. The structural density rating for this area is rural.
8. Slopes average 18 %. Slopes this steep adversely affect fire behavior.
9. This area has numerous fire hydrants.
10. Compliance with defensible space regulations will help protect homes in this area. Homeowners should use their large lots to extend and link defensible space between homeowners to create a fuel reduction zone.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Install county standard street signs	Homeowners
Remove roadside brush	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	18%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High

HOLLY PLACE

1. Holly Place is a very short dirt/gravel road servicing a small number of parcels.
2. See Manzanita Way

MANZANITA WAY

1. Manzanita way is a paved road that dead-ends into Manzanita Place and Manzanita Court. It is 831 feet in length.
2. Nonstandard street signs are present throughout.
3. Roadside brush is present in some areas.
4. Fuel load is heavy in most areas, with the heaviest fuel loads in the drainages to the west of the road.
5. These concentrations of fuel will increase the intensity of wildfires burning upslope from Climax Road. Residents along West View should increase the size of their defensible space below their homes.
6. Half of the fuels are in fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
7. The other half of the fuels are in fuel model FM10. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
8. The average parcel size is 1.9 acres. The structural density rating for this area is rural.
9. Slopes average 18 %. Slopes this steep adversely affect fire behavior.
10. This area has numerous fire hydrants.
11. Compliance with defensible space regulations will help protect homes in this area. Homeowners should use their large lots to create defensible space well in excess of the mandatory distance. Homeowners should use their large lots to extend and link defensible space between homeowners to create a fuel reduction zone.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Install county standard street signs	Homeowners
Remove roadside brush	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	18%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

MANZANITA COURT

1. Manzanita Court is a short dead-end paved road branching off the end of Manzanita Way. It is 622 feet in length.
2. Nonstandard street signs are present throughout.
3. Roadside brush is present in some areas.
4. Fuel load is heavy in most areas, with the heaviest fuel loads in the drainages to the west of the road.
5. These concentrations of fuel will increase the intensity of wildfires burning upslope from Climax Road. Residents along West View should increase the size of their defensible space below their homes.
6. Half of the fuels are in fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
7. The other half of the fuels are in fuel model FM10. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
8. The average parcel size is 1.45 acres. The structural density rating for this area is rural.
9. Slopes average 18 %. Slopes this steep adversely affect fire behavior.
10. This area has numerous fire hydrants.
11. Compliance with defensible space regulations will help protect homes in this area. Homeowners should use their large lots to create defensible space well in excess of the mandatory distance.

Homeowners should use their large lots to extend and link defensible space between homeowners to create a fuel reduction zone.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Install county standard street signs	Homeowners
Remove roadside brush	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	18%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

MANZANITA PLACE

1. Manzanita Place is a short dead-end paved road branching off the end of Manzanita Way. It is 210 feet in length.
2. Nonstandard street signs are present throughout.
3. Roadside brush is present in some areas.
4. Fuel load is heavy in most areas, with the heaviest fuel loads in the drainages to the west of the road.
5. These concentrations of fuel will increase the intensity of wildfires burning upslope from Climax Road. Residents along West View should increase the size of their defensible space below their homes.
6. Half of the fuels are in fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
7. The other half of the fuels are in fuel model FM10. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
8. The average parcel size is 1.45 acres. The structural density rating for this area is rural.
9. Slopes average 18 %. Slopes this steep adversely affect fire behavior.
10. This area has numerous fire hydrants.

11. Compliance with defensible space regulations will help protect homes in this area. Homeowners should use their large lots to extend and link defensible space between homeowners to create a fuel reduction zone.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Install county standard street signs	Homeowners
Remove roadside brush	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	18%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

SLEEPY HOLLOW

1. Sleepy Hollow is a narrow paved dead-end road 113 feet in length with without a cul-de-sac at its terminus.
2. Nonstandard wooden street signs are present throughout.
3. Roadside brush is present in some areas.
4. Fuel load is heavy in most areas, with the heaviest fuel loads in the drainages to the south of the road.
5. These concentrations of fuel will increase the intensity of wildfires burning upslope from Climax Road. Residents along West View should increase the size of their defensible space below their homes.
6. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
7. The average parcel size is 1.5 acres. The structural density rating for this area is rural.
8. Slopes average 18 %. Slopes this steep adversely affect fire behavior.
9. This area has numerous fire hydrants.
10. Compliance with defensible space regulations will help protect homes in this area. Homeowners should use their large lots to extend and link defensible space between homeowners to create a fuel reduction zone.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Install county standard street signs	Homeowners
Remove roadside brush	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	18%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High

W VIEW

1. W View is a narrow paved dead-end road 1470 feet in length with drivable shoulders and without a cul-de-sac at its terminus.
2. Nonstandard wooden street signs are present throughout.
3. Roadside brush is present in some areas.
4. Fuel load is heavy in most areas, with the heaviest fuel loads in the drainages to the south of the road.
5. These concentrations of fuel will increase the intensity of wildfires burning upslope from Climax Road. Residents along West View should increase the size of their defensible space below their homes.
6. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
7. The average parcel size is 1.19 acres. The structural density rating for this area is rural.
8. Slopes average 18 %. Slopes this steep adversely affect fire behavior.
9. This area has numerous fire hydrants.
10. Compliance with defensible space regulations will help protect homes in this area. Homeowners should use their large lots to extend and link defensible space between homeowners to create a fuel reduction zone.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Install county standard street signs	Homeowners
Remove roadside brush	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	18%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High

WEST COURT

1. West Court is a narrow paved dead-end road 160 feet in length.
2. Nonstandard wooden street signs are present throughout.
3. Roadside brush is present in some areas.
4. Fuel load is heavy in most areas, with the heaviest fuel loads in the drainages to the south of the road.
5. These concentrations of fuel will increase the intensity of wildfires burning upslope from Climax Road. Residents along West View should increase the size of their defensible space below their homes.
6. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
7. The average parcel size is 1.19 acres. The structural density rating for this area is rural.
8. Slopes average 18 %. Slopes this steep adversely affect fire behavior.
9. This area has numerous fire hydrants.
10. Compliance with defensible space regulations will help protect homes in this area. Homeowners should use their large lots to extend and link defensible space between homeowners to create a fuel reduction zone.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Install county standard street signs	Homeowners
Remove roadside brush	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	18%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High

LIVE OAK COURT

1. Live Oak Court is a graded gravel dead-end road 624 feet in length without a standard cul-de-sac at its terminus. However, it does have a turnaround area.
2. Nonstandard wooden street signs are present throughout.
3. Roadside brush is present in some areas.
4. Fuel load is light to moderate to heavy.
5. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
6. Fuel Model 10 fuels exist to the west side of this area. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
7. The average parcel size is 2.0 acres. The structural density rating for this area is rural.
8. Slopes average 21 %. Slopes this steep adversely affect fire behavior.
9. This area has numerous fire hydrants.
10. Compliance with defensible space regulations will help protect homes in this area. Homeowners should use their large lots to extend and link defensible space between homeowners to create a fuel reduction zone.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Install county standard street signs	Homeowners
Remove roadside brush	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	21%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

MINE COURT

1. Mine Court is a short dead-end paved road branching off the east end of Mountain View Drive. It is 646 feet in length.
2. Nonstandard street signs are present throughout.
3. Roadside brush is present in some areas.
4. Fuel load is heavy in some areas, with the heaviest fuel loads in the drainages to the southwest of the road. Fuel load to the east is light to moderate.
5. These concentrations of fuel will increase the intensity of wildfires burning upslope from Climax Road. Residents along West View should increase the size of their defensible space below their homes.
6. The dominate fuel model is FM10. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
7. Lesser amounts of fuels in FM2 are present. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
8. The average parcel size is 1.5 acres. The structural density rating for this area is rural.
9. Slopes average 15 %. Slopes this steep adversely affect fire behavior.
10. This area has numerous fire hydrants.
11. Compliance with defensible space regulations will help protect homes in this area. Homeowners should use their large lots to extend and link defensible space between homeowners to create a fuel reduction zone.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Install county standard street signs	Homeowners
Remove roadside brush	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	15%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

PETERSON RANCH AREA

PONDEROSA WAY (BETWEEN PETERSON RANCH DRIVE AND RIDGE ROAD)

1. Ponderosa Way is a wide paved road between Peterson Ranch Drive and Ridge Road.
2. Fuel load is very light in some areas. These light fuel loads exist on both sides of the road. The heaviest fuel concentrations are closer to the intersection with Peterson ranch Drive. Fuel load in these areas is moderate. This area gains additional protection from foehn wind driven fires because of the extensive fuel modification in the commercial area of Pine Grove. The commercial area of Pine Grove has been so modified by human activity that it no longer fits any of the standard fuel models.
3. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
4. Small amounts of fuel model FM10 are present west of this road. Fuel load in this model is extremely light. While Fuel Model 10 represents the most hazardous Fuel Model, the low fuel load offsets the risk usually associated with this model. Additionally fuels in some areas along this street have been so modified by human activity that the no longer fit any of the standard fuel models.
5. The average parcel size is 7.2 acres. The structural density rating for this area is rural.
6. Slopes average 17 %. Slopes this steep adversely affect fire behavior.
7. This area has numerous fire hydrants.
8. Compliance with defensible space regulations will help protect homes in this area. Homeowners should use their large lots to create defensible space well in excess of the mandatory distance.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	17%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

PETERSON RANCH DRIVE

1. Peterson Ranch Drive is a wide county road connecting between Ponderosa Way and Climax road.
2. Fuel load is very light along the entire southern side of this road. This light fuel load provides protection against wildfire occurring during the typical summer weather pattern. There are heavier concentrations of fuel in the drainage that parallels most of this road's northeastern side. Drainages act as chimneys during wildfires. These chimneys increase fire intensity and rate of spread. Slope also affects intensity and rate of spread. Slopes in the drainages near this road exceed 20% in places.
3. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
4. The average parcel size is 2.6 acres. The structural density rating for this area is rural.
5. Slopes average 15 %. Slopes this steep adversely affect fire behavior.
6. This area has numerous fire hydrants.
7. Compliance with defensible space regulations will help protect homes in this area. Homeowners should use their large lots to create defensible space well in excess of the mandatory distance.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	15%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

MINERAL RIDGE DRIVE

1. Mineral Ridge Drive is a wide county road connecting between Peterson Ranch Drive and Ridge Road.
2. Fuel load is light to moderate along much of this road's length. There are heavier concentrations of fuel in the drainage intersects this road at its center. Drainages act as chimneys during wildfires. These chimneys increase fire intensity and rate of spread. Slope also affects intensity and rate of spread. Slopes in the drainages near this road exceed 20% in places. Fuel model FM10 is present in this drainage.
3. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
4. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
5. The average parcel size is 2.5 acres largely due to the larger commercial parcels near Ridge Road. The structural density rating for this area is rural.
6. Slopes average 15 %. Slopes this steep adversely affect fire behavior.
7. This area has numerous fire hydrants.
8. Compliance with defensible space regulations will help protect homes in this area. Homeowners should use their large lots to create defensible space well in excess of the mandatory distance.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	15%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

MINERAL RIDGE COURT

1. Mineral Ridge Court is a wide dead-end county road with a cul-de-sac at its terminus. Mineral Ridge Court is 700 feet in length.
2. Fuel load is moderate along much of this road's length. There are heavier concentrations of fuel in the drainage on the northeastern side of this road. Drainages act as chimneys during wildfires. These chimneys increase fire intensity and rate of spread. Slope also affects intensity and rate of spread. Slopes in the drainages near this road exceed 13% in places. Fuel model FM10 is present in this drainage.
3. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
4. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
5. The average parcel size is 3.4 acres. The structural density rating for this area is rural.
6. Slopes average 12 %. Slopes this steep adversely affect fire behavior.
7. This area has numerous fire hydrants.
8. Compliance with defensible space regulations will help protect homes in this area. Homeowners should use their large lots to create defensible space well in excess of the mandatory distance.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	12%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

BLUFF COURT

1. Bluff Court is a wide dead-end county road with a cul-de-sac at its terminus. It is 530 feet in length.
2. Fuel load is moderate along much of this road's length. There are heavier concentrations of fuel in the drainage on the southern side of this road. Drainages act as chimneys during wildfires. These chimneys increase fire intensity and rate of spread. Slope also affects intensity and rate of spread. Slopes in the drainages near this road exceed 34% in places. Fuel model FM10 is present in this drainage.
3. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
4. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
5. The average parcel size is 3.4 acres. The structural density rating for this area is rural.
6. Slopes average 20 %. Slopes this steep adversely affect fire behavior.
7. This area has numerous fire hydrants.
8. Compliance with defensible space regulations will help protect homes in this area. Homeowners should use their large lots to create defensible space well in excess of the mandatory distance.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	20%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

FREDRICKS DRIVE

1. Fredricks Drive is a wide dead-end county road with a cul-de-sac at its terminus. Fredricks Drive is 899 feet in length.
2. Fuel load is light throughout. Many open grassy areas were noted. The heaviest fuel concentrations are at the outer edge of the parcels on the west side of this road.
3. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
4. The average parcel size is 2.0 acres. The structural density rating for this area is rural.
5. Slopes average 14%. Slopes to the southwest are 22%. Slopes this steep will adversely affect fire behavior.
6. This area has numerous fire hydrants.
7. Compliance with defensible space regulations will help protect homes in this area. Homeowners should use their large lots to create defensible space well in excess of the mandatory distance.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	14 - 22%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Low

ROSE COURT

1. Rose Court is a wide dead-end county road with a cul-de-sac at its terminus. Rose Court is 261 feet in length.
2. Fuel load is light throughout. The heaviest fuel concentrations are at the outer edge of the parcels on the west side of this road.
3. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
4. The average parcel size is 1.7 acres. The structural density rating for this area is rural.
5. Slopes are nearly flat. Slopes to the southwest of the parcels on this road are steep averaging 22%. These steep slopes will adversely affect fire behavior. Residents can increase the survivability of their homes by increasing their defensible space beyond the 100-foot requirement.
6. This area has numerous fire hydrants.
7. Compliance with defensible space regulations will help protect homes in this area. Homeowners should use their large lots to create defensible space well in excess of the mandatory distance.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	22%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Low

RAPINI COURT

1. Rapini Court is a wide dead-end county road with a cul-de-sac at its terminus. Rapini Court is 231 feet in length.
2. Fuel load is light throughout.
3. This road is dominated by fuel model FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat

outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.

4. Much of the risk associated with this fuel model is mitigated by the high degree of compliance with defensible space regulations.
5. The average parcel size is 1.7 acres. The structural density rating for this area is rural.
6. Slopes average 18 %. Slopes this steep will adversely affect fire behavior.
7. This area has numerous fire hydrants.
8. Compliance with defensible space regulations will help protect homes in this area. Homeowners should use their large lots to create defensible space well in excess of the mandatory distance.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	18%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Low

LOGANS ALLEY

1. Logans Alley is a wide dead-end private road with a cul-de-sac at its terminus. Logans Alley is 907 feet in length.
2. Fuel load is light throughout.
3. The first half of this road is dominated by fuel model FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
4. The second half of this road is dominated by fuel model FM10. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
5. Much of the risk associated with these two fuel models is mitigated by the high degree of compliance with defensible space regulations.
6. The average parcel size is 2.3 acres. The structural density rating for this area is rural.
7. Slopes average 8 %. Slopes this flat will not adversely affect fire behavior.
8. This area has numerous fire hydrants.

9. Compliance with defensible space regulations will help protect homes in this area. Homeowners should use their large lots to create defensible space well in excess of the mandatory distance.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	8%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Low
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

TANYARD HILL AREA

TANYARD LANE

1. Tanyard Lane is a narrow dead-end private road 2128 feet in length with drivable shoulders and a cul-de-sac at its terminus.

FIGURE 6 ROADISDE FUELS

2. Fuel load is light to moderate along the ridge top. Very heavy concentrations of forest fuels lie in the drainages to the east and north of this road.
3. Roadside brush is present along much of the road. Some of this brush is Scotch Broom a highly flammable non-native plant. Brush along a narrow road makes evacuation difficult during a wildfire.
4. The ridge top where the road and homes are located is within fuel model FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. Fuel model FM10 is the dominate fuel type in the drainages. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down

fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.

6. The average parcel size is 6.0 acres. The structural density rating for this area is rural.
7. Slopes on the east and north average 29%, slopes this steep will adversely affect fire behavior.
8. The greatest threat to this area is from wildfires occurring north or east of it. The heavy fuel load of FM10 fuels and steep slopes create this increased risk. This risk is heightened during foehn wind events. Residents can mitigate much of this problem by using their large parcels to create defensible space downslope from their homes in excess of the mandatory 100-foot clearance.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Clear brush from roadsides	Homeowners/Amador Fire Safe Council
Eliminate Scotch Broom from yards and roadsides	Homeowners – tool available from Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	29%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

TANYARD HILL ROAD (BETWEEN RIDGE ROAD AND TANNERY LANE – INCLUDES PONY BROWN LANE)

1. Tanyard Hill Road is a narrow paved private road that connected to Ridge Road and Surrey Junction Lane. The connection to Surrey Junction Lane is via a gated fire road at the northern terminus of Tanyard Hill Road. Tanyard Hill Road follows a ridge top that runs north to south.

FIGURE 7 - ROADSIDE FUELS

2. Fuel load is moderate to heavy.
3. Roadside brush is present along much of this section of road. Brush along a narrow road makes evacuation difficult during a wildfire.
4. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include

clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.

5. The average parcel size is 3.4 acres. The structural density rating for this area is rural.
6. Slopes on the east and north average 19%, slopes this steep will adversely affect fire behavior.
7. The greatest threat to this area is from wildfires occurring in the drainages south and west of the road. Much of the risk can be mitigated by increasing the clearance behind the structures beyond the 100-foot mandatory clearance.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Clear brush from roadsides	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	19%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High

TANYARD HILL ROAD (BETWEEN TANNERY LANE AND TANYARD HILL WEST ROAD)

1. Tanyard Hill Road is a narrow paved private road that connected to Ridge Road and Surrey Junction Lane. The connection to Surrey Junction Lane is via a gated fire road at the northern terminus of Tanyard Hill Road. Tanyard Hill Road follows a ridge top that runs north to south.
2. Fuel load along this section of Tanyard Hill Road is light to moderate. The heaviest concentration of fuel is on the west side of the road. Fuels on the east side of this section of Tanyard Hill Road are very light with large grassy meadows containing scattered shrubs and trees.
3. There are no structures on the west side of this road.
4. Roadside brush is present along much of this section of road. Brush along a narrow road makes evacuation difficult during a wildfire.
5. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
6. The average parcel size is 6.7 acres. The structural density rating for this area is rural.
7. Slopes 10%, slopes this flat will not adversely affect fire behavior.
8. Strict compliance with defensible space requirements eliminates much of the risk from wildfire.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Remove brush from roadside	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	10%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate

TANYARD HILL ROAD (BETWEEN TANYARD WEST ROAD AND SURREY JUNCTION LANE)

1. Tanyard Hill Road is a narrow paved private road that connected to Ridge Road and Surrey Junction Lane. The connection to Surrey Junction Lane is via a gated fire road at the northern terminus of Tanyard Hill Road. Tanyard Hill Road follows a ridge top that runs north to south.

FIGURE 8 - FIRE GATE

2. Fuel load along this section of Tanyard Hill Road is moderate to heavy.
3. Roadside brush is present along much of this section of road. Brush along a narrow road makes evacuation difficult during a wildfire.
4. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. The average parcel size is 4.8 acres. This large average lot size is the result of one large lot 18 acre at the end of the road where the fire road begins. Without this large lot, lots still average 2.2 acres. The structural density rating for this area is rural.
6. Slopes average 26% with the steeper slopes located north and east of the road. Slopes in these area range from 26% to 40%. Slopes this steep adversely affect fire behavior.
7. Strict compliance with defensible space requirements eliminates much of the risk from wildfire.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Remove brush from roadside	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	10%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High

TANYARD HILL WEST ROAD

1. Tanyard Hill West Road is a narrow dead-end private road 1087 feet in length without a cul-de-sac at its terminus.
2. Fuel load is moderate to heavy. The heaviest fuel concentrations of forest fuels lie in the drainages to the south and west of this road.
3. Roadside brush is present along much of the south side of this road. Brush along a narrow road makes evacuation difficult during a wildfire.
4. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. The average parcel size is 1.9 acres. The structural density rating for this area is rural. Homes near the terminus are situated near close to each other. The close proximity of structures may cause structure-to-structure ignition during a wildfire.
6. Slopes on the east and north average 23%, slopes this steep will adversely affect fire behavior.
7. The greatest threat to this area is from wildfires occurring in the drainages south and west of the road. Much of the risk can be mitigated by increasing the clearance behind the structures beyond the 100-foot mandatory clearance.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Clear brush from roadsides	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	23%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High

TANNERY LANE

1. Tannery Lane is a narrow dead-end private road 1182 feet in length without a cul-de-sac at its terminus. However, a flat open area at the last residence serves as a turnaround.
2. Fuel load is moderate to heavy. The heaviest fuel concentrations of forest fuels lie in the drainages to the south and west of this road.
3. Roadside brush is present along much of the south side of this road. Brush along a narrow road makes evacuation difficult during a wildfire.
4. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. The average parcel size is 2.6 acres. The structural density rating for this area is rural.
6. Slopes on the east and north average 19%, slopes this steep will adversely affect fire behavior.
7. The greatest threat to this area is from wildfires occurring in the drainages south and west of the road. Much of the risk can be mitigated by increasing the clearance behind the structures beyond the 100-foot mandatory clearance.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Clear brush from roadsides	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	19%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High

SANDER ROAD

1. Sander Road is a narrow partial paved dead-end private road 402 feet in length without a cul-de-sac at its terminus.
2. Fuel load is Light to moderate. The heaviest fuel concentrations are located near the end of this road. The light fuels are grassy openings that exist on both sides of the road along most of its length.
3. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs

and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.

4. The average parcel size is 2.0 acres. The structural density rating for this area is rural.
5. Slopes on the east and north average 15%, slopes this steep will adversely affect fire behavior.
6. The greatest threat to this area is from wildfires occurring in the drainages south and west of the road. Much of the risk can be mitigated by increasing the clearance behind the structures beyond the 100-foot mandatory clearance.

PROJECTS

Project list	Method/responsible party
Create cul-de-sac at terminus of this road	Homeowners
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	15%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate

LUPE ROAD AREA

SANDAR ROAD

1. Sandar Road is a narrow paved dead-end private road 5127 feet in length without a cul-de-sac at its terminus. There are some drivable shoulders along its length.
2. Fuel load is moderate to heavy. The heaviest fuel concentrations are located in the drainages to the west.
3. Roadside brush is present along some of this road. Brush along a narrow road makes ingress and egress difficult during wildfires. .
4. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. Fuel model FM10 is the dominate fuel type in the drainages. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural

events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.

6. Fuel model FM10 is the dominate fuel type in the drainage nearest Ridge Road. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties
7. The average parcel size is 5.2 acres. The structural density rating for this area is rural. This road exceeds current state fire standards for dead-end roads regarding road length to parcel size. The narrow width of this road and lack of turnouts will make evacuation difficult.
8. Slopes on the west and north average 20%, slopes this steep adversely affect fire behavior.
9. The greatest threat to this area is from wildfires occurring in the drainages west of the road. Much of the risk can be mitigated by increasing the clearance behind the structures beyond the 100-foot mandatory clearance.
10. Compliance with defensible space regulations is good at most residences.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Create turnouts at 400 foot intervals	Homeowners
Reduce brush along roadsides	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	20%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

ANDREWS ROAD

1. Andrews Road is a narrow unpaved private road connecting Ridge Road to Lupe Road. There are some drivable shoulders along its length.
2. Fuel load is moderate to heavy. The heaviest fuel concentrations are located in the drainages to the west.
3. Roadside brush is present is present along some of this road. Brush along a narrow road makes ingress and egress difficult during wildfires. .
4. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-

thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.

5. Fuel model FM10 is the dominate fuel type in the drainage nearest Ridge Road. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties
6. The average parcel size is 6.9 acres. The structural density rating for this area is rural.
7. Slopes average 8%; slopes this flat do not adversely affect fire behavior.
8. The greatest threat to this area is from wildfires occurring in the drainages west of the road. Much of the risk can be mitigated by increasing the clearance behind the structures beyond the 100-foot mandatory clearance.
9. Compliance with defensible space regulations is good at most residences.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Create turnouts at 400 foot intervals	Homeowners
Reduce brush along roadsides	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	8%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

PONDEROSA WAY

1. Ponderosa Way is a wide dead-end county road 1486 feet in length without a cul-de-sac at its terminus.
2. Fuel load is light to moderate. The heaviest fuel concentrations are located in the drainages to the south between Rainbow Mine Road and Ponderosa Way. The lightest concentration of fuel is on the north side of this road near its terminus.
3. Roadside brush is present is present along some of this road. Brush along a narrow road makes ingress and egress difficult during wildfires. .
4. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires

where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.

5. Some fuel model FM10 is present near Lupe Road. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Fuel load is moderate.
6. The average parcel size is 1.1 acres. The structural density rating for this area is rural.
7. Slopes average 13% slopes this steep adversely affect fire behavior.
8. The greatest threat to this area is from wildfires occurring in the drainages south of the road. Much of the risk can be mitigated by increasing the clearance behind the structures beyond the 100-foot mandatory clearance.
9. Compliance with defensible space regulations is good at most residences.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Create cul-de-sac at terminus of this road	Homeowners
Create turnouts at 400 foot intervals	Homeowners
Reduce brush along roadsides	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	8%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

LUPE (BETWEEN RIDGE ROAD AND PONDEROSA WAY)

1. This section of Lupe Road is a wide two lane county road. There are some drivable shoulders along its length.
2. Fuel load is Light to moderate. The heaviest fuel concentrations are located in a drainage east of Lupe Road near its intersection with Ridge Road. Fuels in this area are in fuel model FM10. Fuel load on the west side of Lupe Road is lighter and is less continuous then on the east side of the road.
3. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute

to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.

4. Fuel model FM10 is the dominate fuel type east of Lupe Road in the drainage nearest Ridge Road. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties
5. The average parcel size is 3.3 acres. The structural density rating for this area is rural.
6. Slopes average 8%; slopes this flat do not adversely affect fire behavior.
7. The greatest threat to this area is from wildfires occurring in the drainages west of the road. Much of the risk can be mitigated by increasing the clearance behind the structures beyond the 100-foot mandatory clearance.
8. Compliance with defensible space regulations is good at most residences.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Create turnouts at 400 foot intervals	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	8%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

RAINBOW MINE ROAD

1. Rainbow Mine Road is a wide county road with a turnaround at its terminus. There are some drivable shoulders along its length.
2. Roadside brush exists in areas. Roadside brush can make evacuation during wildfires difficult.
3. Fuel load is light to heavy. The heaviest fuel concentrations are located in a drainage north of Rainbow Mine Road east of Ponderosa Way. Most fuels in this area are in fuel model FM10. Fuel load on the south side of Rainbow Mine Road is lighter and is less continuous then on the north side of the road.
4. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires

where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.

5. Fuel model FM10 is the dominate fuel type east of Lupe Road in the drainage nearest Ridge Road. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties
6. The average parcel size is 1.3 acres. The structural density rating for this area is rural.
7. Slopes average 19% slopes this steep adversely affect fire behavior.
8. The greatest threat to this area is from wildfires occurring in the drainage north of the road. Much of the risk can be mitigated by increasing the clearance behind the structures beyond the 100-foot mandatory clearance.
9. Compliance with defensible space regulations is good at most residences
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PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Reduce brush along roadsides	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	19%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

MARGOT COURT

1. Margot Court is a dead-end county road 432 feet in length with a cul-de-sac at its terminus.
2. Two fuel models affect fire behavior in and around this road. All parcels along this road are in fuel model FM2. The fuel model changes at the northern property boundary of parcels located in the cul-de-sac. Fuel load is moderate in both models. The lightest fuel loads are around the structures.
3. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs

and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.

4. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties
5. The average parcel size is 1.0 acres. The structural density rating for this area is rural.
6. Slopes range from 6% to 20% with an average of 11%. Slopes this steep will adversely affect fire behavior. The steepest slopes contain fuels in the FM10 fuel model.
7. The greatest threat to this area is from wildfires occurring in the drainages north and east of the road.
8. Strict compliance with defensible space will help protect these structures for wildfire.
9. Compliance with defensible space regulations is very good.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	11%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

GLORIA LANE

1. Gloria Lane is a narrow dead-end county road 1456 feet in length with a cul-de-sac at its terminus. This cul-de-sac is too small to accommodate fire apparatus.
2. Two fuel models affect fire behavior in and around this road. All parcels along this road are in fuel model FM2. The fuel model changes on the north aspect of the drainage that follows most of this roads southern edge. Here the fuel model is FM10 and the fuel load is very heavy. Fuel load is moderate in FM2.
3. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs

and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.

4. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties
5. The average parcel size is 1.5 acres. The structural density rating for this area is rural.
6. Slopes range from 13% to 35% with an average of 24%. Slopes this steep will adversely affect fire behavior. The steepest slopes contain fuels in the FM10 fuel model.
7. The greatest threat to this area is from wildfires occurring in the drainages east of the road. Much of the risk can be mitigated by increasing the clearance behind the structures beyond the 100-foot mandatory clearance.
8. Compliance with defensible space regulations is very good.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Increase cul-de-sac size to current standards	Amador County
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	24%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

SYLVIA DRIVE

1. Sylvia Drive is a wide paved private dead-end road 436 feet in length with a cul-de-sac at its terminus.
2. Fuel load is Light to moderate.
3. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
4. The average parcel size is 1.0 acres. The structural density rating for this area is rural. Even though
5. Slopes average 11%. Slopes this steep begin adversely affecting fire behavior.

6. The greatest threat to this area is from wildfires occurring during normal summer weather patterns (south-west winds). Much of the risk can be mitigated by increasing the clearance behind the structures beyond the 100-foot mandatory clearance.
7. Compliance with defensible space regulations is good at most residences.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	11%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate

RED HILL MINE ROAD

1. Red Hill Mine Road is a dead-end private one and a half lane paved road 3136 feet in length without a cul-de-sac at its terminus. There are some drivable shoulders along its length.
2. Roadside brush is present is present along some of this road. Brush along a narrow road makes ingress and egress difficult during wildfires.
3. Fuel load is Light to heavy. The lightest fuel loads are around the structures along the eastern half of this road. The heaviest fuel concentrations are located in the drainage south of Red Hill Mine Road that runs parallel to it. Fuels in this area are in fuel model FM10. Fuel load is very heavy in this drainage.
4. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. Fuel model FM10 is the dominate fuel type in the drainage south of Red Hill Mine Road. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties
6. The average parcel size is 5.5 acres. Homeowners should use this to their advantage by creating defensible space well beyond the 100-foot requirement. The structural density rating for this area is rural.

7. Slopes average 26%; slopes this steep will adversely affect fire behavior. The steepest slopes are the stream banks in the drainage.
8. The greatest threat to this area is from wildfires occurring in the drainages south and east of the road. Much of the risk can be mitigated by increasing the clearance behind the structures beyond the 100-foot mandatory clearance.
9. Compliance with defensible space regulations is good at most residences.
10. The greatest threat to this area is from fires originating east of the terminus of Red Hill Mine Road and fires burning under foehn wind conditions.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Create cul-de-sac at this road's terminus	Homeowners
Reduce fuels along the roadsides	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	26%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

LEONA

1. Leona Road is a dead-end private one and a half lane paved road 474 feet in length without a cul-de-sac at its terminus. The road sign is wooden and not readable from both directions.

FIGURE 9 - POOR STREET SIGN

2. Roadside brush is present along some of this road. Brush along a narrow road makes ingress and egress difficult during wildfires.
3. Fuel load is Light to heavy. The lightest fuel loads are around the structures along the eastern half of this road. The heaviest fuel concentrations are located in the drainage south of Red Hill Mine Road that runs parallel to it. Fuels in this area are in fuel model FM10. Fuel load is very heavy in this drainage.
4. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity.

Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.

5. The average parcel size is 2 acres. Homeowners should use this to their advantage by creating defensible space well beyond the 100-foot requirement. The structural density rating for this area is rural.
6. Slopes average 13%; slopes this steep will adversely affect fire behavior.
7. Compliance with defensible space regulations is good at most residences.
8. The greatest threat to this area is from fires originating east of the terminus of Red Hill Mine Road and fires burning under foehn wind conditions.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Replace current street sign with a county standard sign	Homeowners
Reduce fuels along the roadsides	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	13%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

LUPE (BETWEEN PONDEROSA WAY ITS TERMINUS AS A COUNTY ROAD)

1. This section of Lupe Road is a two lane county road. There are some drivable shoulders along its length.
2. Most of this section of Lupe Road lies across a parcel 384 acres in size. There are no structures on this parcel. There are parcels containing structures near the end of the county section of Lupe Road. Parcels in this area average 6 acres in size
3. Fuel load is moderate to heavy.
4. The dominate fuel model where the structures are located is FM6. Fires in FM6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
5. The dominate fuel model on the large 384 acre parcel is fuel model FM10. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model

burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties

6. Other fuel models are present in lesser amounts. These are FM2 and FM5. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
7. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
8. The structural density rating for this area is rural.
9. Slopes average 26%; slopes this steep adversely affect fire behavior.
10. The greatest threat to this area is from wildfires occurring in the drainages east of the road, especially during foehn wind conditions.
11. Compliance with defensible space regulations is good at most residences.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	26%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Very High
			FM 5 (SH5)	6.5	Very High	Very High	Very High	Extreme	
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

CHESTER'S PLACE

1. Chester Place is a narrow dead-end private road 5764 feet in length without a cul-de-sac at its terminus. Much of this road is just above a creek bed. This creek bed (drainage) creates a natural chimney that will funnel fires upslope from the west. Fires spread upslope with greater intensity.
2. Fuel load is very heavy along its entire length.

3. The dominate fuel model is FM10. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties
4. The average parcel size is 96 acres. The structural density rating for this area is rural.
5. Slopes range from 18% to 32% with an average of 26%. Slopes this steep will adversely affect fire behavior.
6. The greatest threat to this area is from wildfires occurring in the drainage west of the road.
7. There are two structures on this road. Homes along this road will require defensible space well beyond the 100 foot requirement.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	26%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Very High
			FM 5 (SH5)	6.5	Very High	Very High	Very High	Extreme	
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

MARBLE QUARRY ROAD

1. Marble Quarry is a narrow dead-end private dirt road 7327 feet in length without a cul-de-sac at its terminus.
2. Fuel load is very heavy along its entire length.
3. The dominate fuel model is FM10. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties
4. The average parcel size is 57 acres. The structural density rating for this area is rural.
5. Slopes range from 49% to 52% with an average of 50%. Slopes this steep will adversely affect fire behavior.

6. The greatest threat to this area is from wildfires starting near Sutter Creek Road and those occurring during foehn wind conditions.
7. Homes along this road will require defensible space well beyond the 100 foot requirement

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Create cul-de-sac at this road's terminus	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	50%	FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	Very High

RAINBOW LANE

1. Rainbow Lane is a narrow unpaved private dead-end road without a cul-de-sac t its terminus.
2. Roadside brush exists along its length.
3. Fuel load is moderate to heavy.
4. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. The average lot size is 4 acres. The structural density rating for this area is rural.
6. Slopes average 12%; slopes this steep adversely affect fire behavior.
7. The greatest threat to this area is from wildfires occurring in the drainages east of the road, especially during foehn wind conditions.
8. Compliance with defensible space regulations is poor.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Reduce fuels along roadside	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	12%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High

LUPE (PRIVATE ROAD SECTION)

1. This section of Lupe Road is a dead-end private dirt road 1 ½ lanes in width 4361 feet in length. There is a well-constructed turnaround at its terminus designed to accommodate fire apparatus.
2. Most of this section of Lupe Road lies across a parcel 384 acres in size. There are no structures on this parcel. There are parcels containing structures near the end of the county section of Lupe Road. Parcels in this area average 6 acres in size.
3. Fuel load is heavy to very heavy with three fuel models represented – FM 5, FM6, and FM10.
4. The dominate fuel models on the south side of the road are FM5 and FM6. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
5. Fires in FM6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
6. The dominate fuel model on the north side of the road is fuel model FM10. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties
7. The average parcel size is 24 acres. The structural density rating for this area is rural.
8. Slopes average 45%; slopes this steep adversely affect fire behavior.
9. The greatest threat to this area is from wildfires occurring in the drainages north and east of the road, especially during foehn wind conditions.
10. Compliance with minimal defensible space regulations will not protect structures along this road. Homeowners should extend their defensible space well beyond the 100-foot requirement. Two homes at the very end of this road have created defensible space in excess of the 100-foot requirement.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict compliance with defensible space requirements with defensible space of 100 feet or more especially on the downslope areas to the north and east.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	45%	FM 5 (SH5)	6.5	Very High	Very High	Very High	Extreme	High
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

PINE GROVE AREA

BERRY STREET

1. Berry Street parallels Highway 88 in Pine Grove. It is a dead-end paved county road 2354 feet in length with drivable shoulders and a wide turnaround at its terminus.
2. Fuel load is light. The fuel model is FM28. FM28 is an urban fuel model that describes fuels that have been so modified that they no longer qualify as a forest fuel. Fuels in this model may include native plants but also include non-native species. This fuel model also includes large areas of man-made disturbances such as parking lots, ballparks, etc.
3. The average parcel size is 1.7 acres. The structural density rating for this area is rural.
4. Slopes average 11%; slopes this steep can adversely affect fire behavior.
5. Compliance with minimal defensible space regulations will protect most structures on this road.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	11%	FM 28 (NB1)	---	---	---	---	---	Low

F STREET

1. F Street is a paved private road.
2. Fuel load is non-existent. The fuel model is FM28. FM28 is an urban fuel model that describes fuels that have been so modified that they no longer qualify as a forest fuel. Fuels in this model may

include native plants but also include non-native species. This fuel model also includes large areas of man-made disturbances such as parking lots, ballparks, etc.

3. This road services to state facilities, CAL TRANS and CAL FIRE. The parcel size is 5.6 acres. The structural density rating for this area is rural.
4. Slopes average is less than 10%; slopes this steep will not adversely affect fire behavior.
5. Compliance with minimal defensible space regulations will protect structures on this road.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	10%	FM 28 (NB1)	---	---	---	---	---	Low

MATSON DRIVE

1. Matson Drive is a very short (159 feet) dead-end private road without a cul-de-sac at its terminus.
2. Fuel load is non-existent. The fuel model is FM28. FM28 is an urban fuel model that describes fuels that have been so modified that they no longer qualify as a forest fuel. Fuels in this model may include native plants but also include non-native species. This fuel model also includes large areas of man-made disturbances such as parking lots, ballparks, etc.
3. The average parcel size is 0.17 acres. The structural density rating for this area is urban.
4. Slopes average is less than 6%; slopes this steep will not adversely affect fire behavior.
5. Compliance with minimal defensible space regulations will protect structures on this road.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
urban	yes	10%	FM 28 (NB1)	---	---	---	---	---	Low

SPURLOCK LANE

1. Spurlock Lane is a dead-end private road 2183 feet in length that begins as a wide two lane road then narrows to 1 ½ lanes in width. There is no cul-de-sac at its terminus but there is a large turnaround on the property at the road's end.
2. Fuel load is heavy to very heavy. The heaviest fuels are in the drainage that parallels Spurlock Lane on the east side.
3. The dominate fuel model is fuel model FM10. Fuel Model 10 represents the most hazardous Fuel Model. The heaviest fuels are the Fuel Model 10 fuels. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties
4. The average parcel size is 11 acres. The structural density rating for this area is rural.
5. Slopes average 23%; slopes this steep adversely affect fire behavior.
6. The greatest threat to this area is from wildfires occurring in the land east of the road, especially during foehn wind conditions.
7. Compliance with minimal defensible space regulations will not protect structures along this road. Homeowners should extend their defensible space well beyond the 100-foot requirement. Two homes at the very end of this road have created defensible space in excess of the 100-foot requirement.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	23%	FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	High

WALNUT STREET

1. Walnut Street is a narrow dead-end private road 524 feet in length without no turnouts along its length and no cul-de-sac at its terminus
2. Fuel load in the immediate area is moderate. However, very heavy concentrations of fuels are found within 500 feet northwest of this road.
3. The dominate fuel model is fuel model FM10. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Two other fuel models are present. These are fuel model FM2 and FM6.

4. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
5. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
6. The average parcel size is 0.99 acres. The structural density rating for this area is suburban.
7. Slopes average 19%; slopes this steep adversely affect fire behavior.
8. The greatest threat to this area is from wildfires occurring in the fuels northwest this road during normal summer weather patterns and during foehn wind conditions.
9. A hydrant is available near the intersection of Crestview Drive and Tellurium Drive.
10. Good compliance with defensible space was noted.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Suburban	Yes	19%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

CRESTVIEW DRIVE

1. Crestview Drive is a dead-end county road 985 feet in length with a cul-de-sac at its terminus
2. Fuel load in the immediate area is moderate. However, very heavy concentrations of fuels are found within 500 feet north northwest of this road.
3. The dominate fuel model is fuel model FM10. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.

4. The average parcel size is 3.4 acres. This large average is due to one very large parcel (15.7 acres) at the western end of Crestview Drive. Without this parcel, the average parcel size is 0.38 acres. The structural density rating for this area is suburban.
5. Slopes average 19%; slopes this steep adversely affect fire behavior.
6. The greatest threat to this area is from wildfires occurring in the fuels northwest this road during normal summer weather patterns and during foehn wind conditions.
7. A hydrant is available near the intersection of Crestview Drive and Tellurium Drive.
8. Fair compliance with defensible space was noted.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Suburban	No	19%	FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	Moderate

KNOLL COURT

1. Knoll Court is a county road 328 feet in length with a cul-de-sac at its terminus
2. Fuel load in the immediate area is heavy. Very heavy concentrations of fuels are found north and northwest of this road.
3. The dominate fuel model is fuel model FM6. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak. The greater threat to the residents of this road is from the very heavy fuel load of FM10 fuels below and to the northwest of this road. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
4. The average parcel size is 0.74 acres. The lots along this road range in depth from 190 feet to 230 feet deep. Residents should take advantage of this to increase their defensible space. In addition, there is a narrow arm of an adjoining parcel that would provide additional protection (50+ feet) if converted to a fuelbreak. The structural density rating for this area is rural.
5. Slopes average 28%; slopes this steep adversely affect fire behavior.
6. The greatest threat to this area is from wildfires occurring in the fuels northwest this road during normal summer weather patterns and during foehn wind conditions.
7. A hydrant is available near the intersection of Knoll Court and Tellurium Drive.

8. Fair compliance with defensible space was noted.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Develop a fuel management zone (fuelbreak) to the north and east of the parcels on Knoll Court	Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Suburban	Yes	28%	FM 6 (SH7)	6.9	Very High	Very High	High	Very High	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

VISTA COURT

1. Vista Court is a county road 402 feet in length with a cul-de-sac at its terminus
2. Fuel load in the immediate area is heavy. Very heavy concentrations of fuels are found north and northwest of this road.
3. The dominate fuel model is fuel model FM6. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak. The greater threat to the residents of this road is from the very heavy fuel load of FM10 fuels below and to the northwest of this road. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
4. The average parcel size is 0.48 acres. The lots along this road range in depth from 190 feet to nearly 300 feet deep. Residents should take advantage of this to increase their defensible space. In addition, there is a narrow arm of an adjoining parcel that would provide additional protection (50+ feet) if converted to a fuelbreak. The structural density rating for this area is suburban.
5. Slopes average 28%; slopes this steep adversely affect fire behavior.
6. The greatest threat to this area is from wildfires occurring in the fuels northwest this road during normal summer weather patterns and during foehn wind conditions.

7. A hydrant is available near the intersection of Knoll Court and Tellurium Drive.
8. Fair compliance with defensible space was noted.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Develop a fuel management zone (fuelbreak) to the north and east of the parcels on Vista Court	Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Suburban	Yes	28%	FM 6 (SH7)	6.9	Very High	Very High	High	Very High	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

TELLURIUM DRIVE

1. Tellurium Drive is a county road 927 feet in length with a cul-de-sac at its terminus
2. Fuel load in the immediate area is moderate.
3. The dominate fuel model is fuel model FM6. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak. The greater threat to the residents of this road is from the very heavy fuel load of FM10 fuels below and to the northwest of this road. Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
4. The average parcel size is 1.1 acres. This large lot size is due to single parcel 5.4 acres in size. Without this parcel, the average parcel size is 0.42 acres. The structural density rating for this area is suburban.
5. Slopes average 6%; slopes this steep do not adversely affect fire behavior.
6. The greatest threat to this area is from wildfires occurring in the fuels northwest this road during normal summer weather patterns and during foehn wind conditions.
7. A hydrant is available near the intersection of Knoll Court and Tellurium Drive.
8. Fair compliance with defensible space was noted.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Develop a fuel management zone (fuelbreak) to the north and east of the parcels on Knoll Court	Amador Fire Safe Council

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Suburban	Yes	6%	FM 6 (SH7)	6.9	Very High	Very High	High	Very High	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

HILLTOP STREET

1. Hilltop Street is a short (1019 feet) dead-end private paved road without a cul-de-sac at its terminus.
2. Fuel load is light.
3. The fuel models are FM2, FM6, FM10, and FM28. FM28 is an urban fuel model that describes fuels that have been so modified that they no longer qualify as a forest fuel. Fuels in this model may include native plants but also include non-native species. This fuel model also includes large areas of man-made disturbances such as parking lots, ballparks, etc.
4. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
6. In FM10, fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
7. The average parcel size is 0.73 acres. The structural density rating for this area is suburban.
8. Slopes average is less than 10%; slopes this steep will not adversely affect fire behavior.

9. Compliance with defensible space regulations will protect structures on this road.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Suburban	Yes	10%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Low
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	
			FM 28 (NB1)	6.9	Very High	Very High	High	Very High	

VOLCANO ROAD AREA

AQUEDUCT ROAD (COUNTY ROAD)

1. Aqueduct Road connects Highway 88 to Pine Grove Volcano Road. This road is 4772 feet in length.
2. Fuel load is moderate to heavy.
3. Three fuel models are present – FM 5, FM6, and FM10. The dominate fuel model is FM10. Fires in this FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
4. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak. Two other fuel models are present, FM2 and FM10.
5. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
6. The average parcel size is 24 acres. The structural density rating for this area is rural.
7. Slopes average 9%; slopes mild do not adversely affect fire behavior. This area is a wide valley.

8. The greatest threat to this area is from wildfires occurring east of this area during foehn wind conditions.

PROJECTS

Project list	Method/responsible party
Strict compliance with defensible space requirements taking advantage of the large lot size to provide as much clearance as possible	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	9%	FM 5 (SH5)	6.5	Very High	Very High	Very High	Extreme	Moderate
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

PINE CONE LANE

1. Pine Cone Lane is a narrow paved dead-end private road 1370 feet in length without no turnouts along its length and no cul-de-sac at its terminus. There is a circular drive at the last residence.
2. The road sign at the intersection of Pine Cone lane and Pine Grove Volcano Road is of poor quality and does not meet current standards.
3. Fuel load in the immediate area is moderate.
4. The length of this road combined with the lots size does not meet current state and county standards for dead-end roads. Residents should consider early evacuation when this area is threatened by wildfire.
5. The dominate fuel model is fuel model FM6. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak. Two other fuel models are present, FM2 and FM10.
6. Fires in this FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
7. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this

model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.

8. The average parcel size is 1.1 acres. The structural density rating for this area is rural.
9. Slopes average 24%; slopes this steep adversely affect fire behavior.
10. The greatest threat to this area is from wildfires occurring east of this area during foehn wind conditions.
11. Fair compliance with defensible space was noted.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Replace street sign with a sign meeting current county and state standards.	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	24%	FM 5 (SH5)	6.5	Very High	Very High	Very High	Extreme	High
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

MAICO GULCH

1. Maico Gulch is a narrow paved dead-end private road 573 feet in length without no turnouts along its length and no cul-de-sac at its terminus. This road begins approximately half way up Pine Cone Lane. When the section of Pine Cone Lane between Pine Grove Volcano Road and Maico Gulch is added the overall length of this dead-end road is 1696 feet in length. The length of this road combined with the lots size does not meet current state and county standards for dead-end roads. Residents should consider early evacuation when this area is threatened by wildfire.
2. Fuel load in the immediate area is moderate.
3. Three fuel models are represented in equal amounts. These are fuel models FM5, FM6, and FM10. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
4. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.

5. Fires in this FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
6. The average parcel size is 1.2 acres. The structural density rating for this area is rural.
7. Slopes average 25%; slopes this steep adversely affect fire behavior.
8. The greatest threat to this area is from wildfires occurring east of this area during foehn wind conditions.
9. Fair compliance with defensible space was noted.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Replace street sign with a sign meeting current county and state standards.	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	25%	FM 5 (SH5)	6.5	Very High	Very High	Very High	Extreme	High
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

TOBACCO ROAD

1. Tobacco Road is a narrow private gravel road 1390 feet long that loops from Pine Grove Volcano Road back to Pine Grove Volcano Road.
2. Fuel load in the immediate area is moderate.
3. The road sign at the intersection of Tobacco Road and Pine Grove Volcano Road is of poor quality and does not meet current standards.
4. Three fuel models are represented in equal amounts. These are fuel models FM5, FM6, and FM10. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
5. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub

conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.

6. Fires in this FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
7. The average parcel size is 1.0 acres. The structural density rating for this area is rural.
8. Slopes average 9%; slopes this steep adversely affect fire behavior.
9. The greatest threat to this area is from wildfires occurring east of this area during foehn wind conditions.
10. Fair compliance with defensible space was noted.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Replace street sign with a sign meeting current county and state standards.	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	9%	FM 5 (SH5)	6.5	Very High	Very High	Very High	Extreme	High
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

WARNER WEST ROAD

1. Warner West Road is a narrow private gravel dead-end road 606 feet long without a cul-de-sac at its terminus. There are sections of this road with marginal payment.
2. Roadside fuels exist along the paved portions of the road. Roadside fuel can make evacuation difficult.
3. Fuel load in the immediate area is moderate.
4. Reduction of surface fuels through this area by strict compliance with defensible space regulations will eliminate much of the risk from wildfire.
5. Two fuel models are represented in equal amounts. These are fuel models FM5 and FM10. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.

6. Fires in this FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
7. The average parcel size is 1.7acres. The structural density rating for this area is rural.
8. Slopes average 9%; slopes this flat will not adversely affect fire behavior.
9. The greatest threat to this area is from wildfires occurring east of this area during foehn wind conditions.
10. Fair compliance with defensible space was noted.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Reduce roadside fuels	Homeowners/Amador Fire Safe Council
Replace street sign with a sign meeting current county and state standards.	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	9%	FM 5 (SH5)	6.5	Very High	Very High	Very High	Extreme	Moderate
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

WARNER EAST ROAD

1. Warner East Road is a narrow private gravel dead-end road 2448 feet long without a cul-de-sac at its terminus. There is a circular drive at the very end of this road but it is not sufficient for fire apparatus. The length of this road combined with the lots size does not meet current state and county standards for dead-end roads. Residents should consider early evacuation when this area is threatened by wildfire.
2. Roadside fuels are present toward the end of this road. Roadside fuels can make evacuation difficult.
3. Fuel load in the immediate area is light to moderate with the heaviest fuels located at the end of the road. The heaviest fuels lay in the draw that runs from the road toward the southwest.
4. Three fuel models are represented in equal amounts. These are fuel models FM5, FM6, and FM10. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.

5. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
6. Fires in this FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
7. The average parcel size is 1.7acres. The structural density rating for this area is rural.
8. Slopes average 22%; slopes this steep will adversely affect fire behavior.
9. The greatest threat to this area is from wildfires occurring east of this area during foehn wind conditions.
10. Good compliance with defensible space was noted.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Reduce roadside fuels	Homeowners/Amador Fire Safe Council
Replace street sign with a sign meeting current county and state standards.	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	22%	FM 5 (SH5)	6.5	Very High	Very High	Very High	Extreme	Moderate
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

LONESOME LANE

1. Lonesome Lane is a narrow private paved dead-end road 887 feet long that connects to Rockola Road. Rockola Road is a very short road that loops back to Lonesome Lane. This loop creates a good turnaround for fire apparatus that replaces the need for a cul-de-sac.
2. Street sign is on wooden post.
3. Roadside fuels are present toward the end of this road. Roadside fuels can make evacuation difficult.
4. Fuel load in the immediate area is light to moderate.

5. Two fuel models are represented in equal amounts. These are fuel models FM2 and FM5. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
6. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
7. The average parcel size is 4.9acres. The structural density rating for this area is rural.
8. Slopes average 14%; slopes this steep will adversely affect fire behavior.
9. The greatest threat to this area is from wildfires occurring east of this area during foehn wind conditions.
10. Good compliance with defensible space was noted.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Replace street sign post with a metal post	Homeowners
Reduce roadside fuels	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	14%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate
			FM 5 (SH5)	6.5	Very High	Very High	Very High	Extreme	

ROCKOLA LANE (SEE LONESOME LANE)

PARKSIDE LANE

1. Parkside Lane is a narrow private gravel dead-end road 1573 feet long without a cul-de-sac at its terminus. However, a large open area is available in the front yard of the last residence.
2. Residents should consider early evacuation when this area is threatened by wildfire.
3. Roadside fuels (Scotch Broom) are present toward the end of this road. Roadside fuels can make evacuation difficult.

4. Fuel load in the immediate area is light to heavy with the heaviest fuels located at the end of the road.
5. Three fuel models are represented in equal amounts. These are fuel models FM5, FM6, and FM10. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
6. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
7. Fires in this FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels.
8. This area borders the south boundary of Indian Grinding Rock State Park and as a result, receives some protection from wildfires approaching from the north.
9. The average parcel size is 1.3acres. The structural density rating for this area is rural.
10. Slopes average 14%; slopes this steep will adversely affect fire behavior.
11. The greatest threat to this area is from wildfires occurring east of this area during foehn wind conditions.
12. Good compliance with defensible space was noted.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Reduce roadside fuels	Homeowners/Amador Fire Safe Council
Replace street sign with a sign meeting current county and state standards.	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	14%	FM 5 (SH5)	6.5	Very High	Very High	Very High	Extreme	Moderate
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

BRYSON LANE

1. Bryson Lane is a wide private paved dead-end road 1573 feet long without a cul-de-sac at its terminus. .
2. Fuel load in the immediate area is light to heavy with the heaviest fuels located in the draw south of the road.
3. Two fuel models are represented in equal amounts. These are fuel models FM5 and FM10. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
4. Fires in this FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels.
5. The average parcel size is 19 acres. The structural density rating for this area is rural.
6. Slopes average 21%; slopes this steep will adversely affect fire behavior.
7. The greatest threat to this area is from wildfires occurring east of this area during foehn wind conditions.
8. No structures are present and the gate is locked without a fire service lockbox.

PROJECTS

Project list	Method/responsible party
Install fire service lockbox at the gate	Owners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	21%	FM 5 (SH5)	6.5	Very High	Very High	Very High	Extreme	Moderate
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

PAYTON LANE

1. Payton Lane is a wide private paved dead-end road 3149 feet long without a cul-de-sac at its terminus. However, large meadow at last residence provides ample turnaround space.
2. Fuel load in the immediate area is light to heavy with the heaviest fuels located in the draw south of the road.
3. Roadside fuels (Scotch Broom) are present near the end of this road. Roadside fuels make evacuation difficult during wildfires.

4. Four fuel models are represented in equal amounts. These are fuel models FM1, FM5, FM6, and FM10.
5. In Fuel Model 1 (meadow areas), fire spread is governed by the fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber is present, generally less than one third of the area. Grasslands and savanna are represented along with stubble, grass-tundra, and grass-shrub combinations that met the above area constraint. Annual and perennial grasses are included in this fuel model.
6. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
7. Fires in model 6 carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush. This area is mostly oaks with some conifers interspersed among the oak.
8. Fires in this FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels.
9. The average parcel size is 11 acres. This large parcel size is due to one large 96-acre parcel. Without that parcel calculated into the average, the average parcel size is still 6 acres. The structural density rating for this area is rural.
10. Slopes average 14%; slopes this steep will adversely affect fire behavior.
11. Compliance with defensible space regulations is very good.
12. The greatest threat to this area is from wildfires occurring east of this area during foehn wind conditions.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Reduce roadside fuels	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	14%	FM1 (GR4)	2.15	High	Very High	Very High	Extreme	Moderate
			FM 5 (SH5)	6.5	Very High	Very High	Very High	Extreme	
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

HORSE CANYON ROAD (INCLUDES INDIAN ROCK ROAD)

1. Horse Canyon Road is a dirt road 3913 feet in length connecting Indian Rock Road and Mitchell Mine Road. It is gated at both ends. This road only serves Indian Grinding Rock State Park and the Horse Canyon Ranch.
2. Fuel load in the immediate area is light to moderate with the heaviest fuels located west of the park and south of the road.
3. The dominate fuel model is FM5. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
4. This area includes Indian Grinding Rock State Park.
5. The average parcel size is 44 acres. The structural density rating for this area is rural.
6. Slopes average 14%; slopes this steep will adversely affect fire behavior.

PROJECTS

Project list	Method/responsible party
Install fire service lockbox at the gate	Owners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	14%	FM 5 (SH5)	6.5	Very High	Very High	Very High	Extreme	Moderate

MITCHELL MINE ROAD AREA

MITCHELL MINE ROAD

1. Mitchell Mine Road is a narrow (one-lane) private dirt dead-end road 6211 feet long without a cul-de-sac at its terminus.
2. Fuel load is heavy to very heavy.
3. Two fuel models are represented. These are fuel models FM5 and FM10. Fuel Model FM10 is present on the north aspects while FM5 is present on the south aspects.
4. The dominate fuel model is FM10. Fires in this FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels. These fuels are on the slopes south of the road.
5. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
6. The average parcel size is 7.8 acres. The structural density rating for this area is rural.
7. Slopes average 36%; slopes this steep will adversely affect fire behavior.
8. The fire threat to this area is a result of the fuels and slopes combined with the lack of quick access.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Reduce roadside fuels	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	36%	FM 5 (SH5)	6.5	Very High	Very High	Very High	Extreme	Very High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

WEST MITCHELL MINE ROAD

1. West Mitchell Mine Road is a narrow (one-lane) private dirt dead-end road 3717 feet long without a cul-de-sac at its terminus. This road is located in a canyon.

2. Fuel load is heavy to very heavy with the heaviest fuels located on the slopes of the ridge.
3. Two fuel models are represented. These are fuel models FM5 and FM10. Fuel Model FM10 is present on the north aspects while FM5 is present on the south aspects.
4. The dominate fuel model is FM10. Fires in this FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels. These fuels are on the slopes south of the road.
5. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
6. The average parcel size is 27 acres. The structural density rating for this area is rural.
7. Slopes average 25%; slopes this steep will adversely affect fire behavior.
8. The fire threat to this area is a result of the fuels and slopes combined with the lack of quick access.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Reduce roadside fuels	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	25%	FM 5 (SH5)	6.5	Very High	Very High	Very High	Extreme	Very High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

MOONLIGHT RIDGE ROAD

1. Moonlight Ridge Road is a narrow (one-lane) private dirt dead-end road 1882 feet long without a cul-de-sac at its terminus. This road is located on a ridge top.
2. Fuel load is heavy to very heavy with the heaviest fuels located on the slopes of the ridge.
3. Roadside fuels are present. Roadside fuels make evacuation difficult during wildfires.
4. Two fuel models are represented. These are fuel models FM5 and FM10.
5. The dominate fuel model is FM10. Fires in this FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of

dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels.

6. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
7. The average parcel size is 31 acres. The structural density rating for this area is rural.
8. Slopes average 28%; slopes this steep will adversely affect fire behavior.
9. The fire threat to this area is a result of the fuels and slopes combined with the lack of quick access.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Reduce roadside fuels	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	28%	FM 5 (SH5)	6.5	Very High	Very High	Very High	Extreme	Very High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

WILD IRISH LANE

1. Wild Iris Lane is a narrow (one-lane) private dirt dead-end road 1415 feet long without a cul-de-sac at its terminus.
2. Fuel load is heavy to very heavy with the heaviest fuels located on the slopes of the ridge.
3. Roadside fuels are present. Roadside fuels make evacuation difficult during wildfires.
4. The dominate fuel model is FM10. Fires in this FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels.
5. The average parcel size is 3.9 acres. The structural density rating for this area is rural.
6. Slopes average 28%; slopes this steep will adversely affect fire behavior.
7. The fire threat to this area is a result of the fuels and slopes combined with the lack of quick access.

PROJECTS

Project list	Method/responsible party
Standardized address signs	Homeowners
Reduce roadside fuels	Homeowners/Amador Fire Safe Council
Create cul-de-sac at road's terminus	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	28%	FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	Very High

GALA MANOR AREA

GALA UNIT 1 (INCLUDES GALA DRIVE TO ELDERBERRY DRIVE, NORMA COURT, MARKO LANE, BILLS COURT, TONY COURT, AND FOOTHILL PINES COURT)

1. With the exception of Foothill Pines Court, all roads in Gala Unit 1 are wide paved county roads.
2. Patches of Scotch Broom were present near treatment plant and between Highway 88. Scotch Broom is a highly flammable noxious non-native species that is highly invasive.
3. Fuel load is moderate to heavy north and east of unit 1 bordering on the backyard property boundaries on the north side of Gala Drive.
4. Three fuel models are represented. These are fuel models FM1, FM5, and FM28.
5. The areas dominated by FM1 are Marko Lane, Bills Court, and Foothill Pine Court. Fire spread is governed by the fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber is present, generally less than one third of the area. Grasslands and savanna are represented along with stubble, grass-tundra, and grass-shrub combinations that met the above area constraint. Annual and perennial grasses are included in this fuel model.
6. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material. This fuel model is present in the area between the treatment plant and the end of Marko Lane.
7. Fuel model FM28 is the most dominate fuel model for this entire area. FM28 represents the affects of urbanization on the native vegetation. In this case, native fuels have been so altered by human activities as to no longer fit any of the existing forest fuel models. This fuel model consists of

sidewalks, lawns, paved roads, decks, sewer treatment plant, homes, outbuildings, vehicles, and non-native plants. Fuel load here is primarily structures and non-native plants.

8. The average parcel size is 0.36 (excluding Foothill Pines Court) acres. Foothill Pines court is excluded because it contains an apartment complex while all other lots are single residential parcels. This produces a structural density rating of suburban. However, the homes are located nearest the street, which is the narrowest part of the lot, especially on the cul-de-sacs. Horizontal distance between homes measures as little as 22 feet. When home placement is taken into consideration, this area is more appropriately rated as urban. In areas where urban structure density exists, the risk of home-to-home ignition is present (Auburn Fires). All forest fuel models are no longer valid as predictors of wildfire behavior.

9. Slopes average 16%; slopes this steep will adversely affect fire behavior.
10. The fire threat to this area is from fires burning during foehn wind events. Wildfires approaching from the north and east under these conditions could trigger house-to-house ignition, especially in homes on the north side of Gala Drive.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Eradicate Scotch Broom	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Urban	Yes	16%	FM1 (GR4)	2.15	High	Very High	Very High	Extreme	Low
			FM 5 (SH5)	6.5	Very High	Very High	Very High	Extreme	

GALA UNIT 2

ELDERBERRY DRIVE

1. Elderberry Drive is a wide paved dead-end county road 489 feet in length.
2. Elderberry Drive does not have a cul-de-sac at its terminus. Residential parking alcoves are present on both sides of the road at its terminus. These approximate a hammerhead turnaround. However, these are too shallow to accommodate fire apparatus as a turnaround. Any advantage of these

parking alcoves is lost if vehicles are parked in them when fire or other emergency services need them as turnarounds.
3. Fuel load is light to moderate.
4. The dominate fuel model is FM10. Fires in this FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
5. The average parcel size is 1.5 acres. The structure density rating for this area is rural.
6. Slopes average 14%; slopes this steep will adversely affect fire behavior.
7. Most of the risk from wildfire can be mitigated by eliminating surface and ladder fuels and limbing remaining trees at least 12 feet from ground level. Homeowners should use their large lots to extend and link defensible space between homeowners to create a fuel reduction zone.
8. Compliance with defensible space is good throughout this area.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	14%	FM 5 (SH5)	6.5	Very High	Very High	Very High	Extreme	Moderate
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

ELDERBERRY COURT

1. Elderberry Court is a wide paved dead-end county road 191 feet in length.
2. Elderberry Court does not have a cul-de-sac at its terminus. There is a circular turnaround at its terminus that is adequate for use by fire apparatus.
3. Fuel load is light to moderate.
4. The dominate fuel model is FM5. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
5. The average parcel size is 1.2 acres. The structure density rating for this area is rural.
6. Slopes average 22%; slopes this steep will adversely affect fire behavior.

7. Most of the risk from wildfire can be mitigated by eliminating surface and ladder fuels and limbing remaining trees at least 12 feet from ground level. Homeowners should use their large lots to extend and link defensible space between homeowners to create a fuel reduction zone.
8. Compliance with defensible space is good throughout this area.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	22%	FM 5 (SH5)	6.5	Very High	Very High	Very High	Extreme	Moderate

GALA DRIVE UNIT 2 (RATING OF NEAREST CROSS STREET)

REDBUD LANE

1. Redbud Lane is a wide paved dead-end private road 566 feet in length.
2. Redbud Lane does not have a cul-de-sac at its terminus. Residential parking alcoves are present on both sides of the road at its terminus. These approximate a hammerhead turnaround. However, these are too shallow to accommodate fire apparatus as a turnaround. Any advantage of these parking alcoves is lost if vehicles are parked in them when fire or other emergency services need them as turnarounds.
3. Fuel load is moderate to heavy.
4. The dominate fuel model is FM5. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
5. Some fuel model FM10 is present also. Fires in this FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
6. The average parcel size is 1.3 acres. The structure density rating for this area is rural.
7. Slopes average 36%; slopes this steep will adversely affect fire behavior.

8. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface and ladder fuels and limbing remaining trees at least 12 feet from ground level. Homeowners should use their large lots to extend and link defensible space between homeowners to create a fuel reduction zone.
9. Compliance with defensible space is good throughout this area.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	36%	FM 5 (SH5)	6.5	Very High	Very High	Very High	Extreme	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

SEQUOIA LANE

1. Sequoia Lane is a wide paved dead-end private road 566 feet in length.
2. Sequoia Lane does not have a cul-de-sac at its terminus. Residential parking alcoves are present on both sides of the road at its terminus. These approximate a hammerhead turnaround. However, these are too shallow to accommodate fire apparatus as a turnaround. Any advantage of these parking alcoves is lost if vehicles are parked in them when fire or other emergency services need them as turnarounds.
3. Fuel load is moderate to heavy.
4. The dominate fuel model is FM5. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
5. The average parcel size is 1.0 acres. The structure density rating for this area is rural.
6. Slopes average 33%; slopes this steep will adversely affect fire behavior.
7. Most of the risk from wildfire can be mitigated by eliminating surface and ladder fuels and limbing remaining trees at least 12 feet from ground level. Homeowners should use their large lots to extend and link defensible space between homeowners to create a fuel reduction zone.
8. Compliance with defensible space is good throughout this area.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	33%	FM 5 (SH5)	6.5	Very High	Very High	Very High	Extreme	High

BLACKBERRY LANE

1. Blackberry Lane is a wide paved private road. Blackberry does not have a cul-de-sac at its terminus but it is not a dead-end road (see next item).
2. Blackberry Lane is connected to Highway 88 via an emergency egress fire lane. This lane is gated.
3. Fuel load is moderate. The heaviest fuel load is in the draws on the west side of the road. Draws tend to funnel wildfire upslope with greater intensity.
4. The dominate fuel model is FM5. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
5. The average parcel size is 4 acres. The structure density rating for this area is rural.
6. Slopes average 22%; slopes this steep will adversely affect fire behavior.
7. The greatest wildfire risk to this area is during foehn wind conditions. Most of the risk from wildfire can be mitigated by eliminating surface and ladder fuels and limbing remaining trees at least 12 feet from ground level. Homeowners should use their large lots to extend and link defensible space between homeowners to create a fuel reduction zone.
8. Compliance with defensible space is fair in this area.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	22%	FM 5 (SH5)	6.5	Very High	Very High	Very High	Extreme	Moderate

COTTONWOOD LANE

1. Cottonwood Lane is a wide paved dead-end private road 518 feet in length.
2. Cottonwood Lane does not have a cul-de-sac at its terminus. Residential parking alcoves are present on both sides of the road at its terminus. These approximate a hammerhead turnaround. However, these are too shallow to accommodate fire apparatus as a turnaround. Any advantage of these parking alcoves is lost if vehicles are parked in them when fire or other emergency services need them as turnarounds.
3. Fuel load is moderate to heavy. The heaviest fuel load is in the draws. Draws tend to funnel wildfire upslope with greater intensity.
4. The dominate fuel model is FM10. Fires in this FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
5. The average parcel size is 1.5 acres. The structure density rating for this area is rural.
6. Slopes average 25%; slopes this steep will adversely affect fire behavior.
7. The greatest wildfire risk to this area is during foehn wind conditions. Most of the risk from wildfire can be mitigated by eliminating surface and ladder fuels and limbing remaining trees at least 12 feet from ground level. Homeowners should consider this treatment for their entire parcel. Homeowners should use their large lots to extend and link defensible space between homeowners to create a fuel reduction zone.
8. Compliance with defensible space is fair in this area.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	25%	FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	High

ALDER LANE

1. Alder Lane is a wide paved dead-end private road 681 feet in length.
2. Alder Lane does not have a cul-de-sac at its terminus.
3. Fuel load is light to moderate.
4. The dominate fuel model is FM5. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
5. Some fuel model FM10 is present also. Fires in this FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
6. The average parcel size is 2.8 acres. The structure density rating for this area is rural.
7. Slopes average 22%; slopes this steep will adversely affect fire behavior.
8. Most of the risk from wildfire can be mitigated by eliminating surface and ladder fuels and limbing remaining trees at least 12 feet from ground level. Homeowners should use their large lots to extend and link defensible space between homeowners to create a fuel reduction zone.
9. Compliance with defensible space is good throughout this area.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	22%	FM 5 (SH5)	6.5	Low	High	Moderate	High	Moderate
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

PAINTBRUSH LANE

1. Paintbrush Lane is a wide paved dead-end private road 772 feet in length.
2. Paintbrush Lane does not have a cul-de-sac at its terminus. Residential parking alcoves are present on both sides of the road at its terminus. These approximate a hammerhead turnaround. However, these are too shallow to accommodate fire apparatus as a turnaround. Any advantage of these parking alcoves is lost if vehicles are parked in them when fire or other emergency services need them as turnarounds.
3. Fuel load is moderate to heavy. The heaviest fuel load is in the draws. Draws tend to funnel wildfire upslope with greater intensity.

4. The dominate fuel model is FM10. Fires in this FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.
5. FM5 is also present in lesser amounts. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
6. The average parcel size is 1.9 acres. The structure density rating for this area is rural.
7. Slopes average 22%; slopes this steep will adversely affect fire behavior.
8. Most of the risk from wildfire can be mitigated by eliminating surface and ladder fuels and limbing remaining trees at least 12 feet from ground level. Homeowners should use their large lots to extend and link defensible space between homeowners to create a fuel reduction zone.
9. Compliance with defensible space is good throughout this area.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	22%	FM 5 (SH5)	6.5	Low	High	Moderate	High	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

HOMESTEAD ROAD AREA

HOMESTEAD ROAD (COUNTY ROAD PORTION)

1. This section of Homestead Road is a wide paved county road.
2. Fuel load is moderate to heavy.
3. The dominate fuel model is FM5. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.

4. FM6 is also present in lesser amounts. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.
5. The average parcel size is 1.9 acres. The structure density rating for this area is rural.
6. Slopes average 14%; slopes this steep will adversely affect fire behavior.
7. Most of the risk from wildfire can be mitigated by eliminating surface and ladder fuels and limbing remaining trees at least 12 feet from ground level. Homeowners should extend and link defensible space between homeowners to create a fuel reduction zone.
8. Compliance with defensible space is good throughout this area.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	14%	FM 5 (SH5)	6.5	Low	High	Moderate	High	Moderate
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	

PINE PARK LOOP

1. Pine Park Loop is a wide paved county road that loops from Homestead near Highway 88 back to Homestead near the beginning of the private road portion of Homestead Road.
2. Fuel load is moderate to heavy.
3. The dominate fuel model is FM10. Fires in this FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels.
4. Some fuel model FM5 is also present. In FM5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
5. FM6 is also present in lesser amounts. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h

(13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.

6. The average parcel size is 1.2 acres. The structure density rating for this area is rural.
7. Slopes average 28%; slopes this steep will adversely affect fire behavior.
8. The greatest threat to this area is from fires occurring during foehn wind conditions. Most of the risk from wildfire can be mitigated by eliminating surface and ladder fuels and limbing remaining trees at least 12 feet from ground level.
9. Compliance with defensible space is good throughout this area. Homeowners should extend and link defensible space between homeowners to create a fuel reduction zone.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	28%	FM 5 (SH5)	6.5	Low	High	Moderate	High	High
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

NORTH POINT COURT

1. North Point Court is a wide dead-end paved county road 699 feet in length with a cul-de-sac at its terminus.
2. Fuel load is moderate to very heavy. The heaviest fuels are located in the draw to the northwest.
3. The dominate fuel model is FM10. Fires in this FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels.
4. The average parcel size is 3.4 acres. The structure density rating for this area is rural.
5. Slopes average 24%; slopes this steep will adversely affect fire behavior.
6. The greatest threat to this area is from fires occurring during foehn wind conditions. Most of the risk from wildfire can be mitigated by eliminating surface and ladder fuels and limbing remaining trees at least 12 feet from ground level.
7. Compliance with defensible space is good throughout this area. Homeowners should extend and link defensible space between homeowners to create a fuel reduction zone.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	24%	FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	High

GREEN LEAF COURT

1. Green Leaf Court is a wide dead-end paved county road 193 feet in length with a cul-de-sac at its terminus.
2. Fuel load is moderate to heavy.
3. The dominate fuel model is FM10. Fires in this FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels.
4. The average parcel size is 1 acre. The structure density rating for this area is rural.
5. Slopes average 24%; slopes this steep will adversely affect fire behavior.
6. The greatest threat to this area is from fires occurring during foehn wind conditions. Most of the risk from wildfire can be mitigated by eliminating surface and ladder fuels and limbing remaining trees at least 12 feet from ground level.
7. Compliance with defensible space is good throughout this area. Homeowners should extend and link defensible space between homeowners to create a fuel reduction zone.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	24%	FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	High

HOMESTEAD ROAD (PRIVATE ROAD PORTION)

1. This section of Homestead Road is a partially paved private dead-end road 3098 feet in length with a small cul-de-sac at its terminus. This section exceeds the current state fire safety standards for dead-end roads and parcel size. Residents should consider early evacuation when threatened by wildfire.
2. Fuel load is moderate to heavy.
3. Four fuel models are present. These are FM 1, FM2, FM6, and FM10. In FM1, Fire spread is governed by the fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber is present, generally less than one third of the area. Grasslands and savanna are represented along with stubble, grass-tundra, and grass-shrub combinations that met the above area constraint. Annual and perennial grasses are included in this fuel model.
4. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.
6. Fires in this FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels.
7. The average parcel size is 11.5 acres. The structure density rating for this area is rural.
8. Slopes average 19%; slopes this steep will adversely affect fire behavior.
9. Most of the risk from wildfire can be mitigated by eliminating surface and ladder fuels and limbing remaining trees at least 12 feet from ground level. Homeowners should use their large lots to extend and link defensible space between homeowners to create a fuel reduction zone.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners
Enlarge cul-de-sac to meet current state and county standards.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	19%	FM1 (GR4)	2.15	High	Very High	Very High	Extreme	High
			FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

SPRING CANYON LANE

1. Spring Canyon Road is a partially paved private dead-end road 833 feet in length without a cul-de-sac at its terminus.
2. Fuel load is heavy.
3. Roadside fuel is present. Roadside fuels can make evacuation difficult during wildfires.
4. Three fuel models are present. These are FM2, FM6, and FM10. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.
6. Fires in FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels.
7. The average parcel size is 5 acres. The structure density rating for this area is rural.
8. Slopes average 12%; slopes this steep will adversely affect fire behavior.
9. Most of the risk from wildfire can be mitigated by eliminating surface and ladder fuels and limbing remaining trees at least 12 feet from ground level.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	12%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

BRANDON ROAD (NORTH)

1. Brandon Road (North of Homestead) is a narrow private dead-end gravel road 1833 feet in length without a cul-de-sac at its terminus. There is a wide open area that can be used as a turnaround.
2. Fuel load is heavy. Fuel load in the draw where the roadbed is located is very heavy. Draws tend to funnel wildfire upslope with greater intensity.
3. Roadside fuel is present. Roadside fuels can make evacuation difficult during wildfires.
4. The dominate fuel model is FM10. Fires in FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels.
5. The average parcel size is 5 acres. The structure density rating for this area is rural.
6. Slopes average 21%; slopes this steep will adversely affect fire behavior.
7. Most of the risk from wildfire can be mitigated by eliminating surface and ladder fuels and limbing remaining trees at least 12 feet from ground level.
8. Compliance with defensible space requirements is good.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	21%	FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	High

BRANDON ROAD (SOUTH)

1. Brandon Road (south of Homestead) is a narrow private dead-end paved road 1940 feet in length without a cul-de-sac at its terminus.
2. Fuel load is heavy.
3. Roadside fuel is present, including Scotch Broom. Scotch Broom is a non-native invasive species that is highly flammable. Roadside fuels can make evacuation difficult during wildfires.
4. Equal amounts of fuel models FM6 and FM10 are present. Fires in FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels.
5. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush
6. The average parcel size is 4 acres. The structure density rating for this area is rural.
7. Slopes average 20%; slopes this steep will adversely affect fire behavior.
8. Most of the risk from wildfire can be mitigated by eliminating surface and ladder fuels and limbing remaining trees at least 12 feet from ground level.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Create a cul-de-sac at the roads terminus	Homeowners
Eliminate Scotch Broom	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	20%	FM 6 (SH7)	6.9	Very High	Very High	High	Very High	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

QUAIL LANE

1. Quail Lane is a private dead-end gravel road 1050 feet in length without a cul-de-sac at its terminus. However there is a large driveway/parking area at the end that can serve as a turnaround. This road

exceeds the current state fire safety standards for dead-end roads and parcel size. Residents should consider early evacuation when threatened by wildfire.

2. Fuel load is moderate to heavy.
3. Three fuel models are present. These are FM 5, FM6, and FM10. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
4. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.
5. Fires in this FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels.
6. The average parcel size is 5.4 acres. The structure density rating for this area is rural.
7. Slopes average 20%; slopes this steep will adversely affect fire behavior.
8. Most of the risk from wildfire can be mitigated by eliminating surface and ladder fuels and limbing remaining trees at least 12 feet from ground level.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	20%	FM 5 (SH5)	6.5	Low	High	Moderate	High	High
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

PRIMROSE LANE

1. Primrose Lane is a private dead-end paved road 1051 feet in length without a cul-de-sac at its terminus. However, several converging driveways can be used as a turnaround.
2. Fuel load is moderate to very heavy.
3. Two fuel models are present. These are FM 5 and FM10. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
4. Fires in this FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels.
5. The average parcel size is 5 acres. The structure density rating for this area is rural.
6. Slopes average 23%; slopes this steep will adversely affect fire behavior.
7. Most of the risk from wildfire can be mitigated by eliminating surface and ladder fuels and limbing remaining trees at least 12 feet from ground level.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	23%	FM 5 (SH5)	6.5	Low	High	Moderate	High	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

AQUEDUCT GROVE ROAD AREA

SKYHIGH BLVD

1. Skyhigh Blvd is a private dead-end single lane paved road 2092 feet in length without a cul-de-sac at its terminus. However, Skyhigh Blvd is an extension of Aqueduct Grove Road, which is 2929 feet in length. The total distance of these roads is 5021 feet. Residents near the end of Skyhigh Blvd must travel this distance to evacuate during a wildfire. This section exceeds the current state fire safety standards for dead-end roads and parcel size. Residents should consider early evacuation when threatened by wildfire. Skyhigh forks near the top of the ridge. The south fork is very short and does not have a cul-de-sac. The north fork is also short and lacks a cul-de-sac. This fork is gated. The gate has a fire service key box.
2. This road is very steep. Roadside fuels are present along most its length. Roadside fuels make evacuation difficult during wildfires.
3. Fuel load is heavy to very heavy.
4. Two fuel models are present. These are FM 5 and FM6. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.
6. The average parcel size is 2.7 acres. The structure density rating for this area is rural.
7. Slopes average 35%; slopes this steep will adversely affect fire behavior.
8. The greatest risk to this area is from wildfires occurring in the Mokelumne River canyon during foehn wind conditions. This area does receive some additional protection from the PG&E right a way to the north of Skyhigh Blvd. This clearing is near the ridge top and will protect against wildfires occurring during normal weather patterns that originate near Highway 88.

PROJECTS

Project list	Method/responsible party
Eliminate fuels along roadside	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	35%	FM 5 (SH5)	6.5	Low	High	Moderate	High	Very High
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	

AQUEDUCT CIRCLE

1. Aqueduct Circle is a private single lane dirt road that loops from Aqueduct Grove Road back onto itself near Aqueduct Grove Road.
2. This road is very steep in places and lacks turnouts along some of it length. Some roadside fuels are present near the Aqueduct Cemetery.
3. Fuel load is light to heavy. The heaviest fuels are located on the southern half of the loop. The lightest fuels are located inside the circle at the top of the ridge.
4. Two fuel models are present. These are FM 5 and FM10. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
5. Fires in FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels.
6. The average parcel size is 2.7 acres. The structure density rating for this area is rural.
7. Slopes average 33%; slopes this steep will adversely affect fire behavior.
8. The greatest risk to this area is during foehn wind conditions.

PROJECTS

Project list	Method/responsible party
Eliminate fuels along roadside	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	33%	FM 5 (SH5)	6.5	Low	High	Moderate	High	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

AQUEDUCT GROVE ROAD

1. Aqueduct Grove Road is a private one and a half lane paved road 2929 feet in length, which connects to Skyhigh Road.
2. This road is near the bottom of a draw. .
3. Fuel load is light to heavy. The heaviest fuels are along the last two thirds of this road before it connects to at Skyhigh Blvd.
4. Four fuel models are present in equal amounts. These are FM2, FM 5, FM6, and FM10. In Fuel Model 2, FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
6. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.
7. Fires in FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels.
8. The average parcel size is 3.9 acres. The structure density rating for this area is rural.
9. Slopes average 33%; slopes this steep will adversely affect fire behavior.
10. The greatest risk to this area is during foehn wind conditions.

PROJECTS

Project list	Method/responsible party
Eliminate fuels along roadside	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	33%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High
			FM 5 (SH5)	6.5	Low	High	Moderate	High	
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

PIONEER VOLCANO ROAD AREA

OWL ROAD

FIGURE 10 - EXCELLENT DEFESIBLE SPACE

1. Owl Road is a private single lane dead-end dirt/gravel road 1815 feet in length without a cul-de-sac at its terminus. However, multiple residences' yards and driveways provide turnaround area.
2. Fuel load is heavy to very heavy. The heaviest fuels are along the last two thirds of this road before it connects to at Skyhigh Blvd.
3. Two fuel models are present in equal amounts. These are FM6, and FM10. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.
4. Fires in FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels.
5. The average parcel size is 6 acres. The structure density rating for this area is rural.
6. Compliance with defensible space is good. The defensible space at one residence demonstrates how homeowners can protect their homes even when located in the most hazardous fuels. Landowners

have managed surface fuels in a way that reduces the chance of crown fire and high intensity ground fire.

7. Slopes average 31%; slopes this steep will adversely affect fire behavior.
8. The greatest risk to this area is during foehn wind conditions.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	31%	FM 6 (SH7)	6.9	Very High	Very High	High	Very High	Moderate
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

MC LN RANCH ROAD

1. Mc Ln Ranch Road is a private single lane dead-end dirt/gravel road 648 feet in length with a circular turnaround at its terminus.
2. This road is poorly signed. The existing road sign appears to be the name of a homeowner. It is also very difficult to read even during daylight.
3. Fuel load is moderate, however very large area with a very heavy fuel load is locate just north of the terminus of the road. This fuel is represented by fuel model FM10.
4. Three fuel models are present in equal amounts. These are FM5, FM6, and FM10. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
5. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.
6. Fires in FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels.
7. The average parcel size is 20 acres. The structure density rating for this area is rural.

8. Compliance with defensible space is good. Landowners have managed surface fuels in a way that reduces the chance of crown fire and high intensity ground fire.
9. Slopes average 22%; slopes this steep will adversely affect fire behavior.
10. The greatest risk to this area is during foehn wind conditions.

PROJECTS

Project list	Method/responsible party
Install county standard street sign	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	22%	FM 5 (SH5)	6.5	Low	High	Moderate	High	Moderate
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

DIAMOND VIEW DRIVE

1. Diamond View Drive is a private single lane dead-end dirt/gravel road 1666 feet in length with a cul-de-sac at its terminus.
2. This road is poorly signed at its intersection with Pioneer Volcano Road and is unsigned at its intersection with West Diamond View Drive. The unsigned intersection with West Diamond View could cause delays in response by emergency personnel unfamiliar with the area. The sign that does exist is wooden and not easily read.
3. Fuel load is light along the eastern side of this road. The area between Pioneer Volcano Road and Diamond View Drive is primarily grass (fuel model FM1). This grassy area extends from Diamond View Drive on the south to Silver Ridge Road on the north. The effect of this grassy area is to give significant protection to structures along Diamond View Drive from wildfires approaching from the east (foehn wind driven fires). This protection can be greatly enhanced by strict adherence to defensible space requirements. However, compliance with defensible space regulations is poor.
4. However very large area with a very heavy fuel load is located just west of the road. This fuel is represented by fuel model FM10. Fires in FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels. Therefore, while this area is less vulnerable to foehn wind driven fires, it is a risk from wildfires occurring during normal summer weather patterns (southwest winds).
5. One other fuel model is present, FM6. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the

stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.

6. The average parcel size is 5.8 acres. The structure density rating for this area is rural.
7. Slopes average 18%; slopes this steep will adversely affect fire behavior. The steepest slopes are west of the road in FM10 fuels. Here the slope is 42%
8. The greatest risk to this area is from fires occurring west of this area on windy days.

PROJECTS

Project list	Method/responsible party
Install county standard street signs at each intersection	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	18%	FM 5 (SH5)	6.5	Low	High	Moderate	High	Moderate
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

WEST DIAMOND VIEW DRIVE

1. West Diamond View Drive is a private single lane dead-end partially paved road 1516 feet in length without a cul-de-sac at its terminus. An additional 754 feet is required to reach pioneer Volcano Road along Diamond View Drive. For evacuation purposes, the actual length of this road is 2270 feet.
2. This road is unsigned at its intersection with Diamond View Drive. The unsigned intersection with West Diamond View could cause delays in response by emergency personnel unfamiliar with the area.
3. Roadside fuel is present. Roadside fuels can make evacuation difficult during wildfires.
4. Fuel load is heavy to very heavy. The heaviest concentrations are in fuel model FM10.
5. The dominate fuel models are FM5, FM6 and FM10. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
6. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of

shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.

7. However very large area with a very heavy fuel load is located just west of the road. This fuel is represented by fuel model FM10. Fires in FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels.
8. The average parcel size is 7.5 acres. The structure density rating for this area is rural.
9. Slopes average 33%; slopes this steep will adversely affect fire behavior. The steepest slopes are west and south of this road in FM10 fuels. Here the slope is 42%
10. The greatest risk to this area is from fires occurring west of this area on windy days.

PROJECTS

Project list	Method/responsible party
Install county standard street signs at each intersection	Homeowners
Reduce or eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	33%	FM 5 (SH5)	6.5	Low	High	Moderate	High	High
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

SILVER RIDGE ROAD

1. Silver Ridge Road is a private very narrow dead-end dirt/gravel road 1935 feet in length without a cul-de-sac at its terminus. This road is located on the side slope of a long draw running north to south. Some slopes below the road exceed 39%.
2. The street sign is of very poor quality. It is made of wood and is in poor repair.
3. Fuel load is very heavy. The heaviest concentration of fuels is represented by fuel model FM10.
4. Two fuel models are present. These are FM6, and FM10. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.
5. The dominate fuel model is FM10. Fires in FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or

larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels.

6. The average parcel size is 7.6 acres. The structure density rating for this area is rural.
7. Slopes average 31%; slopes this steep will adversely affect fire behavior.
8. The greatest risk to this area is from during foehn wind conditions and from fires originating in the draw below the road.

PROJECTS

Project list	Method/responsible party
Install county standard street signs	Homeowners
Create a cul-de-sac at the terminus of this road	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	31%	FM 6 (SH7)	6.9	Very High	Very High	High	Very High	Very High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

SILVER COURT (SEE SILVER RIDGE ROAD)

RANCH HOUSE ESTATES AREA

RANCH DRIVE

1. Ranch Drive is a short wide county road 309 feet in length.
2. Fuel load is light
3. Fuels near this road have been so modified that they no longer fall within the description of any of the 13 Standard Fuel Models
4. The dominate fuel model is FM10. Fires in FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels.
5. The average parcel size is 5.5 acres. The structure density rating for this area is rural.
6. Slopes are flat or nearly flat. Slopes this gentle do not adversely affect fire behavior.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	0%	FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	Low

MEADOW BROOK DRIVE

1. Meadow Brook Drive is a long dead-end partially paved county road that branched in two directions from Ranch Drive. The eastern branch is 2115 feet in length. The southern branch is 2680 feet in length and is paved for a third of its length. Both sections have large cul-de-sacs at the end of the paved sections.
2. Fuel load is light.
3. The dominate fuel model is FM6 with lesser amounts of FM1, Fm5, and FM10. Some fuels near this road have been so modified that they no longer fall within the description of any of the 13 Standard Fuel Models.
4. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
5. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.
6. Fires in FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels.
7. The unpaved section of Meadowbrook Drive lies in FM1 fuels. In FM1, fire spread is governed by the fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber is present, generally less than one third of the area. Grasslands and savanna are represented

along with stubble, grass-tundra, and grass-shrub combinations that met the above area constraint. Annual and perennial grasses are included in this fuel model.

8. The average parcel size exceeds 10 acres. This large parcel size is due to very large parcels along the unpaved portion of Meadowbrook Drive. When these parcels are excluded, the average parcel size is 0.7 acres. The structure density rating for this area is rural.
9. Slopes average 20%. Slopes this steep will adversely affect fire behavior.
10. Strict compliance with defensible space regulations will eliminate most threats from wildfires.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	28%	FM1 (GR4)	2.15	High	Very High	Very High	Extreme	Low
			FM 5 (SH5)	6.5	Low	High	Moderate	High	
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

SHADOW GLENN COURT

1. Shadow Glenn Court is a private dead-end paved road 821 feet in length with a large cul-de-sac at its terminus.
2. Fuel load is light to non-existent. Most fuels are mature Black Oaks with grass understory.
3. The dominate fuel model is FM6. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.
4. The average is 0.6 acres. The structure density rating for this area is suburban.
5. Slopes average 20%. Slopes this steep will adversely affect fire behavior.
6. Strict compliance with defensible space regulations will eliminate most threats from wildfires.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Suburban	Yes	20%	FM 6 (SH7)	6.9	Very High	Very High	High	Very High	Low

DOGWOOD COURT

1. Dogwood Court is a private dead-end paved road 343 feet in length with a large cul-de-sac at its terminus.
2. Fuel load is light to moderate. The heaviest fuel load is east of the cul-de-sac.
3. The dominate fuel model is FM6. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.
4. The average is 0.6 acres. Normally, this lot size would have a structure density rating of suburban. However, the placement of homes on the lots on the northeast side of Dogwood Court make structure-to-structure ignition possible under foehn wind conditions. For this reason, the structure density rating is urban.
5. Slopes average 20%. Slopes this steep will adversely affect fire behavior.
6. Strict compliance with defensible space regulations will eliminate most threats from wildfires.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Urban	Yes	20%	FM 6 (SH7)	6.9	Very High	Very High	High	Very High	Moderate

BROOK COURT

1. Brook Court is a county dead-end road 358 feet in length with a large cul-de-sac at its terminus.
2. Fuel load is light to moderate.
3. The dominate fuel model is FM6. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.
4. The average is 1.3 acres. The structure density rating for this area is rural.
5. Slopes average 20%. Slopes this steep will adversely affect fire behavior.
6. Strict compliance with defensible space regulations will eliminate most threats from wildfires.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	20%	FM 6 (SH7)	6.9	Very High	Very High	High	Very High	Moderate

VALLEY VIEW COURT

1. Valley View Court is a private dead-end paved road 565 feet in length with a large cul-de-sac at its terminus.
2. Fuel load is light to non-existent. Most fuels are mature Black Oaks with grass understory.
3. The dominate fuel model is FM6. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.
4. The average is 0.6 acres. The structure density rating for this area is suburban.
5. Slopes average 20%. Slopes this steep will adversely affect fire behavior.
6. Strict compliance with defensible space regulations will eliminate most threats from wildfires.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Suburban	Yes	20%	FM 6 (SH7)	6.9	Very High	Very High	High	Very High	Low

ROLLING HILLS COURT

1. Rolling Hills Court is a county dead-end road 324 feet in length with a large cul-de-sac at its terminus.
2. Fuel load is light to moderate.
3. The dominate fuel model is FM6. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.
4. The average is 0.6 acres. The structure density rating for this area is suburban.
5. Slopes average 20%. Slopes this steep will adversely affect fire behavior.
6. Strict compliance with defensible space regulations will eliminate most threats from wildfires.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Suburban	Yes	20%	FM 6 (SH7)	6.9	Very High	Very High	High	Very High	Moderate

CHARLESTON ROAD AREA

CHARLESTON ROAD

See nearest cross street for rating.

CHARLESTON COURT

1. Charleston Court is a private dead-end gravel road 1470 feet in length with turnarounds at most structures.
2. The street sign at the intersection of Charleston Road and Charleston Court is barely readable.
3. Fuel load is light.
4. The dominate fuel model is FM1. In Fuel Model FM1, fire spread is governed by the fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber is present, generally less than one third of the area. Grasslands and savanna are represented along with stubble, grass-tundra, and grass-shrub combinations that met the above area constraint. Annual and perennial grasses are included in this fuel model.
5. The average parcel size is 7 acres. The structure density rating for this area is rural.
6. Slopes average 15%. Slopes this steep will adversely affect fire behavior.
7. Strict compliance with defensible space regulations will eliminate most threats from wildfires.

PROJECTS

Project list	Method/responsible party
Install county standard street sign	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	15%	FM1 (GR4)	2.15	High	Very High	Very High	Extreme	Low

LOMO RANCHOS

1. Lomo Ranchos is a private single lane dead-end paved road 1949 feet in length without a cul-de-sac at its terminus.
2. Fuel load is light to moderate.
3. Three fuels models are represented, FM1, FM2, and FM5. The dominate fuel model is FM1. In Fuel Model FM1, fire spread is governed by the fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber is present, generally less than

one third of the area. Grasslands and savanna are represented along with stubble, grass-tundra, and grass-shrub combinations that met the above area constraint. Annual and perennial grasses are included in this fuel model.

4. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.
6. The average is 5.8 acres. The structure density rating for this area is rural.
7. Slopes average 15%. Slopes this steep will adversely affect fire behavior.
8. Strict compliance with defensible space regulations will eliminate most threats from wildfires.

PROJECTS

Project list	Method/responsible party
Create cul-de-sac at the terminus of this road	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	15%	FM1 (GR4)	2.15	High	Very High	Very High	Extreme	Low
			FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	

PONDEROSA WAY - SECTION 2(CHARLESTON ROAD TO PONDEROSA TRAIL)

1. Ponderosa way is a long (10,314 feet) connecting Ponderosa Annex to Charleston Road. There are few homes along this road. The road is dirt for most its length and very narrow in places.
2. Fuel load light along most of this road.
3. Three fuel models are represented in equal amounts - FM1, FM2, and FM5. In Fuel Model FM1, fire spread is governed by the fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber is present, generally less than one third of the area. Grasslands and savanna are represented along with stubble, grass-tundra, and grass-shrub combinations that met the above area constraint. Annual and perennial grasses are included in this fuel model.

4. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush
6. The average parcel size is 158 acres. The structure density rating for this area is rural.
7. Slopes average 17%. Slopes this steep will adversely affect fire behavior.
8. Much of the risk to residences along this road has been eliminated by strict compliance with defensible space regulations.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	17%	FM1 (GR4)	2.15	High	Very High	Very High	Extreme	Moderate
			FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	
			FM 5 (SH5)	6.5	Low	High	Moderate	High	

PONDEROSA TRAIL

1. Ponderosa Trail is a paved single lane dead-end road with drivable shoulders.
2. Fuel load light along most of this road due to excellent fuels management.
3. Three fuel models are represented in equal amounts – FM5, FM6, and FM10. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
4. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of

shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.

5. Fires in FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels.
6. The average is 158 acres. The structure density rating for this area is rural.
7. Slopes average 22%. Slopes this steep will adversely affect fire behavior.
8. The greatest wildfire threat to this area is from wildfires occurring during normal summer weather patterns. This threat can be eliminated by strict compliance with defensible space regulations.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	22%	FM 5 (SH5)	6.5	Low	High	Moderate	High	Moderate

SHAKE RIDGE ROAD AREA

MELLA DRIVE

1. Mella Drive is a wide paved dead-end county road 2987 feet in length without a cul-de-sac at its terminus. This road is located on the north side of Shake Ridge Road approximately 2823 feet east of the intersection of Charleston and Shake Ridge Roads.
2. Fuel load light to moderate.
3. Three fuels models are represented in equal amounts- FM1, FM5, and FM6. In Fuel Model FM1, fire spread is governed by the fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber is present, generally less than one third of the area. Grasslands and savanna are represented along with stubble, grass-tundra, and grass-shrub combinations that met the above area constraint. Annual and perennial grasses are included in this fuel model.
4. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.

5. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.
6. Fires in FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels.
7. The average is 0.65 acres. The structure density rating for this area is suburban.
8. Slopes average 6%. Slopes this steep will not adversely affect fire behavior.
9. Compliance with defensible space regulations is good. This area receives a great deal of protection from a large orchard directly behind the north side of Mella Drive and a large area of grass between Mella Drive and Hale Road.

PROJECTS

Project list	Method/responsible party
Create a cul-de-sac or hammer head at terminus of road	Amador County
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Suburban	Yes	6%	FM1 (GR4)	2.15	High	Very High	Very High	Extreme	Low
			FM 5 (SH5)	6.5	Low	High	Moderate	High	
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

NO NAME ROAD #1

1. No Name Road #1 is a private single lane dead-end dirt road 1121 feet in length without a cul-de-sac at its terminus. This road is located on the north side of Shake Ridge Road approximately 2823 feet east of the intersection of Charleston and Shake Ridge Roads.
2. There is no street sign identifying this road.
3. Fuel load light to heavy.
4. Three fuels models are represented in equal amounts- FM2, FM5, FM6, and FM10. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material,

ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.

5. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
6. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.
7. Fires in FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels.
8. The average parcel size is 6 acres. The structure density rating for this area is rural.
9. Slopes average 11%. Slopes this steep will adversely affect fire behavior.
10. Compliance with defensible space regulations is poor. The greatest wildfire threat to this area is from foehn wind driven wildfires.

PROJECTS

Project list	Method/responsible party
Install a county standard road sign	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	11%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High
			FM 5 (SH5)	6.5	Low	High	Moderate	High	
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

BUCKEYE DRIVE

1. Buckeye Drive a private single lane dead-end paved road 3046 feet in length without a cul-de-sac at its terminus. Several driveways at the terminus serve as turnarounds. This road turns to gravel about half way towards its terminus.
2. The street sign identifying this road is poorly designed and difficult to read.
3. Fuel load light along most of this road. The heaviest fuels are located west of the road. These fuels are in FM6 and FM10.
4. Four fuels models are represented in equal amounts - FM1, FM2, FM6, and FM10. In Fuel Model FM1, fire spread is governed by the fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber is present, generally less than one third of the area. Grasslands and savanna are represented along with stubble, grass-tundra, and grass-shrub combinations that met the above area constraint. Annual and perennial grasses are included in this fuel model.
5. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
6. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.
7. Fires in FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels.
8. The average parcel size is 9 acres. The structure density rating for this area is rural.
9. Slopes average 20%. Slopes this steep will adversely affect fire behavior.
10. This area receives protection from foehn wind driven fires by the large areas of FM1 east of the road. The greatest wildfire threat to this area is from wildfires occurring during normal summer weather patterns.

PROJECTS

Project list	Method/responsible party
Install a county standard road sign	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	20%	FM1 (GR4)	2.15	High	Very High	Very High	Extreme	Low
			FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

MCKINNA (LONG PRIVATE DRIVEWAY SERVICING MULTIPLE PROPERTIES)

1. McKinna a private single lane dead-end paved road approximately 4280 feet in length without a cul-de-sac at its terminus. This road has no turnouts along its length.
2. Fuel load is light along the center one third of this road and heavy along the other sections. The heaviest fuels are located near the last third of the road. These fuels are in FM6 and FM10. Heavy concentrations of roadside fuels were observed along the inner one-half of this road. Roadside fuels can make evacuation during wildfires dangerous.
3. Four fuels models are represented in equal amounts – FM5, FM6, and FM10. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
4. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.
5. Fires in FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels.
6. The average is 15 acres. The structure density rating for this area is rural.
7. Slopes average 21%. Slopes this steep will adversely affect fire behavior.
8. The greatest wildfire threat to this area is from wildfires occurring during foehn wind events.
9. The Very High rating as to its risk from wildfire is primarily due to the steep long narrow road and the heavy concentrations of forest fuels in the FM10 fuel model east of this area. These factors combined with the Very High length of this single lane road (10451 feet) make this a very hazardous area for resident and fire agency personnel.

PROJECTS

Project list	Method/responsible party
Install a county standard road sign	Homeowners
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	21%	FM 5 (SH5)	6.5	Low	High	Moderate	High	Very High
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

SHAKE RIDGE COURT

1. Shake Ridge Court a private single lane dead-end gravel road 707 feet in length without a cul-de-sac at its terminus. This road has no turnouts along its length.
2. Fuel load is heavy.
3. Two fuels models are represented – FM5 and FM10. FM5 is the dominate fuel. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
4. Fires in FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels.
5. The average is 3.5 acres. The structure density rating for this area is rural.
6. Slopes average 15%. Slopes this steep will adversely affect fire behavior.
7. This area is threatened by fires occurring during normal summer weather patterns. However, the greatest wildfire threat to this area is from wildfires occurring during foehn wind events.

PROJECTS

Project list	Method/responsible party
Create cul-de-sac at terminus of this road	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	15%	FM 5 (SH5)	6.5	Low	High	Moderate	High	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

LA COLINA ROAD

1. La Colina Road is a private single lane dead-end dirt road 664 feet in length without a cul-de-sac at its terminus. This road has no turnouts along its length. However, the driveway of the last house provides a turnaround.
2. Fuel load is light around structures and heavy at outer edges of the parcels.
3. Four fuels models are represented in equal amounts – FM5, FM6, and FM10. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
4. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.
5. Fires in FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels.
6. The average is 2.2 acres. The structure density rating for this area is rural.
7. Slopes average 12%. Slopes this steep will adversely affect fire behavior.
8. The greatest wildfire threat to this area is from wildfires occurring during foehn wind events.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	12%	FM 5 (SH5)	6.5	Low	High	Moderate	High	High
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

PONDEROSA ANNEX

1. Ponderosa Annex is a private single lane partially paved road that connects Shake Ridge Road to Ponderosa Way. This road is 4271 feet in length.
2. Fuel load is heavy.
3. Three fuel models are represented in equal amounts – FM5, FM6, and FM10. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
4. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.
5. Fires in FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels.
6. The average parcel size is 7 acres. The structure density rating for this area is rural.
7. Slopes average 22%. Slopes this steep will adversely affect fire behavior.
8. This area is equally threatened by fires occurring during normal summer weather patterns and foehn wind events. Residents should evacuate early when threatened by wildfire.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	22%	FM 5 (SH5)	6.5	Low	High	Moderate	High	High
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

TOYON COURT

1. Toyon Court is a private single lane dead-end gravel road 1332 feet in length without a cul-de-sac at its terminus. However, there is a turnaround in the front yard of last house on this road.
2. Fuel load is heavy. Extremely heavy fuel loads are present on the slopes below this road and between it and Sutter Creek Volcano Road.
3. Roadside brush is present. Roadside fuels make evacuation difficult during wildfires.
4. Two fuel models are represented – FM6 and FM10.
5. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.
6. The dominate fuel model is FM10. Fires in FM10 burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels.
7. The average is 5 acres. The structure density rating for this area is rural.
8. Slopes average 41%. Slopes this steep will adversely affect fire behavior.
9. This area is equally threatened by fires occurring during normal summer weather patterns and foehn wind events. Residents should evacuate early when threatened by wildfire.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	41%	FM 6 (SH7)	6.9	Very High	Very High	High	Very High	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

PONDEROSA WAY - SECTION 1(PONDEROSA TRAIL TO SUTTER CREEK ROAD)

1. Ponderosa way is a very long (10,314 feet) connecting Ponderosa Annex to Charleston Road. There are no homes along this road. The road is dirt for most its length and very narrow in places. Multiple high-risk fuel models are represented along its length. This road is located on the side of a very steep ridge. Fuel load is very heavy.
2. The dominate fuel model is FM10. In FM10, fires burn in the surface and ground fuels with greater fire intensity than the other timber litter models. Dead-down fuels include greater quantities of 3-inch (7.6-cm) or larger limbwood resulting from over maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees are more frequent in this fuel situation, leading to potential fire control difficulties. Any forest type may be considered if heavy down material is present; examples are insect- or disease-ridden stands, windthrown stands, overmature situations with deadfall, and aged light thinning or partial-cut slash.
3. Slopes average 38%. Slopes this steep have an adverse affect on fire behavior.
4. This road risk rating is Very High.

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	38%	FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	Very High

STONE JUG

1. Stone Jug is a single lane dead-end gravel road without as cul-de-sac at its terminus. This road ends at a residence with a large area for a turnaround.
2. Fuel load is moderate along this road.
3. Three fuel models are represented in equal amounts - FM1, FM2, and FM6. . In Fuel Model FM1, fire spread is governed by the fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber is present, generally less than one third of the area. Grasslands and savanna are represented along with stubble, grass-tundra, and grass-shrub combinations that met the above area constraint. Annual and perennial grasses are included in this fuel model.

4. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush
6. The average is 158 acres. The structure density rating for this area is rural.
7. Slopes average 17%. Slopes this steep will adversely affect fire behavior.
8. Strict compliance with defensible space regulations will help protect these homes from wildfire. This area is vulnerable to wildfires occurring during normal summer weather patterns and wildfires occurring during foehn wind events.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	17%	FM1 (GR4)	2.15	High	Very High	Very High	Extreme	Moderate
			FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	

SONSHINE LANE

1. Sonshine Lane is a long (3122 feet) one-lane gravel road connecting Stone Jug Road to Stage Road. There are few homes along this road. The road is narrow in places. There is a short dead-end section where it crosses Stage Road. This section of Sonshine Lane appears to end at a residence with a large turnaround area.
2. Fuel load is heavy to very heavy.
3. Four fuel models are represented in equal amounts – FM2, FM5, FM6, and FM10. The dominate fuels are represented by the FM2 model. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that

generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.

4. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
5. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush
6. In FM10, fires burn in the surface and ground fuels with greater fire intensity than the other timber litter models. Dead-down fuels include greater quantities of 3-inch (7.6-cm) or larger limbwood resulting from over maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees are more frequent in this fuel situation, leading to potential fire control difficulties. Any forest type may be considered if heavy down material is present; examples are insect- or disease-ridden stands, windthrown stands, overmature situations with deadfall, and aged light thinning or partial-cut slash.
7. The average parcel size is 18 acres. The structure density rating for this area is rural.
8. Slopes average 16%. Slopes this steep will adversely affect fire behavior.
9. Strict compliance with defensible space regulations will help protect these homes from wildfire. This area is vulnerable to wildfires occurring during normal summer weather patterns and wildfires occurring during foehn wind events.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	16%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High
			FM 5 (SH5)	6.5	Low	High	Moderate	High	
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

KESTREL LANE

1. Kestrel Lane is a short one-lane dead-end gravel road 426 feet in length without a cul-de-sac at its terminus. There are few homes along this road.
2. Fuel load is heavy to very heavy.
3. The dominate fuel model is FM6. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush
4. The average parcel size is 18 acres. The structure density rating for this area is rural.
5. Slopes average 16%. Slopes this steep will adversely affect fire behavior.
6. Strict compliance with defensible space regulations will help protect these homes from wildfire. This area is vulnerable to wildfires occurring during normal summer weather patterns and wildfires occurring during foehn wind events.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	16%	FM 6 (SH7)	6.9	Very High	Very High	High	Very High	High

STAGE ROAD (UNPR)

1. The unimproved section of Stage Road takes off from of the private section of Stage Road and continues north for 5806 feet where it dead-ends into Bureau of Land Management lands. This road is barely passable for most of its length. There are no homes located along its length. This area's risk from wildfire is high.

STAGE ROAD (PRIVATE ROAD SECTION)

1. This section of Stage Road takes off from Shake Ridge Road and continues north where it connects to the unimproved section of Stage Road. This section is paved for the first ½ mile from Shake Ridge Road thereafter it is a gravel road. It is a single lane road its entire length.
2. Fuel load is moderate to heavy.
3. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-

thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.

4. The average parcel size is 4.0 acres. The structure density rating for this area is rural.
5. Slopes average 20%. Slopes this steep will adversely affect wildfire behavior.
6. Strict compliance with defensible space regulations will help protect these homes from wildfire. This area is vulnerable to wildfires occurring during normal summer weather patterns and wildfires occurring during foehn wind events.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	20%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate

RANCHERIA TRAIL

1. Rancheria trail is a single lane dead-end gravel road 831 feet in length without a cul-de-sac at its terminus.
2. Fuel load is moderate to heavy. This road is essentially a driveway servicing a single parcel.
3. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
4. The average parcel size is 5.4 acres. The structure density rating for this area is rural.
5. Slopes average 20%. Slopes this steep will adversely affect wildfire behavior.
6. Strict compliance with defensible space regulations will help protect this home from wildfire. This area is vulnerable to wildfires occurring during normal summer weather patterns and wildfires occurring during foehn wind events.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	20%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High

LAKE MARIE ROAD

1. Lake Marie Road is a single lane dead-end gravel road 479 feet in length without a cul-de-sac at its terminus. This road ends at a gate. A private road continues on to the single parcel served by this road. This private road continues through this parcel and connects to Huggie Drive. This section of the private road is also gated at the property line with an electric gate with a fire service lockbox.
2. Fuel load is moderate to heavy. This road is essentially a driveway servicing a single parcel.
3. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
4. In FM10, fires burn in the surface and ground fuels with greater fire intensity than the other timber litter models. Dead-down fuels include greater quantities of 3-inch (7.6-cm) or larger limbwood resulting from over maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees are more frequent in this fuel situation, leading to potential fire control difficulties. Any forest type may be considered if heavy down material is present; examples are insect- or disease-ridden stands, windthrown stands, overmature situations with deadfall, and aged light thinning or partial-cut slash. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels.
5. The average parcel size is 7.8 acres. The structure density rating for this area is rural.
6. Slopes average 20%. Slopes this steep will adversely affect wildfire behavior.
7. Strict compliance with defensible space regulations will help protect this home from wildfire. This area is vulnerable to wildfires occurring during normal summer weather patterns and wildfires occurring during foehn wind events.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	20%	FM1 (GR4)	2.15	High	Very High	Very High	Extreme	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

LOUISE LANE

1. Louise lane is a single lane road that loops from Shake Ridge Road for 3795 feet where it returns to Shake Ridge Road.
2. The street signs at Shake Ridge Road are constructed from wood and thus are vulnerable to destruction from wildfire.
3. Fuel load is moderate to heavy. This road is essentially a driveway servicing a single parcel.
4. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. The average parcel size is 2.9 acres. The structure density rating for this area is rural.
6. Slopes average 20%. Slopes this steep will adversely affect wildfire behavior.
7. Strict compliance with defensible space regulations will help protect this home from wildfire. This area is vulnerable to wildfires occurring during normal summer weather patterns and wildfires occurring during foehn wind events.

PROJECTS

Project list	Method/responsible party
Install county standard street signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	20%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High

TUGGIE ROAD

1. Tuggie Road is a single lane dirt/gravel road that loops from Shake Ridge Road for 3795 feet where it returns to Shake Ridge Road.
2. The street signs at Shake Ridge Road are constructed from wood and thus are vulnerable to destruction from wildfire.
3. Fuel load is moderate to heavy. The heaviest fuel loads are located north of this area.
4. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. The average parcel size is 2.6 acres. The structure density rating for this area is rural.
6. Slopes average 20%. Slopes this steep will adversely affect wildfire behavior.
7. Strict compliance with defensible space regulations will help protect this home from wildfire. This area is vulnerable to wildfires occurring during normal summer weather patterns and wildfires occurring during foehn wind events.

PROJECTS

Project list	Method/responsible party
Install county standard street signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	20%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High

CENTURY LANE

1. Century Lane is a single lane private road that is paved for the first 100 feet before turning to gravel. This is a dead-end road 776 feet in length without a cul-de-sac at its terminus. This road parallels Shake Ridge Road on the south and is located on the edge of a very steep slope.
2. This road is properly signed.
3. Fuel load is light to moderate.
4. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. The average parcel size is 1.5 acres. The structure density rating for this area is rural.
6. Slopes in the immediate area are less than 10%%. However, slopes immediately south of this area exceed 29%. Slopes this steep will adversely affect wildfire behavior.
7. This area provides an example of how homeowners can protect their homes from wildfire by developing defensible spaces around their structures. Strict compliance with defensible space regulations protects these homes from wildfire. Because of the level of compliance with defensible space regulations and the logical application of the regulations to the topography, this area is rated as a moderate risk from wildfire. This area is vulnerable to wildfires occurring during normal summer weather patterns and wildfires occurring during foehn wind events.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	29%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate

LUNAR TRAIL

1. Lunar trail is a single lane private dead-end dirt/gravel road 3124 feet in length without a cul-de-sac at its terminus. However, there aware several side grassy areas between the last and second to last homes that can function as turnouts and turnarounds.
2. Roadside fuels are present. Roadside fuels make evacuation difficult during wildfires. Residents of this road should consider early evacuation when threatened by wildfires.
3. Fuel load is heavy to very heavy.

4. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. The average parcel size is 5.5 acres. The structure density rating for this area is rural.
6. Slopes average 33%. Slopes this steep will adversely affect wildfire behavior.
7. Strict compliance with defensible space regulations will help to protect these homes from wildfire. This area is vulnerable to wildfires occurring during normal summer weather patterns and wildfires occurring during foehn wind events.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	33%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High

HUMMINGBIRD LANE (EAST)

1. Hummingbird Lane (east) is a single lane private dead-end paved road 1239 feet in length without a cul-de-sac at its terminus.
2. Roadside fuels are present. Roadside fuels make evacuation difficult during wildfires. Residents of this road should consider early evacuation when threatened by wildfires.
3. Fuel load is heavy to very heavy.
4. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. Some fuel model FM10 is present in the drainages below this road. In FM10, fires burn in the surface and ground fuels with greater fire intensity than the other timber litter models. Dead-down fuels include greater quantities of 3-inch (7.6-cm) or larger limbwood resulting from over maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees are more frequent in this fuel situation, leading to potential fire control difficulties. Any forest type may be considered if heavy down material is present; examples

are insect- or disease-ridden stands, windthrown stands, overmature situations with deadfall, and aged light thinning or partial-cut slash. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels.

6. The average parcel size is 4.7 acres. The structure density rating for this area is rural.
7. Slopes average 33%. Slopes this steep will adversely affect wildfire behavior.
8. This road services a number of structures with long driveways that in some cases are almost as long as the road. Residents at these homes should evacuate well in advance of any official order to evacuate.
9. Strict compliance with defensible space regulations will help to protect these homes from wildfire. This area is vulnerable to wildfires occurring during normal summer weather patterns and wildfires occurring during foehn wind events.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	33%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Very High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

HUMMINGBIRD LANE (WEST)

1. Hummingbird Lane (west) is a single lane private dead-end gravel road 1299 feet in length without a cul-de-sac at its terminus.
2. Roadside fuels are present. Roadside fuels make evacuation difficult during wildfires. Residents of this road should consider early evacuation when threatened by wildfires.
3. Fuel load is moderate to heavy.
4. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. The average parcel size is 5.0 acres. The structure density rating for this area is rural.
6. Slopes average 23%. Slopes this steep will adversely affect wildfire behavior.

7. Strict compliance with defensible space regulations will help to protect these homes from wildfire. This area is vulnerable to wildfires occurring during normal summer weather patterns and wildfires occurring during foehn wind events.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	23%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High

LOWRY LANE

1. Hummingbird Lane (west) is a paved single lane private dead-end road 1080 feet in length without a cul-de-sac at its terminus.
2. Fuel load is moderate to heavy.
3. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
4. The average parcel size is 2.0 acres. The structure density rating for this area is rural.
5. Slopes average 40%. Slopes this steep will adversely affect wildfire behavior.
6. Compliance with defensible space regulations is very good. Continued strict compliance with defensible space regulations will help to protect these homes from wildfire. This area is vulnerable to wildfires occurring during normal summer weather patterns and wildfires occurring during foehn wind events.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	40%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High

AMBER WAY

1. Amber Way is a single lane private dead-end gravel road 1408 feet in length without a cul-de-sac at its terminus. Numerous driveways and parking areas provide turnarounds at the end of this road.
2. The street sign is readable from one direction only.
3. Roadside fuels are present. Roadside fuels make evacuation difficult during wildfires. Residents of this road should consider early evacuation when threatened by wildfires.
4. Fuel load is moderate to heavy.
5. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
6. The average parcel size is 4.0 acres. The structure density rating for this area is rural.
7. Slopes average 20%. Slopes this steep will adversely affect wildfire behavior.
8. Compliance with defensible space regulations is generally good. Strict compliance with defensible space regulations will help to protect these homes from wildfire. This area is vulnerable to wildfires occurring during normal summer weather patterns and wildfires occurring during foehn wind events.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Install county standard street sign	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	20%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High

SOKE SPRINGS RANCH ROAD

1. Soke Springs Ranch Road is a single lane private dead-end paved road 4934 feet in length without a cul-de-sac at its terminus. Numerous driveways and parking areas provide turnarounds at the end of this road.
2. Roadside fuels are present. Roadside fuels make evacuation difficult during wildfires. Residents of this road should consider early evacuation when threatened by wildfires.
3. Fuel load is light to moderate.
4. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. The average parcel size is 21.0 acres. The structure density rating for this area is rural.
6. Slopes average 27%. Slopes this steep will adversely affect wildfire behavior.
7. Strict compliance with defensible space regulations will help to protect these homes from wildfire. This area is vulnerable to wildfires occurring during normal summer weather patterns and wildfires occurring during foehn wind events.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	27%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High

BUNKHOUSE ROAD

1. Bunkhouse Road is a very short private dead-end road 155 feet in length without a cul-de-sac at its terminus.
2. This road serves several large parcels with residences off very long driveways.
3. Fuel load is moderate to heavy.
4. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-

thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.

5. The average parcel size is 45.0 acres. The structure density rating for this area is rural.
6. Slopes average 23%. Slopes this steep will adversely affect wildfire behavior.
7. Strict compliance with defensible space regulations will help to protect these homes from wildfire. This area is vulnerable to wildfires occurring during normal summer weather patterns and wildfires occurring during foehn wind events.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	23%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High

DARLING COURT

1. Darling Court is a wide paved road 1754 feet in length with drivable shoulders and with a cul-de-sac at its terminus.
2. Fuel load is light to moderate.
3. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
4. Some fuel model FM1 and FM6 are also present. In FM1, Fire spread is governed by the fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber is present, generally less than one third of the area. Grasslands and savanna are represented along with stubble, grass-tundra, and grass-shrub combinations that met the above area constraint. Annual and perennial grasses are included in this fuel model.
5. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.
6. The average parcel size is 7.6 acres. The structure density rating for this area is rural.

7. Slopes average 15%. Slopes this steep will adversely affect wildfire behavior.
8. Compliance with defensible space regulations is very good. Strict compliance with defensible space regulations will help to protect these homes from wildfire. This area is at reduced risk from wildfires approaching from the west due to the large areas of FM1 fuels. This area is vulnerable to wildfires occurring during foehn wind events.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	15%	FM1 (GR4)	2.15	High	Very High	Very High	Extreme	Moderate
			FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	

RICHARDS ROAD

1. Richards Road is a narrow dirt/gravel road 799 feet in length, which terminates in a large pasture.
2. Fuel load is light to moderate.
3. The dominate fuel model affecting structures is FM1. In FM1, Fire spread is governed by the fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber is present, generally less than one third of the area. Grasslands and savanna are represented along with stubble, grass-tundra, and grass-shrub combinations that met the above area constraint. Annual and perennial grasses are included in this fuel model.
4. Some fuel model FM2, FM6 and FM10 are also present. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.
6. In FM10, fires burn in the surface and ground fuels with greater fire intensity than the other timber litter models. Dead-down fuels include greater quantities of 3-inch (7.6-cm) or larger limbwood

resulting from over maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees are more frequent in this fuel situation, leading to potential fire control difficulties. Any forest type may be considered if heavy down material is present; examples are insect- or disease-ridden stands, windthrown stands, overmature situations with deadfall, and aged light thinning or partial-cut slash. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels.

7. The average parcel size is 113 acres. The structure density rating for this area is rural.
8. Slopes average 13%. Slopes this steep will adversely affect wildfire behavior.
9. Compliance with defensible space regulations is good. Strict compliance with defensible space regulations will help to protect these homes from wildfire. This area is at reduced risk from wildfires due to the large areas of FM1 fuels that are present were the structures are present.
10. This area is vulnerable to wildfires occurring during foehn wind events.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	13%	FM1 (GR4)	2.15	High	Very High	Very High	Extreme	Low
			FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

AUTUMN DRIVE

1. Autumn Drive is a narrow paved road 2501 feet in length, which turns to gravel. There is no cul-de-sac at its terminus. This street is properly signed.
2. Fuel load is moderate to heavy.
3. Roadside fuel is present. Roadside fuels can make evacuation difficult during a wildfire.
4. The dominate fuel model is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. The average parcel size is 4.4 acres. The structure density rating for this area is rural.
6. Slopes average 30%. Slopes this steep will adversely affect wildfire behavior.

7. Compliance with defensible space regulations is poor. Strict compliance with defensible space regulations will help to protect these homes from wildfire.
8. This area is vulnerable to wildfires occurring during normal summer weather patterns and foehn wind events.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Create cul-de-sac or hammerhead turnaround at end of the road	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	30%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High

AUTUMN COURT

1. Autumn Court intersects Autumn Drive approximately 2700 feet from the intersection of Manzanita Road and Shake Ridge. Autumn Court is a narrow gravel road 1381 feet in length. There is no cul-de-sac at its terminus. Numerous driveways and parking areas provide turnarounds at the end of this road.
2. This street is properly signed.
3. Because this road is quite long when the sections of Autumn Drive and Manzanita Road are calculated into the evacuation route, residents should evacuate early when threatened by a wildfire.
4. Fuel load is light to moderate.
5. Roadside fuel is present. Roadside fuels can make evacuation difficult during a wildfire.
6. The dominate fuel model is FM5. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
7. Some fuel model FM6 is also present. In FM6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.
8. The average parcel size is 3.8 acres. The structure density rating for this area is rural.
9. Slopes average 33%. Slopes this steep will adversely affect wildfire behavior.

10. Compliance with defensible space regulations is fair. Strict compliance with defensible space regulations will help to protect these homes from wildfire.
11. This area is vulnerable to wildfires occurring during normal summer weather patterns and foehn wind events.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	33%	FM 5 (SH5)	6.5	Low	High	Moderate	High	High
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	

BAKER LANE

1. Baker Lane intersects Manzanita Road approximately 525 feet from the intersection of Manzanita Road and Shake Ridge Road. Baker Lane is a narrow gravel road 698 feet in length. There is no cul-de-sac at its terminus
2. Fuel load is moderate to heavy.
3. Roadside fuel is present. Roadside fuels can make evacuation difficult during a wildfire.
4. The dominate fuel model is FM6. In FM6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.
5. The average parcel size is 2.8 acres. The structure density rating for this area is rural.
6. Slopes average 42%. Slopes this steep will adversely affect wildfire behavior.
7. Compliance with defensible space regulations is fair. Strict compliance with defensible space regulations will help to protect these homes from wildfire.
8. This area is vulnerable to wildfires occurring during normal summer weather patterns and foehn wind events.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Create cul-de-sac or hammerhead at the end of this road	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	42%	FM 6 (SH7)	6.9	Very High	Very High	High	Very High	High

DARLING VIEW COURT

1. Darling View Court is a wide (two lane) paved road with a good cul-de-sac at its terminus. This road has drivable shoulders.
2. The street sign at the intersection of Shake Ridge Road and Darling View Court is nonstandard and of poor quality.
3. Fuel load is light to moderate.
4. The dominate fuel model affecting structures is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. Some fuel model FM1 and FM6 fuel are also present. In FM1, Fire spread is governed by the fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber is present, generally less than one third of the area. Grasslands and savanna are represented along with stubble, grass-tundra, and grass-shrub combinations that met the above area constraint. Annual and perennial grasses are included in this fuel model.
6. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.
7. The average parcel size is 7.6 acres. The structure density rating for this area is rural.
8. Slopes average 29%. Slopes this steep will adversely affect wildfire behavior.
9. Compliance with defensible space regulations is very good. Strict compliance with defensible space regulations will help to protect these homes from wildfire. This area is at reduced risk due to the

high level of compliance with defensible space regulations. Additional relief from the threat of wildfire is provided by the large area of FM1directly west of this road.

10. This area is vulnerable to wildfires occurring during foehn wind events.

PROJECTS

Project list	Method/responsible party
Install county standard street sign	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	29%	FM1 (GR4)	2.15	High	Very High	Very High	Extreme	Moderate
			FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	

MANZANITA ROAD (NORTH OF MEADOW VIEW DRIVE)

1. This section of Manzanita Road is a wide (1.5 lane) paved road starting at Shake Ridge and ending at Meadow View Drive. Manzanita continues from this intersection to Sutter Highlands Road - this section of Manzanita Road is covered in the Sutter Highlands Area section of this document.
2. Roadside brush is present along many areas of this road. Roadside brush can make evacuation difficult during wild fires.
3. Fuel load is moderate to heavy on this section of Manzanita Road.
4. The dominate fuel model affecting structures is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. North of Autumn Drive fuel models FM6 and FM10 are also present. In FM10, fires burn in the surface and ground fuels with greater fire intensity than the other timber litter models. Dead-down fuels include greater quantities of 3-inch (7.6-cm) or larger limbwood resulting from over maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees are more frequent in this fuel situation, leading to potential fire control difficulties. Any forest type may be considered if heavy down material is present; examples are insect- or disease-ridden stands, windthrown stands, overmature situations with deadfall, and aged light thinning or partial-cut slash. Because most of the trees in this model are larger, much of the threat from wildfire can be mitigated by eliminating surface fuels.

6. In Fuel Model 6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.
7. The average parcel size is 2.8 acres. The structure density rating for this area is rural.
8. Slopes average 25%. Slopes this steep will adversely affect wildfire behavior.
9. Compliance with defensible space regulations varies from fair to good. Strict compliance with defensible space regulations will help to protect these homes from wildfire.
10. This area is vulnerable to wildfires occurring during foehn wind events and normal summer weather patterns.

PROJECTS

Project list	Method/responsible party
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	25%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

SUTTER HIGHLANDS AREA

MEADOW VIEW DRIVE

1. Meadow View Drive is a 3301-foot single lane road connecting Manzanita Road and Highview Way. Five dead-end roads connect to Meadow View Drive along its length. Evacuation during wildfire is more difficult because of the narrow roads throughout this area and the long distance to paved county roads. Even though residents on Meadow View Drive and the roads connecting to it have two options to exit to a county road (Sutter Creek Road or Shake Ridge Road), they must travel long distances before reaching these roads. Fuel loads, fuels types, and slopes suggest fast moving and unpredictable wildfires are possible in the entire Sutter Highlands Area. Residents should consider early evacuation whenever a wildfire remotely threatens this area.
2. Residents should collectively identify possible shelter in place locations. One such area (APN 015170088000) is located just north of the intersection of Meadow View Road and Starview Lane. This is a large meadow. Residents can contact CAL FIRE for information regarding how to develop a shelter in place location. Another open area is located south of the intersection of Sierra View Lane and Starview Lane.
3. Roadside brush is present along many areas of this road. Roadside brush can make evacuation difficult during wild fires.

4. Fuel load is moderate to heavy.
5. This entire area is located on the south aspect of Shake Ridge. South aspects receive more sunlight then north aspect slopes. South aspects fuels cure faster and generally support vegetation that can survive in drier conditions. Wildfires burn with greater intensity on south aspect slopes.
6. The dominate fuel model affecting structures is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
7. The average parcel size is 18 acres. The structure density rating for this area is rural.
8. Slopes average 23%. Slopes this steep will adversely affect wildfire behavior.
9. Compliance with defensible space regulations varies from fair to good. Strict compliance with defensible space regulations will help to protect these homes from wildfire.
10. This area is vulnerable to wildfires occurring during foehn wind events and normal summer weather patterns.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Develop shelter in place option	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	23%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Very High

REBEL ROAD

1. Rebel Road is a single lane paved dead-end road 1197 feet in length without a cul-de-sac at its terminus.
2. Evacuation during wildfire is more difficult because of the narrow roads throughout this area and the long distance to paved county roads. Even though residents on Rebel Road have two options to exit to a county road (Sutter Creek Road or Shake Ridge Road), they must travel long distances before reaching these roads. Fuel loads, fuels types, and slopes suggest fast moving and unpredictable wildfires are possible in the entire Sutter Highlands Area. Residents should consider early evacuation whenever a wildfire remotely threatens this area.

3. Residents should collectively identify possible shelter in place locations. One such area (APN 015170088000) is located just north of the intersection of Meadow View Road and Starview Lane. This is a large meadow. Residents can contact CAL FIRE for information regarding how to develop a shelter in place location. Another open area is located south of the intersection of Sierra View Lane and Starview Lane.
4. Roadside brush is present along many areas of this road. Roadside brush can make evacuation difficult during wild fires.
5. Fuel load is moderate to heavy.
6. This entire area is located on the south aspect of Shake Ridge. South aspects receive more sunlight then north aspect slopes. South aspects fuels cure faster and generally support vegetation that can survive in drier conditions. Wildfires burn with greater intensity on south aspect slopes.
7. The dominate fuel model affecting structures is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
8. The average parcel size is 2.9 acres. The structure density rating for this area is rural.
9. Slopes average 15%. Slopes this steep will adversely affect wildfire behavior.
10. Compliance with defensible space regulations varies from fair to good. Strict compliance with defensible space regulations will help to protect these homes from wildfire.
11. This area is vulnerable to wildfires occurring during foehn wind events and normal summer weather patterns.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Develop shelter in place option	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	15%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Very High

HIGHVIEW WAY

1. Highview Way is a single lane gravel dead-end road 1197 feet in length without a cul-de-sac at its terminus.
2. The street sign does not meet county standards.

3. Evacuation during wildfire is more difficult because of the narrow roads throughout this area and the long distance to paved county roads. Even though residents on Highview Way have two options to exit to a county road (Sutter Creek Road or Shake Ridge Road), they must travel long distances before reaching these roads. Fuel loads, fuels types, and slopes suggest fast moving and unpredictable wildfires are possible in the entire Sutter Highlands Area. Residents should consider early evacuation whenever a wildfire remotely threatens this area.
4. Residents should collectively identify possible shelter in place locations. One such area (APN 015170088000) is located just north of the intersection of Meadow View Road and Starview Lane. This is a large meadow. Residents can contact CAL FIRE for information regarding how to develop a shelter in place location. Another open area is located south of the intersection of Sierra View Lane and Starview Lane.
5. Roadside brush is present along many areas of this road. Roadside brush can make evacuation difficult during wild fires.
6. Fuel load is moderate to heavy.
7. This entire area is located on the south aspect of Shake Ridge. South aspects receive more sunlight then north aspect slopes. South aspects fuels cure faster and generally support vegetation that can survive in drier conditions. Wildfires burn with greater intensity on south aspect slopes.
8. The dominate fuel model affecting structures is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
9. The average parcel size is 3.8 acres. The structure density rating for this area is rural.
10. Slopes average 27%. Slopes this steep will adversely affect wildfire behavior.
11. Compliance with defensible space regulations varies from fair to good. Strict compliance with defensible space regulations will help to protect these homes from wildfire.
12. This area is vulnerable to wildfires occurring during foehn wind events and normal summer weather patterns.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Install county standard street sign	Homeowners
Develop shelter in place option	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	27%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Very High

BREWBA COURT

1. Brewba Court is a single lane gravel dead-end road 264 feet in length without a cul-de-sac at its terminus.
2. Evacuation during wildfire is more difficult because of the narrow roads throughout this area and the long distance to paved county roads. Even though residents on Brewba Court have two options to exit to a county road (Sutter Creek Road or Shake Ridge Road), they must travel long distances before reaching these roads. Fuel loads, fuels types, and slopes suggest fast moving and unpredictable wildfires are possible in the entire Sutter Highlands Area. Residents should consider early evacuation whenever a wildfire remotely threatens this area.
3. Residents should collectively identify possible shelter in place locations. One such area (APN 015170088000) is located just north of the intersection of Meadow View Road and Starview Lane. This is a large meadow. Residents can contact CAL FIRE for information regarding how to develop a shelter in place location. Another open area is located south of the intersection of Sierra View Lane and Starview Lane.
4. Fuel load is moderate.
5. This entire area is located on the south aspect of Shake Ridge. South aspects receive more sunlight then north aspect slopes. South aspects fuels cure faster and generally support vegetation that can survive in drier conditions. Wildfires burn with greater intensity on south aspect slopes.
6. The dominate fuel model affecting structures is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
7. The average parcel size is 3.4 acres. The structure density rating for this area is rural.
8. Slopes average 27%. Slopes this steep will adversely affect wildfire behavior.
9. Compliance with defensible space regulations varies from fair to good. Strict compliance with defensible space regulations will help to protect these homes from wildfire.
10. This area is vulnerable to wildfires occurring during foehn wind events and normal summer weather patterns.

PROJECTS

Project list	Method/responsible party
Develop shelter in place option	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	27%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Very High

HADAKA WAY

1. Hadaka Way is a single lane gravel dead-end road 257 feet in length without a cul-de-sac at its terminus.
2. Evacuation during wildfire is more difficult because of the narrow roads throughout this area and the long distance to paved county roads. Even though residents on Hadaka Way have two options to exit to a county road (Sutter Creek Road or Shake Ridge Road), they must travel long distances before reaching these roads. Fuel loads, fuels types, and slopes suggest fast moving and unpredictable wildfires are possible in the entire Sutter Highlands Area. Residents should consider early evacuation whenever a wildfire remotely threatens this area.
3. Residents should collectively identify possible shelter in place locations. One such area (APN 015170088000) is located just north of the intersection of Meadow View Road and Starview Lane. This is a large meadow. Another open area is located south of the intersection of Sierra View Lane and Starview Lane. Residents can contact CAL FIRE for information regarding how to develop a shelter in place location.
4. Fuel load is moderate.
5. This entire area is located on the south aspect of Shake Ridge. South aspects receive more sunlight then north aspect slopes. South aspects fuels cure faster and generally support vegetation that can survive in drier conditions. Wildfires burn with greater intensity on south aspect slopes.
6. The dominate fuel model affecting structures is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
7. The average parcel size is 2.9 acres. The structure density rating for this area is rural.
8. Slopes average 27%. Slopes this steep will adversely affect wildfire behavior.
9. Compliance with defensible space regulations varies from fair to good. Strict compliance with defensible space regulations will help to protect these homes from wildfire.
10. This area is vulnerable to wildfires occurring during foehn wind events and normal summer weather patterns.

PROJECTS

Project list	Method/responsible party
Develop shelter in place option	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	27%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Very High

STARVIEW LANE

1. Starview Lane is a single lane gravel/dirt dead-end road 1796 feet in length without a cul-de-sac at its terminus.
2. Roadside fuels are present. Roadside fuels make evacuation difficult.
3. Evacuation during wildfire is more difficult because of the narrow roads throughout this area and the long distance to paved county roads. Even though residents on Starview Lane have two options to exit to a county road (Sutter Creek Road or Shake Ridge Road), they must travel long distances before reaching these roads. Fuel loads, fuels types, and slopes suggest fast moving and unpredictable wildfires are possible in the entire Sutter Highlands Area. Residents should consider early evacuation whenever a wildfire remotely threatens this area.
4. Residents should collectively identify possible shelter in place locations. One such area (APN 015170088000) is located just north of the intersection of Meadow View Road and Starview Lane. This is a large meadow. Residents can contact CAL FIRE for information regarding how to develop a shelter in place location. Another open area is located south of the intersection of Sierra View Lane and Starview Lane.
5. Fuel load is heavy to very heavy.
6. This entire area is located on the south aspect of Shake Ridge. South aspects receive more sunlight then north aspect slopes. South aspects fuels cure faster and generally support vegetation that can survive in drier conditions. Wildfires burn with greater intensity on south aspect slopes.
7. The dominate fuel model affecting structures is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
8. The average parcel size is 8 acres. The structure density rating for this area is rural.
9. Slopes average 29%. Slopes this steep will adversely affect wildfire behavior.
10. Compliance with defensible space regulations varies from fair to good. Strict compliance with defensible space regulations will help to protect these homes from wildfire.

11. This area is vulnerable to wildfires occurring during foehn wind events and normal summer weather patterns.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Develop shelter in place option	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	29%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Very High

SIERRA VIEW LANE

1. Sierra View Lane is a single lane gravel/dirt dead-end road 1098 feet in length without a cul-de-sac at its terminus.
2. Roadside fuels are present. Roadside fuels make evacuation difficult.
3. Evacuation during wildfire is more difficult because of the narrow roads throughout this area and the long distance to paved county roads. Even though residents on Starview Lane have two options to exit to a county road (Sutter Creek Road or Shake Ridge Road), they must travel long distances before reaching these roads. Fuel loads, fuels types, and slopes suggest fast moving and unpredictable wildfires are possible in the entire Sutter Highlands Area. Residents should consider early evacuation whenever a wildfire remotely threatens this area.
4. Residents should collectively identify possible shelter in place locations. One such area (APN 015170088000) is located just north of the intersection of Meadow View Road and Starview Lane. This is a large meadow. Residents can contact CAL FIRE for information regarding how to develop a shelter in place location. Another open area is located south of the intersection of Sierra View Lane and Starview Lane.
5. Fuel load is heavy.
6. This entire area is located on the south aspect of Shake Ridge. South aspects receive more sunlight then north aspect slopes. South aspects fuels cure faster and generally support vegetation that can survive in drier conditions. Wildfires burn with greater intensity on south aspect slopes.
7. The dominate fuel model affecting structures is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
8. The average parcel size is 8 acres. The structure density rating for this area is rural.

9. Slopes average 24%. Slopes this steep will adversely affect wildfire behavior.
10. Compliance with defensible space regulations varies from fair to good. Strict compliance with defensible space regulations will help to protect these homes from wildfire.
11. This area is vulnerable to wildfires occurring during foehn wind events and normal summer weather patterns.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Develop shelter in place option	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	24%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Very High

PINEBROOK COURT

1. Pinebrook Court is a single lane gravel/dirt dead-end road 1269 feet in length without a cul-de-sac at its terminus. However, there is a large turnaround area at the last house on the road.
2. Roadside fuels are present. Roadside fuels make evacuation difficult.
3. Evacuation during wildfire is more difficult because of the narrow roads throughout this area and the long distance to paved county roads. Even though residents on Pine Brook Court have two options to exit to a county road (Sutter Creek Road or Shake Ridge Road), they must travel long distances before reaching these roads. Fuel loads, fuels types, and slopes suggest fast moving and unpredictable wildfires are possible in the entire Sutter Highlands Area. Residents should consider early evacuation whenever a wildfire remotely threatens this area.
4. Residents should collectively identify possible shelter in place locations. One such area (APN 015170088000) is located just north of the intersection of Meadow View Road and Starview Lane. This is a large meadow. Residents can contact CAL FIRE for information regarding how to develop a shelter in place location. Another open area is located south of the intersection of Sierra View Lane and Starview Lane.
5. Fuel load is moderate.
6. This entire area is located on the south aspect of Shake Ridge. South aspects receive more sunlight then north aspect slopes. South aspects fuels cure faster and generally support vegetation that can survive in drier conditions. Wildfires burn with greater intensity on south aspect slopes.
7. The dominate fuel model affecting structures is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate

higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.

8. The average parcel size is 4.6 acres. The structure density rating for this area is rural.
9. Slopes average 17%. Slopes this steep will adversely affect wildfire behavior.
10. Compliance with defensible space regulations varies from fair to good. Strict compliance with defensible space regulations will help to protect these homes from wildfire.
11. This area is vulnerable to wildfires occurring during foehn wind events and normal summer weather patterns.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Develop shelter in place option	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	17%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Very High

MARANATHA WAY

1. Maranatha Lane is a single lane gravel/dirt dead-end road 909 feet in length without a cul-de-sac at its terminus. However, there is a large turnaround area at the last house on the road.
2. Roadside fuels are present. Some of these fuels are Scotch Broom. Scotch Broom is a non-native high flammable invasive plant. Roadside fuels make evacuation difficult.
3. Evacuation during wildfire is more difficult because of the narrow roads throughout this area and the long distance to paved county roads. Even though residents on Maranatha Way have two options to exit to a county road (Sutter Creek Road or Shake Ridge Road), they must travel long distances before reaching these roads. Fuel loads, fuels types, and slopes suggest fast moving and unpredictable wildfires are possible in the entire Sutter Highlands Area. Residents should consider early evacuation whenever a wildfire remotely threatens this area.
4. Residents should collectively identify possible shelter in place locations. One such area (APN 015170088000) is located just north of the intersection of Meadow View Road and Starview Lane. This is a large meadow. Residents can contact CAL FIRE for information regarding how to develop a shelter in place location. Another open area is located south of the intersection of Sierra View Lane and Starview Lane.
5. Fuel load is heavy to very heavy (except on the east side).
6. This entire area is located on the south aspect of Shake Ridge. South aspects receive more sunlight then north aspect slopes. South aspects fuels cure faster and generally support vegetation that can survive in drier conditions. Wildfires burn with greater intensity on south aspect slopes.

7. The dominate fuel model affecting structures is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
8. The average parcel size is 4.9 acres. The structure density rating for this area is rural.
9. Slopes average 17%. Slopes this steep will adversely affect wildfire behavior.
10. Compliance with defensible space regulations varies from fair to good. Strict compliance with defensible space regulations will help to protect these homes from wildfire.
11. This area is vulnerable to wildfires occurring during foehn wind events and normal summer weather patterns.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Develop shelter in place option	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	17%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Very High

MANZANITA ROAD (BETWEEN MEADOWVIEW DRIVE AND SUTTER HIGHLANDS ROAD)

1. Manzanita Road is a 3067-foot single lane road connecting Meadow View Drive and Sutter Highlands Road. Five dead-end roads connect to Meadow View Drive along its length. Evacuation during wildfire is more difficult because of the narrow roads throughout this area and the long distance to paved county roads. Even though residents on Manzanita Road and the roads connecting to it have two options to exit to a county road (Sutter Creek Road or Shake Ridge Road), they must travel long distances before reaching these roads. Fuel loads, fuels types, and slopes suggest fast moving and unpredictable wildfires are possible in the entire Sutter Highlands Area. Residents should consider early evacuation whenever a wildfire remotely threatens this area.
2. Roadside brush is present along many areas of this road. Roadside brush can make evacuation difficult during wild fires.
3. Fuel load is heavy to very heavy.
4. This entire area is located on the south aspect of Shake Ridge. South aspects receive more sunlight then north aspect slopes. South aspects fuels cure faster and generally support vegetation that can survive in drier conditions. Wildfires burn with greater intensity on south aspect slopes.
5. The dominate fuel model affecting structures is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These

are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.

6. Some fuel model FM10 is found towards the southern end of this section of Manzanita Road. In FM10, fires burn in the surface and ground fuels with greater fire intensity than the other timber litter models. Dead-down fuels include greater quantities of 3-inch (7.6-cm) or larger limbwood resulting from over maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees are more frequent in this fuel situation, leading to potential fire control difficulties. Any forest type may be considered if heavy down material is present; examples are insect- or disease-ridden stands, windthrown stands, overmature situations with deadfall, and aged light thinning or partial-cut slash.
7. The average parcel size is 4.9 acres. The structure density rating for this area is rural.
8. Slopes average 25%. Slopes this steep will adversely affect wildfire behavior.
9. Compliance with defensible space regulations varies from fair to good. Strict compliance with defensible space regulations will help to protect these homes from wildfire.
10. This area is vulnerable to wildfires occurring during foehn wind events and normal summer weather patterns.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	25%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Very High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

MANZANITA ROAD (SOUTH OF SUTTER HIGHLANDS)

1. Manzanita Road is a 2447-foot dead-end single lane gravel road without a cul-de-sac at its southern terminus. Evacuation during wildfire is more difficult because of the narrow roads throughout this area and the long distance to paved county roads. Even though residents on Manzanita Road and the roads connecting to it have two options to exit to a county road (Sutter Creek Road or Shake Ridge Road), they must travel long distances before reaching these roads. Fuel loads, fuels types, and slopes suggest fast moving and unpredictable wildfires are possible in the entire Sutter

Highlands Area. Residents should consider early evacuation whenever a wildfire remotely threatens this area.

2. Roadside brush is present along many areas of this road. Roadside brush can make evacuation difficult during wild fires.
3. Fuel load is heavy to very heavy.
4. This entire area is located on the south aspect of Shake Ridge. South aspects receive more sunlight then north aspect slopes. South aspects fuels cure faster and generally support vegetation that can survive in drier conditions. Wildfires burn with greater intensity on south aspect slopes.
5. The dominate fuel model affecting structures is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
6. Some fuel model FM10 is found towards the southern end of this section of Manzanita Road. In FM10, fires burn in the surface and ground fuels with greater fire intensity than the other timber litter models. Dead-down fuels include greater quantities of 3-inch (7.6-cm) or larger limbwood resulting from over maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees are more frequent in this fuel situation, leading to potential fire control difficulties. Any forest type may be considered if heavy down material is present; examples are insect- or disease-ridden stands, windthrown stands, overmature situations with deadfall, and aged light thinning or partial-cut slash.
7. The average parcel size is 4.9 acres. The structure density rating for this area is rural.
8. Slopes average 19%. Slopes this steep will adversely affect wildfire behavior.
9. Compliance with defensible space regulations varies from fair to good. Strict compliance with defensible space regulations will help to protect these homes from wildfire.
10. This area is vulnerable to wildfires occurring during foehn wind events and normal summer weather patterns.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	19%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Very High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

MEADOW LARK LANE

1. Meadow Lark Lane is a 5658-foot 1.5 lane paved road connecting Manzanita Road and Sutter Creek Road.
2. Evacuation during wildfire is difficult because of the narrow roads throughout this area and the long distance to paved county roads. Even though residents on Meadow Lark Lane and the roads connecting to it have three options to exit to a county road (Sutter Creek Road or Shake Ridge Road), they must travel long distances before reaching these roads. Fuel loads, fuels types, and slopes suggest fast moving and unpredictable wildfires are possible in the entire Sutter Highlands Area. Residents should consider early evacuation whenever a wildfire remotely threatens this area. This evacuation problem is made more difficult because so many homes are located on very long driveways that add significantly to the distance needed to travel.
3. Roadside brush is present along many areas of this road. Roadside brush can make evacuation difficult during wild fires.
4. Fuel load is moderate to heavy. The heaviest fuel load is nearest Sutter Creek Road.
5. This entire area is located on the south aspect of Shake Ridge. South aspects receive more sunlight then north aspect slopes. South aspects fuels cure faster and generally support vegetation that can survive in drier conditions. Wildfires burn with greater intensity on south aspect slopes.
6. The dominate fuel model affecting structures is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
7. Some fuel model FM10 is present. In FM10, fires burn in the surface and ground fuels with greater fire intensity than the other timber litter models. Dead-down fuels include greater quantities of 3-inch (7.6-cm) or larger limbwood resulting from over maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees are more frequent in this fuel situation, leading to potential fire control difficulties. Any forest type may be considered if heavy down material is present; examples are insect- or disease-ridden stands, windthrown stands, overmature situations with deadfall, and aged light thinning or partial-cut slash.
8. The average parcel size is 9.4 acres. The structure density rating for this area is rural.
9. Slopes average 27%. Slopes this steep will adversely affect wildfire behavior.
10. Compliance with defensible space regulations varies from fair to good. Strict compliance with defensible space regulations will help to protect these homes from wildfire.
11. This area is vulnerable to wildfires occurring during foehn wind events and normal summer weather patterns.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	27%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Very High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

SUSAN ROAD

1. Susan Road is a long (3639 feet) paved dead-end road without a cul-de-sac at its terminus. However, there is a large turnaround area at the last house on the road.
2. Evacuation during wildfire is difficult because of the narrow roads throughout this area and the long distance to paved county roads. Even though residents on Susan Road three options to exit to a county road (Sutter Creek Road or Shake Ridge Road), they must travel long distances before reaching these roads. Fuel loads, fuels types, and slopes suggest fast moving and unpredictable wildfires are possible in the entire Sutter Highlands Area. Residents should consider early evacuation whenever a wildfire remotely threatens this area. This evacuation problem is made more difficult because so many homes are located on very long driveways that add significantly to the distance needed to travel.
3. Roadside brush is present along many areas of this road. Roadside brush can make evacuation difficult during wild fires.
4. Fuel load is moderate to very heavy. The heaviest fuel load is nearest the terminus of Susan Road.
5. This entire area is located on the south aspect of Shake Ridge. South aspects receive more sunlight then north aspect slopes. South aspects fuels cure faster and generally support vegetation that can survive in drier conditions. Wildfires burn with greater intensity on south aspect slopes.
6. The dominate fuel model affecting structures is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
7. Some fuel model FM10 is present. In FM10, fires burn in the surface and ground fuels with greater fire intensity than the other timber litter models. Dead-down fuels include greater quantities of 3-inch (7.6-cm) or larger limbwood resulting from over maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees are more frequent in this fuel situation, leading to potential fire control difficulties. Any forest type may be considered if heavy down material is present; examples are insect- or disease-ridden stands, windthrown stands, overmature situations with deadfall, and aged light thinning or partial-cut slash.
8. The average parcel size is 13 acres. The structure density rating for this area is rural.
9. Slopes average 27%. Slopes this steep will adversely affect wildfire behavior.
10. Compliance with defensible space regulations varies from fair to good. Strict compliance with defensible space regulations will help to protect these homes from wildfire.
11. This area is vulnerable to wildfires occurring during foehn wind events and normal summer weather patterns.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	27%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Very High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

BOOGER HOLLOW ROAD

1. Booger Hollow Road is an 1182-foot dead-end gravel road without a cul-de-sac at its terminus. However, there is a large turnaround area at the last house on the road.
2. Evacuation during wildfire is difficult because of the narrow roads throughout this area and the long distance to paved county roads. Even though residents on Susan Road three options to exit to a county road (Sutter Creek Road or Shake Ridge Road), they must travel long distances before reaching these roads. Fuel loads, fuels types, and slopes suggest fast moving and unpredictable wildfires are possible in the entire Sutter Highlands Area. Residents should consider early evacuation whenever a wildfire remotely threatens this area.
3. Roadside brush is present along this road. Roadside brush can make evacuation difficult during wild fires.
4. Fuel load is moderate to heavy.
5. This entire area is located on the south aspect of Shake Ridge. South aspects receive more sunlight then north aspect slopes. South aspects fuels cure faster and generally support vegetation that can survive in drier conditions. Wildfires burn with greater intensity on south aspect slopes.
6. The dominate fuel model affecting structures is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
7. The average parcel size is 5 acres. The structure density rating for this area is rural.
8. Slopes average 20%. Slopes this steep will adversely affect wildfire behavior.
9. Compliance with defensible space regulations varies from fair to good. Strict compliance with defensible space regulations will help to protect these homes from wildfire.

10. This area is vulnerable to wildfires occurring during foehn wind events and normal summer weather patterns.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	20%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Very High

CHESTNUT LANE

1. Chest Lane is an 810-foot dead-end narrow road without a cul-de-sac at its terminus. However, there is a large turnaround area at the last house on the road.
2. Evacuation during wildfire is difficult because of the narrow roads throughout this area and the long distance to paved county roads. Even though residents on Chestnut Lane three options to exit to a county road (Sutter Creek Road or Shake Ridge Road), they must travel long distances along two of these before reaching these county roads. Fuel loads, fuels types, and slopes suggest fast moving and unpredictable wildfires are possible in the entire Sutter Highlands Area. Residents should consider early evacuation whenever a wildfire remotely threatens this area.
3. Roadside brush is present along this road. Roadside brush can make evacuation difficult during wild fires.
4. Fuel load is heavy.
5. This entire area is located on the south aspect of Shake Ridge. South aspects receive more sunlight then north aspect slopes. South aspects fuels cure faster and generally support vegetation that can survive in drier conditions. Wildfires burn with greater intensity on south aspect slopes.
6. The dominate fuel model affecting structures is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
7. The average parcel size is 65 acres. The structure density rating for this area is rural.
8. Slopes average 16%. Slopes this steep will adversely affect wildfire behavior.
9. Compliance with defensible space regulations varies from fair to good. Strict compliance with defensible space regulations will help to protect these homes from wildfire.
10. This area is vulnerable to wildfires occurring during foehn wind events and normal summer weather patterns.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	16%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Very High

SUTTER HIGHLAND DRIVE (PRIVATE ROAD)

1. Sutter Highland drive is a long (13342 feet) mostly gravel single lane road connecting Oneto Road and Manzanita Road. Turnouts are rare along much of this road's length.
2. Evacuation during wildfire is difficult because of the narrow roads throughout this area and the long distance to paved county roads. Even though residents on Sutter Highland Drive have three options to exit to a county road (Oneto Road, Sutter Creek Road, or Shake Ridge Road), they must travel long distances before reaching these roads. Fuel loads, fuels types, and slopes suggest fast moving and unpredictable wildfires are possible in the entire Sutter Highlands Area. Residents should consider early evacuation whenever a wildfire remotely threatens this area. This evacuation problem is made more difficult because so many homes are located on very long driveways that add significantly to the distance needed to travel.
3. Roadside brush is present along many areas of this road. Roadside brush can make evacuation difficult during wild fires.
4. Fuel load is moderate to very heavy.
5. This entire area is located on the south aspect of Shake Ridge. South aspects receive more sunlight then north aspect slopes. South aspects fuels cure faster and generally support vegetation that can survive in drier conditions. Wildfires burn with greater intensity on south aspect slopes.
6. The dominate fuel model affecting structures is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
7. Some fuel model FM10 is present. In FM10, fires burn in the surface and ground fuels with greater fire intensity than the other timber litter models. Dead-down fuels include greater quantities of 3-inch (7.6-cm) or larger limbwood resulting from over maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees are more frequent in this fuel situation, leading to potential fire control difficulties. Any forest type may

be considered if heavy down material is present; examples are insect- or disease-ridden stands, windthrown stands, overmature situations with deadfall, and aged light thinning or partial-cut slash.

8. The average parcel size is 4.5 acres. The structure density rating for this area is rural.
9. Slopes average 20%. Slopes this steep will adversely affect wildfire behavior.
10. Compliance with defensible space regulations varies from fair to good. Strict compliance with defensible space regulations will help to protect these homes from wildfire.
11. This area is vulnerable to wildfires occurring during foehn wind events and normal summer weather patterns.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Create turnouts every 1320 feet	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	20%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Very High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

SUTTER CREEK ROAD AREA

BLACKWELL ROAD (PRIVATE ROAD)

1. Blackwell Road is a narrow dirt/gravel single lane dead-end road 797 feet in length without a cul-de-sac at its terminus. However, there is a large turnaround area at the last house on the road. A long driveway continues on to a single structure.
2. The street sign at the intersection of Blackwell and Sutter creek Roads is constructed of wood and is visible from one direction of travel only.
3. Fuel load is light.
4. The dominate fuel model affecting structures is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. The average parcel size is 14 acres. The structure density rating for this area is rural.
6. Slopes average 21%. Slopes this steep will adversely affect wildfire behavior.

7. Compliance with defensible space regulations is fair. Strict compliance with defensible space regulations will help to protect these homes from wildfire.
8. This area is vulnerable to wildfires occurring during foehn wind events and normal summer weather patterns.

PROJECTS

Project list	Method/responsible party
Install county standard street sign	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	21%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Moderate

VALLEY BOTTOM ROAD (PRIVATE ROAD)

1. Valley Bottom Road is a paved single lane dead-end road 774 feet in length without a cul-de-sac at its terminus. However, there is a large turnaround area at the last house on the road.
2. Roadside brush is present along many areas of this road. Roadside brush can make evacuation difficult during wild fires.
3. Fuel load is moderate to very heavy.
4. The dominate fuel model affecting structures is FM2. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. The average parcel size is 18 acres. The structure density rating for this area is rural.
6. Slopes average 11%. Slopes this steep will adversely affect wildfire behavior. Some residences at the end of this road are on slopes in excess of 27%.
7. Compliance with defensible space regulations varies from fair to good. Strict compliance with defensible space regulations will help to protect these homes from wildfire.
8. This area is vulnerable to wildfires occurring during foehn wind events and normal summer weather patterns.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	11%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High

CARPENTER GULCH ROAD (PRIVATE ROAD)

1. Carpenter Gulch Road is single lane dirt dead-end road 5857 feet (over one mile) in length without a cul-de-sac at its terminus. This road is of very poor quality making travel extremely difficult. There are few areas where vehicles can pass or turn around. Evacuation from this area during a wildfire will be difficult at best. Added to the life safety risk is the roadside brush is present along this road. Roadside brush can make evacuation difficult during wildfires. Residents need to evacuate early to avoid being trapped.
2. Fuel load is very heavy.
3. Two fuel models are present in equal amounts, FM2 and FM10. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
4. In FM10, fires burn in the surface and ground fuels with greater fire intensity than the other timber litter models. Dead-down fuels include greater quantities of 3-inch (7.6-cm) or larger limbwood resulting from over maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees are more frequent in this fuel situation, leading to potential fire control difficulties. Any forest type may be considered if heavy down material is present; examples are insect- or disease-ridden stands, windthrown stands, overmature situations with deadfall, and aged light thinning or partial-cut slash.
5. The average parcel size is 12 acres. The structure density rating for this area is rural.
6. Slopes average 35%. Slopes this steep will adversely affect wildfire behavior.
7. Compliance with defensible space regulations is very poor. Strict compliance with defensible space regulations may help to protect these homes from wildfire.
8. This area is vulnerable to wildfires occurring during foehn wind events and normal summer weather patterns. Residents are at risk of being trapped if they do not evacuate early.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Create turnouts every 400 feet	Homeowners
Grade road surface to provide faster travel during evacuations	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	35%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Very High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

LAKE CANYON ROAD (PRIVATE ROAD)

1. Lake Canyon Road is single lane dirt dead-end road 4083 feet in length without a cul-de-sac at its terminus.
2. Fuel load is very heavy.
3. This entire area is located on the south aspect of Shake Ridge. South aspects receive more sunlight then north aspect slopes. South aspects fuels cure faster and generally support vegetation that can survive in drier conditions. Wildfires burn with greater intensity on south aspect slopes.
4. Two fuel models are present in equal amounts, FM2 and FM10. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. In FM10, fires burn in the surface and ground fuels with greater fire intensity than the other timber litter models. Dead-down fuels include greater quantities of 3-inch (7.6-cm) or larger limbwood resulting from over maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees are more frequent in this fuel situation, leading to potential fire control difficulties. Any forest type may be considered if heavy down material is present; examples are insect- or disease-ridden stands, windthrown stands, overmature situations with deadfall, and aged light thinning or partial-cut slash.
6. The average parcel size is 11 acres. The structure density rating for this area is rural.
7. Slopes average 26%. Slopes this steep will adversely affect wildfire behavior.
8. Compliance with defensible space regulations is fair. Strict compliance with defensible space regulations may help to protect these homes from wildfire.
9. This area is vulnerable to wildfires occurring during foehn wind events and normal summer weather patterns.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	26%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

LAUREL ROAD (PRIVATE ROAD)

1. Laurel Road is one and half lane gravel dead-end road 5106 feet in length without a cul-de-sac at its terminus. However, there is a large turnaround area at the last house on the road.
2. Fuel load is moderate to heavy.
3. Roadside fuel is present. Roadside fuel makes evacuation difficult during wildfires.
4. This entire area is located on the south aspect of Shake Ridge. South aspects receive more sunlight then north aspect slopes. South aspects fuels cure faster and generally support vegetation that can survive in drier conditions. Wildfires burn with greater intensity on south aspect slopes.
5. Multiple fuel models are present. These models are FM2, FM5, FM6, and FM10. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
6. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
7. Some fuel model FM6 is also present. In FM6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.
8. The dominate fuel model is FM10. In FM10, fires burn in the surface and ground fuels with greater fire intensity than the other timber litter models. Dead-down fuels include greater quantities of 3-inch (7.6-cm) or larger limbwood resulting from over maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees are more frequent in this fuel situation, leading to potential fire control difficulties. Any forest type may be considered if heavy down material is present; examples are insect- or disease-ridden stands, windthrown stands, overmature situations with deadfall, and aged light thinning or partial-cut slash.
9. The average parcel size is 4 acres. The structure density rating for this area is rural.
10. Slopes average 29%. Slopes this steep will adversely affect wildfire behavior.
11. Compliance with defensible space regulations is good. Strict compliance with defensible space regulations may help to protect these homes from wildfire.
12. This area is vulnerable to wildfires occurring during foehn wind events and normal summer weather patterns.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	29%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High
			FM 5 (SH5)	6.5	Low	High	Moderate	High	
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

RANCHO CANYON ROAD

Rancho Canyon Road was not rated by driving its length. This road was not deemed drivable for its entire length due to the road conditions. Instead, the analysis of the risk is derived from aerial photos, GIS parcel and road layers, and a GIS contour layer.

1. Rancho Canyon Road is a long narrow dirt road connecting Shake Ridge Road on the north and Sutter Creek Road on the south.
2. There does not appear to be many turnouts along its length. Vehicles using this road during a wildfire will have difficulty passing one another.
3. Fuel load is very heavy.
4. The fuel load is almost exclusively comprised of FM 2 fuels. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
5. Slopes are quite steep ranging between 60 and 80 percent. Slopes this steep will adversely affect fire behavior.
6. The average parcel size is 11 acres. This area has a rural structure density rating.
7. Most homes appear to be located near the ends of Rancho Canyon Road.
8. Because of the fuel load, Fuel type, and slopes, residents should evacuate to the nearest improved county road whenever a wildfire threatens or could threaten their homes.
9. This road is included in a proposed fuelbreak that is listed in Chapter 8, Section 8.2.1 of this plan.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Amador Fire Safe Council/CAL FIRE Fuelbreak
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	70%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	Very High

SUTTER CREEK ROAD (COUNTY ROAD)

1. Within the Greater Pine Grove Planning Unit, Sutter Creek Road begins at the town of Volcano and ends at the intersection of Pine Gulch Road on the west. Sutter Creek Road is a two lane paved county road.
2. The fuel load is varies from light to very heavy.
3. Multiple fuel models are present. These models are FM2, FM5, FM6, and FM10. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
4. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
5. Some fuel model FM6 is also present. In FM6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.
6. The dominate fuel model is FM10. In FM10, fires burn in the surface and ground fuels with greater fire intensity than the other timber litter models. Dead-down fuels include greater quantities of 3-inch (7.6-cm) or larger limbwood resulting from over maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees are more frequent in this fuel situation, leading to potential fire control difficulties. Any forest type may be considered if heavy down material is present; examples are insect- or disease-ridden stands, windthrown stands, overmature situations with deadfall, and aged light thinning or partial-cut slash.
7. The average parcel size is 23 acres. The structure density rating for this area is rural.

8. Slopes around residences are nearly flat. However, this road is located at the bottom of very steep slopes. These steep slopes will adversely affect wildfire behavior.
9. Compliance with defensible space regulations is fair. Strict compliance with defensible space regulations may help to protect these homes from wildfire.
10. This area is vulnerable to wildfires occurring during foehn wind events and normal summer weather patterns.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	0 to >30%	FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	High
			FM 5 (SH5)	6.5	Low	High	Moderate	High	
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

EAST CLINTON ROAD AREA

DEBBIE LANE

1. Debbie Lane is a steep single lane paved dead-end road without a cul-de-sac at its terminus.
2. Roadside fuels are present. Roadside fuels make evacuation difficult during wildfires.
3. The street sign is made from flammable materials.
4. The fuel load is varies from moderate to very heavy.
5. Multiple fuel models are present. These models are FM5, FM6, and FM10.
6. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
7. Some fuel model FM6 is also present. In FM6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.

8. The dominate fuel model is FM10. In FM10, fires burn in the surface and ground fuels with greater fire intensity than the other timber litter models. Dead-down fuels include greater quantities of 3-inch (7.6-cm) or larger limbwood resulting from over maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees are more frequent in this fuel situation, leading to potential fire control difficulties. Any forest type may be considered if heavy down material is present; examples are insect- or disease-ridden stands, windthrown stands, overmature situations with deadfall, and aged light thinning or partial-cut slash.
9. The average parcel size is 6.4 acres. The structure density rating for this area is rural.
10. Slopes around residences are nearly flat. However, this road is located at the bottom of very steep slopes (39%). These steep slopes will adversely affect wildfire behavior.
11. Compliance with defensible space regulations is good. Strict compliance with defensible space regulations may help to protect these homes from wildfire.
12. This area is vulnerable to wildfires occurring during foehn wind events and normal summer weather patterns.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Install county standard street signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	39%	FM 5 (SH5)	6.5	Low	High	Moderate	High	High
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

MEADOWOOD DRIVE

1. Meadowood Drive is a steep single lane paved dead-end road 7278 feet in length, that turns to gravel near its terminus. This road is without a cul-de-sac at its terminus. However, there is a large turnaround area at the last house on the road.
2. Roadside fuels are present. Roadside fuels make evacuation difficult during wildfires.
3. The street sign is made from flammable materials.
4. The fuel load is varies from light to very heavy. There are significant patches of grass (fuel model FM1) midway along this road.
5. Multiple fuel models are present. These models are FM1, FM2, FM5, FM6, and FM10.
6. In FM1, fire spread is governed by the fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber is present, generally less than one third of the area. Grasslands and savanna are represented along with stubble, grass-tundra, and grass-shrub combinations that met the above area constraint. Annual and perennial grasses are included in this fuel model

7. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
8. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
9. In FM6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.
10. In FM10, fires burn in the surface and ground fuels with greater fire intensity than the other timber litter models. Dead-down fuels include greater quantities of 3-inch (7.6-cm) or larger Iimbwood resulting from over maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees are more frequent in this fuel situation, leading to potential fire control difficulties. Any forest type may be considered if heavy down material is present; examples are insect- or disease-ridden stands, windthrown stands, overmature situations with deadfall, and aged light thinning or partial-cut slash.
11. The average parcel size is 6.4 acres. The structure density rating for this area is rural.
12. Slopes around some residences are nearly flat. However, slopes along most the length of this road average 26%. These steep slopes will adversely affect wildfire behavior.
13. Compliance with defensible space regulations is good. Strict compliance with defensible space regulations may help to protect these homes from wildfire.
14. This area is vulnerable to wildfires occurring during foehn wind events and normal summer weather patterns.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Install county standard street signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	26%	FM1 (GR4)	2.15	High	Very High	Very High	Extreme	High
			FM 2 (GR7)	6.4	High	Very High	Very High	Extreme	
			FM 5 (SH5)	6.5	Low	High	Moderate	High	
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

MEADOWOOD COURT

1. Meadowood Court is a steep single lane gravel dead-end road 1316 feet in length without a cul-de-sac at its terminus. However, there is a turnaround area at the last house on the road.
2. Roadside fuels are present. Roadside fuels make evacuation difficult during wildfires.
3. The street sign is made from flammable materials.
4. The fuel load is varies from light to moderate. There are significant patches of grass (fuel model FM1) along this road.
5. Multiple fuel models are present. These models are FM1, FM5, FM6, and FM10.
6. In FM1, fire spread is governed by the fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber is present, generally less than one third of the area. Grasslands and savanna are represented along with stubble, grass-tundra, and grass-shrub combinations that met the above area constraint. Annual and perennial grasses are included in this fuel model
7. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.
8. In FM6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.
9. In FM10, fires burn in the surface and ground fuels with greater fire intensity than the other timber litter models. Dead-down fuels include greater quantities of 3-inch (7.6-cm) or larger limbwood resulting from over maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees are more frequent in this fuel situation, leading to potential fire control difficulties. Any forest type may be considered if heavy down material is present; examples are insect- or disease-ridden stands, windthrown stands, overmature situations with deadfall, and aged light thinning or partial-cut slash.
10. The average parcel size is 1.7 acres. The structure density rating for this area is rural.
11. Slopes around some residences are nearly flat. However, slopes along most the length of this road average 19%. These steep slopes will adversely affect wildfire behavior.

12. Compliance with defensible space regulations is good. Strict compliance with defensible space regulations may help to protect these homes from wildfire.
13. This area is vulnerable to wildfires occurring during foehn wind events and normal summer weather patterns.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Install county standard street signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	19%	FM1 (GR4)	2.15	High	Very High	Very High	Extreme	High
			FM 5 (SH5)	6.5	Low	High	Moderate	High	
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

DAWN RIDGE

1. Dawn Ridge is a very steep single lane paved dead-end road 1949 feet in length, that turns to gravel near its terminus. This road has a large turnaround at its terminus.
2. Multiple water tanks are present.
3. Roadside fuels are present. Roadside fuels make evacuation difficult during wildfires.
4. The street sign is made from flammable materials.
5. The fuel load is varies from light to moderate.
6. Multiple fuel models are present. These models are FM1, FM2, FM5, and FM6.
7. In FM1, fire spread is governed by the fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber is present, generally less than one third of the area. Grasslands and savanna are represented along with stubble, grass-tundra, and grass-shrub combinations that met the above area constraint. Annual and perennial grasses are included in this fuel model
8. FM2 is characterized as grass and shrubs with timber overstory. Fire spreads primarily through fine herbaceous fuels, either curing or dried. These are surface fires where the herbaceous material, ground litter, and downed stemwood (trees and limbs) contribute to the fire intensity. Open shrublands and pine stands or scrub oaks that cover one-third to two-thirds of the area fit this model. These fuels may include clumps that generate higher heat outputs and produce firebrands. Rate of spread can be very fast and flame length long during windy conditions.
9. In Fuel Model 5, fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the

surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. Usually, fires in this model are less intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.

10. In FM6, fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at midflame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, and oak brush.
11. The average parcel size is 3.1 acres. The structure density rating for this area is rural.
12. Slopes around some residences are nearly flat. However, slopes along most the length of this road average 28%. These steep slopes will adversely affect wildfire behavior.
13. Compliance with defensible space regulations is extremely good. Strict compliance with defensible space regulations may help to protect these homes from wildfire.
14. This area is vulnerable to wildfires occurring during foehn wind events and normal summer weather patterns.

PROJECTS

Project list	Method/responsible party
Eliminate roadside fuels	Homeowners/Amador Fire Safe Council
Install county standard street signs	Homeowners
Strict adherence to defensible space regulations. Defensible space should exceed the 100 foot requirement whenever possible.	Homeowners

RELATIVE RISK FROM WILDFIRE

Structure density Category Buildings/ac	Structure Density affects fire behavior	Average slope (3 random samples)	Fuel Model(s)	Average fine fuel load tons/ac	Average flame length feet at 5 mph	Expected Flame length in feet at 20 mph	Expected rate of spread /hr (5 mph)	Expected Rate of spread in wind (20 mph)	Relative risk rating
Rural	No	28%	FM1 (GR4)	2.15	High	Very High	Very High	Extreme	High
			FM 5 (SH5)	6.5	Low	High	Moderate	High	
			FM 6 (SH7)	6.9	Very High	Very High	High	Very High	
			FM 10 (TU5)	7.0	Moderate	Very High	Moderate	Very High	

[1] These are the assets at risk enumerated in the California Fire Plan
[2] Foehn Winds: the name comes from a German local wind. Alternately called Santa Ana, devil winds, or sundowners
[3] Contain a fire: a fuelbreak around the fire has been completed. The fuelbreak may include natural barriers or manually, and/or mechanically constructed line.
[4] R1 Single family residential district; R1A Single family residential and agricultural district; R2 Low density multiple family residential district; R2A Single family (2 acre minimum) residential district; R3 High density multiple family residential district; RE residential estates district
[5] A viewshed is an area of land, water, or other environmental element that is visible to the human eye from a fixed vantage point.
[6] Bryophytes are all embryophytes ('land plants') that are non-vascular:[1] they have tissues and enclosed reproductive systems, but they lack vascular tissue that circulates liquids.[2] They neither have flowers nor produce seeds, reproducing via spores.
[7] "Appendix C, Assessments of Individual Species: Vascular Plants, Bryophytes, and Fungi". SNFPA Final Supplemental Environmental Impact Statement. January 2004. http://www.fs.fed.us/r5/snfpa/final-seis/vol1/appendix-c/assessments/vpbf/index.html.
[8] Amador County Generic Community Wildfire Protection Plan, Part II, 2004
[9] Spread rates and flame lengths were calculated from graphs in Standard Fire Behavior Fuel Models: A Comprehensive Set for Use with Rothermel's Surface Fire Spread Model, USDA Publication

CHAPTER 4- OBJECTIVES AND PROJECTS

TABLE OF CONTENTS

4 SUMMARY OF OBJECTIVES

The objectives of this plan are to:

1. Protect human life
2. Protect property from wildfires
3. Reestablish pre-European Settlement conditions
4. Minimize ignitions
5. Decrease wildfire intensity and damage
6. Protect important public and private infrastructure
7. Reduce epidemics of forest pests and disease due to drought and overstocking
8. Improve forest health
9. Increase wildfire permeability and resiliency.
10. Maintain scenic vistas throughout the planning unit

The Greater Pine Grove Community Conservation and Wildfire Protection Plan compliments four existing plans adopted by the Amador County Board of Supervisors. These plans are the Amador County General Plan, the Amador County Multi-Hazard Mitigation Plan (2006), the Amador County Generic Community Wildfire Protection Plan (2005), and the Pioneer Volcano Community Conservation and Wildfire Protection Plan (2012).

AMADOR COUNTY GENERAL PLAN

Amador County General Plan Safety Element includes the following goals:

> *"c. Progressive improvements in fire protection services, facilities and equipment per the Board of Fire Underwriters and Fire Marshall standards; increased water pressure, additional equipment and personnel, etc,*
>
> *d. Present and planned systems of evacuation routes, fire access trails and fire breaks, and of regulatory measures pertaining to seismic and fire safe construction, location and clearance around structures, etc."*

AMADOR COUNTY MULTI-HAZARD MITIGATION PLAN

The goals defined for the purpose of the Multi-Hazard Mitigation Plan as broad based public policy statements are:

- *"Represent basic desires of the community,*
- *Encompass all aspects of community, public and private,*
- *Are nonspecific, in that they refer to the quality (not the quantity) of the outcome,*
- *Are future-oriented, in that they are achievable in the future; and*
- *Are time-independent, in that they are not scheduled events."*

Action item #7 of the County's Multi-Hazard Mitigation Plan includes projects that were identified in the Amador County Generic Community Conservation and Wildfire Protection Plan.

*“**Issue/Background:** The Amador County Generic Wildfire Protection Plan divides the county into nine distinct areas. Each of these areas is rated as to its relative risk from wildfire. The next step in the planning process is to develop CWPP’s for each of these nine areas. These plans will contain area specific mitigation measures to protect life and property from wildfire.”*

AMADOR COUNTY GENERIC COMMUNITY WILDFIRE PROTECTION PLAN

The Amador County Generic Community Wildfire Protection Plan and the Amador County Multi-Hazard Mitigation Plan (action Item # 7) include a list of critical fuel management projects within the Greater Pine Grove Planning Unit that are also included in this plan. These projects are the:

1. Rams Horn/Shake Ridge Fuelbreak
2. Surrey/Lupe Fuelbreak
3. Hale/Rancheria East Fuelbreak
4. Lupe Road Fuelbreak
5. Hale/Rancheria South Fuelbreak
6. Defender grade Fuelbreak
7. Ponderosa South Fuelbreak

4.1 COMMUNITY PROJECTS

Table 1 represents a list of projects identified as important for the community (individual residents, road associations, government, etc.) to accomplish using their resources. All projects listed in table 1 can be accomplished by residents working together. While there is a proposal in Table 2 Section 8.1.2 for roadside fuel reduction, residents should not wait for this project to be funded. Much of the roadside fuel reduction can be accomplished by citizens working together.

Residents should not depend on the creation of fuelbreaks, fuel management zones (FMZ), or other large-scale measures for their protection. These measures take years to fund and construct. Even if all these projects were completed, there is no guarantee that they will not be breached during adverse fire conditions. Therefore, regardless of the large-scale fuel reduction measures proposed in Table 2 and 3, the best protection from wildfire for residents and businesses is compliance with defensible space regulations. For this reason, defensible space is the first item listed in Table 1

Many do not understand that fire fighters will perform a type of structure triage during wildfires. This triage will rate structures based on their potential for safety and firefighter safety. All structures will fall into one of three categories.

1. Not threatened
2. Threatened – defendable
3. Threatened – not defendable

Homes falling into category 3 either because they lack defensible space or are located along long narrow roads with large amounts of roadside fuels will likely be passed over. Appendix H provides a guide for meeting the current defensible space requirements.

Tables 2 and 3 list large scale projects, existing or proposed, that are beyond homeowners or local community groups capabilities. These projects will be the responsibility of government or other large organizations.

4.1.1 HOMEOWNER AND LOCAL COMMUNITY PROJECTS

TABLE 1

Community, Structure, or Area at Risk	Type of Treatment	Method of Treatment/implementation	Overall Priority
Greater Pine Grove Planning Unit	Strict compliance with defensible space regulations	Individual property owners	Very High
Greater Pine Grove Planning Unit	Roadside fuel reduction	Reduce fuel along 30 miles of public and private roads a minimum of 20 feet from each road edge. Clearance of greater than 20 feet (up to 40 feet) on downslope side when slopes exceed 10%.	Very high
Greater Pine Grove Planning Unit	Street address signs	Replace wooden and other street address signs with a county standard street sign	Very High
Greater Pine Grove Planning Unit roads where Scotch Broom is present	Roadside Scotch Broom Eradication	Herbicides and/or hand removal. Amador Fire Safe Council has tools for this purpose available for loan at no cost.	Very High
Toyon Road Area	Alternate egress for Toyon road to Highway 88	Open existing alternate access	Very High
Toyon Road Area	Alternate egress for Penrose Way to Climax Road	Create an escape route along existing right-away	Very High
Greater Pine Grove Planning Unit	Identify with a standard sign all private water tanks and swimming pools.	Install reflective roadside sign near water sources. Residents should contact their local fire department for information about the appropriate sign.	High
Greater Pine Grove Planning Unit (private roads)	Street signs	Replace wooden and other street signs not meeting current county standards with a county standard road sign	High

8.1.2 EXISTING LARGE SCALE PROJECTS

TABLE 2

2 - EXISTING FUEL REDUCTION PROJECTS						
Community, Structure, or Area at Risk	**Project Name**	**Method of Treatment**	**Funding Needs**	**Acres**	**Priority**	**Expected Completion Date**
Shake Ridge Road Area	Stone Jug	Mastication, tractor, and/or hand crews	$73,172	55	5	In progress using CAL FIRE CAG funding. Project sponsor is the Amador Resource Conservation District, scheduled to be completed 2012-2013
Greater Pine Grove Planning Unit, Pine Acres (north and south)	AFSC FMZ 1	Mastication with herbicide maintenance	$9,848 every 5 to 7 years	55	On going	Completed in maintenance mode – AFSC project
Greater Pine Grove	AFSC FMZ 2	Mastication with	$11,252every 5	66	On	Completed in maintenance

Planning Unit, Pine Acres (north and south)		herbicide maintenance	to 7 years		going	mode = AFSC project
Greater Pine Grove Planning Unit, Pine Acres (north and south)	AFSC FMZ 3	Mastication with herbicide maintenance	$5503 every 5 to 7 years	20	On going	Completed in maintenance mode = AFSC project
Greater Pine Grove Planning Unit, Pine Acres (north and south)	Mt Zion Fuelbreak	Mastication with herbicide maintenance	$9,511 every 5 to 7 years	52	On going	Completed in maintenance mode – AFSC project
Greater Pine Grove Planning Unit, Pine Acres (north and south)	Newsom FMZ	Hand crew with herbicide maintenance	$5,141 every 5 to 7 years	17	On going	Completed in maintenance mode - AFSC project
Greater Pine Grove Planning Unit, Pine Acres (north and south)	PG&E RW between Aqueduct Road and Tabeaud Road	Multiple	$5,936	24	On going	Completed in maintenance mode – PG&E project currently in need of rehab to reduce surface fuels
Greater Pine Grove Planning Unit, Pine Acres (north and south)	Pine Acres FMZ	Hand crew with herbicide maintenance	$12,987 every 5 to 7 years	80	On going	Completed (2011) - in maintenance mode. CAL FIRE and AFSC project
Greater Pine Grove Planning Unit private roads	Roadside fuel reduction	Roadside chipping (estimated 30 miles @ $1000/mile)	$146,000 additional	146 ac est.	On going	In progress needs refunding

The following table lists additional large-scale fuel reduction projects proposed to improve protection from wildfire.

8.1.3 PROPOSED LARGE-SCALE FUEL REDUCTION PROJECTS

TABLE 3

3 - PROPOSED FUEL REDUCTION PROJECTS						
Community, Structure, or Area at Risk	**Project Name**	**Method of Treatment**	**Funding Needs**	**Acres**	**Priority**	**Expected Completion Date**
Jackson Pines Area	BLM FMZ	Mastication and/or hand crews	$96,012	83	(4a)	Proposed –pending funding, To be completed as part of the Mt Zion extension
Greater Pine Grove Planning Unit, Pine Acres (north and south)	Pine Acres Hwy 88 link (extension of Pine Acres Project)	Mastication and/or hand crews	$30,358	17	1	Proposed –pending funding

Greater Pine Grove Planning Unit, Pine Acres (north and south)	Pine Acres Wildwood link (extension of Pine Acres Project)	Mastication and/or hand crews	$53,410	40	1	Proposed –pending funding
Greater Pine Grove Planning Unit, Pine Acres (north and south)	Pine Acres PG&E link (extension of Pine Acres Project	Mastication and/or hand crews	$45,392	32	1	Proposed –pending funding
Toyon Road Area	Toyon FB	Mastication and/or hand crews	$55,945	43	2	Proposed –pending funding
Greater Pine Grove Planning Unit	Mitchell Mine FB	Mastication and/or hand crews	$252,635	242	3	Proposed –pending funding
Jackson Pines Area	Mt. Zion extension	Mastication and/or hand crews	$63,797	51	4	Proposed –pending funding
Volcano Road Area	BLM FMZ	Mastication and/or hand crews	Unknown	Unknown	(3a)	Proposed –pending funding, to be completed as part of the Mitchell Mine FB. This is a retreatment of an existing BLM fuels project.
Shake Ridge Road Area	Stone Jug	Mastication, tractor, and/or hand crews	$73,172	55	5	In progress using CAL FIRE CAG funding. Project sponsor is the Amador Resource Conservation District, scheduled to be completed 2012-2013
Sutter Creek Road and Sutter Highlands Areas	Rancho	Mastication and/or hand crews	$106,742	94	6	Proposed –pending funding

4.2 ADDITIONAL ACTIONS

➢ *Action items are identified with this arrow throughout this chapter.*

4.2.1 DESIGNATION OF WILDLAND URBAN INTERFACE

The wildland-urban interface (WUI) is a general term describing the area where homes and wildland meet. It also has a federal definition as the “line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuel as defined in the Federal Register.”[1] It is within the WUI that specific federal management actions take place in order to reduce fuel risks. These actions are based on guidelines established by the Healthy Forest Restoration Act (HFRA). According to HFRA, “the HFRA provides administrative procedures for hazardous-fuel-reduction projects on USFS and BLM lands in the WUIs of at-risk communities. The act encourages the development of Community Wildfire Protection Plans under which communities will designate their WUIs, where HFRA projects may take place."[2] At the same time, federal agencies are charged with developing WUI designations for the properties they manage.

As required by HFRA, this Plan accepts the WUI designation for Greater Pine Grove Planning Unit. This designation was developed combining Bureau of Land Management, Community-Identified High Risk and Hazard Areas, Community-Identified Project Areas, Community Assets, CAL FIRE's WUI designation, and issues of topography, landscape characteristics, access, fire threat designation, fire weather, etc. Projects in these designated areas should be prioritized for funding and implementation under the National Fire Plan. The following map outlines the proposed WUI designation for Greater Pine Grove Planning Unit.

- ➢ *Bureau of Land Management accept WUI designations defined in this plan and previously identified by CAL FIRE*
  - ➢ *Bureau of Land Management work with Amador Fire Safe Council and other interested community members to reach agreement on projects proposed within WUI areas in Greater Pine Grove Planning Unit*
  - ➢ *Bureau of Land management agrees to complete the projects proposed on BLM lands in this plan.*

4.2.2 DESIGNATION OF COMMUNITIES AT RISK

Most eligible communities have already been designated as a Community at Risk, either by federal or state designation. The California Fire Alliance has a process to add new communities to this list.

- ➢ *All communities within the Greater Pine Grove Planning Unit are currently designated as Communities at Risk.*

4.2.3 DEFENSIBLE SPACE

Through this planning process, much of Greater Pine Grove Planning Unit has been identified as being either especially hazardous, with high fire risk, or both. It makes sense to focus enforcement of existing regulations in this area as well as to place stricter regulations on any new developments there.

The following statement from the California Attorney General's office provides the legal framework for local governments to take action to ensure local fire safety:

> *"The Legislature of the State of California hereby finds and declares that the unrestricted use of grass-, grain-, brush-, or forest-covered land within the State is a potential menace to life and property from fire and resulting erosion…. Counties, cities and counties, cities, and districts may adopt ordinances, rules, or regulations to provide fire prevention hazard conditions.[3]"*

Target Areas in Greater Pine Grove Planning Unit for Defensible Space, Fire Safe Construction, and Alternate Access Programs:

- Areas rated Very High risk regardless of other factors
- Areas rated High Risk served by long narrow dead-end roads not meeting current length/lot size standards.
- Areas rated High Risk where slopes exceed 10%.
- Areas rated High Risk where fuel types are FM2 or FM10

- Areas rated Suburban or Urban structure density regardless of fuel type or slope.

➢ *Focus fire safety efforts in the Target Areas listed above, including defensible space, fire - resistant building, and providing for alternate access routes.*

4.2.4 DEFENSIBLE SPACE IN NEW DEVELOPMENTS

Development pressures are increasing in Greater Pine Grove Planning Unit. This can be seen especially in the interface between wildlands and residential areas. The Toyon Road area is an example of development that does not meet adequate fire safety standards.

As more lands are being developed, the risk to existing homes generally increases. The County of Amador has a responsibility to current residents to minimize the impact on them from future development. One way to do this is to ensure that all new development adheres to accepted fire safety standards.

➢ *The County of Amador explores options to mandate and enforce fire safe standards for new developments.*

4.2.5 FUEL REDUCTION

Reducing hazardous fuel is a challenge for most communities in the western United States. The amount of accumulated fuel is far greater than most communities can afford to handle, hence the need to prioritize projects. The research is still unclear regarding the most effective and efficient way to reduce fuel without compromising ecosystem health. Research by Mark Finney at the Fire Science Lab[4] challenges current theories in landscape-level fuel treatments and models strategic locations for fuel reduction treatments. That said, it is generally agreed that such treatments should be focused first around communities in the wildland-urban interface. Many residential areas in the planning unit qualify for such treatments, and thus were identified at the community meetings and are listed in this document.

Fuel reduction treatments need to begin within the Wildland Fuel Reduction Zone (see Appendix C). Beyond this, strategic locations around neighborhoods and communities should be identified and prioritized for creating shaded fuelbreaks. “Fuelbreaks are never designed to stop fires but to allow suppression forces a higher probability of successfully attacking a wildfire.”[5] The combination of home construction modifications with effective defensible space and shaded fuelbreaks around communities is one of the best-known strategies to protect communities from wildfire.

There is no “one size fits all” prescription for shaded fuelbreaks. For example, the width can vary widely, ranging from 50 to 300 feet. “A shaded fuelbreak is created by altering surface fuel, increasing the height to the base of the live crown, and opening the canopy by removing trees.”[6] Sample prescriptions are described in Appendix C. In addition to initial implementation, maintenance of fuelbreaks is often costly. Maintaining the shade helps to reduce these costs by slowing regeneration.

“Manual treatment is very expensive, and mechanical treatment is only feasible on gentle terrain. Prescribed fire can be effective (Schimke and Green, 1970) but there is potential for fire escape along the edges. Late winter burns, where the previous year’s production is cured, the perennials have not yet greened up, and the adjacent forest is not very flammable, may be a possible cost-effective treatment to avoid risk of escape from maintenance burns and achieve effective maintenance at low cost.”[7]

A program should be developed in conjunction with CAL FIRE and cooperators to regularly burn shaded fuelbreaks where they are not in immediate proximity to residential development. To maintain fuelbreaks most effectively throughout the Greater Pine Grove Planning Unit, an “Adopt a Fuelbreak” program could be developed by the Amador Fire Safe Council, CALFIRE, and the Bureau of Land Management in cooperation with community or neighborhood groups, homeowner's associations, and others whereby each group would be responsible for ongoing maintenance of their adopted fuelbreak. This should be done in cooperation with experienced fire professionals to ensure participant safety and fuelbreak effectiveness.

➢ *The Amador Fire Safe Council develops an "Adopt a Fuelbreak" program for maintenance of fuelbreaks. Work with CAL FIRE, tribes, and other fire professionals to employ prescribed fire techniques where appropriate.*

Section 4.2, Table 2 – Large-Scale Projects includes the shaded fuelbreaks and other fuel-reduction projects that were prioritized for implementation in Greater Pine Grove Planning Unit. Some of these projects were identified at community meetings and others resulted from this planning process. Projects were prioritized based on CDF fire threat level and assets at risk, with an emphasis on human population centers.

➢ *Amador Fire Safe Council and Cal Fire work with appropriate agency and community partners to fund and implement the following identified strategic fuelbreaks and fuel reduction efforts throughout Greater Pine Grove Planning Unit.*

4.2.6 WUI BUILDING STANDARDS

The County of Amador has adopted the latest revisions to the California Building Code Chapter 7a (2007).

➢ *Cal Fire, Amador Fire Protection District, and Amador Fire Safe Council educate residents on the WUI standards.*

4.2.6.1 ROOFING (WUI)

Efforts should be made to eliminate all untreated wood shake roofs. Shake roofs are a leading cause of home loss in wildfires. Research shows that homes with a non-combustible roof and clearance of at least 30 to 60 feet have an 85-95% chance of survival in a wildfire.[8]

➢ *Cal Fire, Amador Fire Protection District, and Amador Fire Safe Councill educate residents on the importance of replacing wood shake roofs.*

➢ *Cal Fire, Amador Fire Protection District, and Amador Fire Safe Councill explore incentives for homeowners to replace wood shake roofs.*

4.2.6.2 VENT OPENINGS (WUI)

Provided that adequate defensible space is maintained, screening of vent openings with ¼" mesh corrosion-resistant steel screens will minimize the entry of embers (during the ember blizzard that comes with a wildfire) into attics (most important) and crawl spaces.

In 2007, the California State Fire Marshall promulgated regulations affecting buildings constructed in any Fire Hazard Severity Zone. These regulations require:

704A.2 Attic Ventilation.
704A.2.1 General. *When required by Chapter 15, roof and attic vents shall resist the intrusion of flame and embers into the attic area of the structure, or shall be protected by corrosion resistant, non-combustible wire mesh with ¼ inch (6 mm) openings or its equivalent.*
704A.2.2 Eave or Cornice Vents. *Vents shall not be installed in eaves and cornices.*

__Exception:__ Eave and cornice vents may be used provided they resist the intrusion of flame and burning embers into the attic area of the structure.

These requirements became effective January 1, 2008. However, the rationale for these new requirements applies to all structures located in areas prone to wildfire. Homeowners and businesses owners of structures constructed before 2008 are encouraged to update their vent openings to this new standard.

- *Cal Fire, Amador Fire Protection District, and Amador Fire Safe Councill educate residents on importance of steel vent screening.*
- *Cal Fire, Amador Fire Protection District, and Amador Fire Safe Councill explore incentives for homeowners to encourage steel screening of vent openings.*

4.2.6.3 WINDOWS (WUI)

Double-pane windows are far more effective in their ability to survive a wildfire, as well as being smart for energy conservation within your home.

- *Cal Fire, Amador Fire Protection District, and Amador Fire Safe Councill educate residents on need to have double-paned windows throughout their homes.*
- *Cal Fire, Amador Fire Protection District, and Amador Fire Safe Councill explore existing incentive programs to upgrade windows to double pane, such as through local energy companies.*

4.2.6.4 DECKS (WUI)

If adequate defensible space is maintained, most solid wood decking is fire-resistant enough to withstand short-term heat load. The next greatest threat from decks is firefighter safety. Many new materials (synthetics) ignite more easily than wood and have a rapid structural collapse when subjected to high heat loads, creating a situation where firefighters could fall through.[9]

In 2007, the California State Fire Marshall promulgated regulations affecting buildings constructed in any Fire Hazard Severity Zone. These regulations require:

704A.4 DECKING, FLOORS AND UNDERFLOOR PROTECTION
704A.4.1 Decking.
704A.4.1.1 Decking Surfaces. *Decking, surfaces, stair treads, risers, and landings of decks, porches, & balconies where any portion of such surface is within 10 feet (3048 mm) of the primary structure shall comply with one of the following methods:*

1. Shall be constructed of Ignition Resistant Materials and pass the performance requirements of SFM 12-7A-4, Parts A and B.
2. Shall be constructed with heavy timber, exterior fire retardant treated wood or approved non-combustible materials.
3. Shall pass the performance requirements of SFM 12-7A-4, Part A, 12-7A-4.7.5.1 only with a net peak heat release rate of 25kW/sq-ft for a 40 minute observation period and: a. Decking surface material shall pass the accelerated weathering test and be identified as Exterior type, in accordance with ASTM D2898 and ASTM D3201 and; b. The exterior wall covering to which it the deck is attached and within 10 (3048 mm) feet of the deck shall be constructed of approved noncombustible or ignition resistant material.

__Exception:__ Walls are not required to comply with this sub-section if the decking surface material conforms to ASTM E-84 Class B, flame spread. The use of paints, coatings, stains, or other surface treatments are not an approved method of protection as required in this Chapter.
704A.4.2 Underfloor and Appendages Protection
__704A4.2.1 Underside of Appendages and Floor Projections.__ The underside of cantilevered and overhanging appendages and floor projections shall maintain the ignition-resistant integrity of exterior walls, or the projection shall be enclosed to the grade.
__704A.4.2. Unenclosed Underfloor Protection.__ Buildings shall have all underfloor areas enclosed to the grade with exterior walls in accordance with section 704A.3.
__Exception:__ The complete enclosure of under floor areas may be omitted where the underside of all exposed floors, exposed structural columns, beams, and supporting walls are protected as required with exterior ignition-resistant material construction or be heavy timber.

These requirements became effective January 1, 2008. However, the rationale for these new requirements applies to all structures located in areas prone to wildfire. Homeowners and businesses owners of structures constructed before 2008 are encouraged to update their decks to this new standard.

- *Cal Fire, Amador Fire Protection District, and Amador Fire Safe Councill educate residents on importance of fire-safe decking.*

4.2.6.5 OUTBUILDINGS

Outbuildings (e.g. storage, wood, and tool sheds) with less than thirty feet of separation from main structures place homes at a high risk of loss, because if they catch fire, they can more easily catch the house on fire.

- *Cal Fire, Amador Fire Protection District, and Amador Fire Safe Council educate residents on need for separation of heat loads from their residence.*
- *Amador Fire Protection District and CAL FIRE enforce clearing 30-100 feet around structures, as per State law.*

4.2.6.6 WOODPILES

Woodpiles with less than thirty feet of separation from structures often place homes at a high risk for loss.

- *Cal Fire, Amador Fire Protection District, and Amador Fire Safe Council educate residents on need to have a minimum of thirty feet separation of firewood piles and woodsheds from their residence.*

4.2.6.7 PROPANE TANKS

Tanks with less than ten feet of clearance around them and thirty feet of separation from houses may place homes at a risk of loss.

- *Cal Fire, Amador Fire Protection District, and Amador Fire Safe Council educate residents on need to have vegetative and flammable material clearance around propane tanks near their residence.*
- *Cal Fire, Amador Fire Protection District, and Amador Fire Safe Council educate residents on need to keep propane tanks and other flammable materials at least thirty feet from homes and outbuildings.*

4.2.7 UTILIZATION

4.2.7.1 SMALL DIAMETER WOOD PRODUCTS

- *Amador Fire Safe Council, CAL FIRE, timber industry, the Amador Calaveras Consensus Group, and economic development community work with local wood processing and manufacturing businesses to develop markets for small-diameter wood products.*

4.2.7.2 BIOMASS

As of this writing, Buena Vista Biomass Power (BVBP) has applied for a use permit that includes repowering and conversion of an existing 18.5-megawatt electric generating facility to a renewable wood waste biomass facility. BVBP has contracted with the Sacramento Municipal Utilities District (SMUD) to provide SMUD with 100% of the facility's output, which will assist SMUD in achieving their Renewable Portfolio Standard goal of 33 percent renewable energy usage by 2020. The proposed fuel supply for the project is solely renewable wooded biomass, derived from a variety of sources including clean urban wood waste, agricultural byproducts from orchard operations, and forest residuals from forest clearing for wildfire fuel reduction. The proposed project is expected to consume 110,000 bone dry tons (BDT) of woody biomass annually and has been certified as a renewable energy facility by the California Energy Commission based on the proposed use of solely woody biomass as its fuel source.

- *Plan partners research methods for supplying woody biomass from forest fuel reduction projects to this facility. For example:*
    - *Consider including collection and transportation as a budget item in future grant application*
    - *Consider grants for neighborhood central collection points for woody biomass.*

4.2.8 FIRE PROTECTION

Local fire agencies need to prepare for paid staffing available from Measure M funding. To qualify for staffing there must be living quarters for the firefighters.

- *Replace Amador Fire Protection District's Pine Grove station with a new facility having living quarters for firefighters.*
- *Mark all firefighting water sources (hydrants, tanks, swimming pools, etc.) with a standard metal sign and reflector that is visible from the road and from both directions of travel*
- *Maintain a database and GIS map of all water sources, type of source, and location*

4.2.9 SIGNAGE OF ROADS AND STRUCTURES (ADDRESSING)

Throughout Greater Pine Grove Planning Unit, firefighters and other emergency personnel are faced with the challenge of finding homes quickly and safely during an emergency. At a minimum, existing Amador County standards that require streets and homes to be visibly addressed must be enforced. This enforcement action needs to be explored creatively.

- *Amador Fire Safe Council and the Amador County Office of Emergency Services explore grant opportunities for purchase of street and address signs.*
- *Fire Departments, Law Enforcement, CAL FIRE, Amador Fire Safe Council and Amador County explore incentives for private signage conformance, including public education*

4.2.10 WATER

Water is critical for successful fire suppression. Minimum fire-fighting water requirements for developments not on a hydrant system are 2,500 gallons. Areas served by hydrants should meet National Fire Protection Association (NSPA) standards.

- *Cal Fire, Amador Fire Protection District, and Amador Fire Safe Council explore funding for a water storage tank program on private lands not adjacent to federal lands.*
- *County Assessor does not increase property values and taxes when water storage is added to private properties for fire protection.*
- *Amador Fire Safe Council, County of Amador, Fire Chiefs, and CAL FIRE explore incentives for increasing water storage on private properties.*
- *The Amador Water Agency continue to work with the Amador Fire Protection District and other interested community groups to develop a fire hydrant maintenance policy that insures all hydrants are painted in accordance to the National Fire Protection Association's (NFPA) standards; are tested periodically to insure they are in working order; are free of obscuring vegetation; and whose locations are marked with a standard reflective device visible at night for no less than 100 feet in both directions.*
- *All water purveyors develop a plan to provide adequate fire flow for their service areas and associated costs of implementing the plan*[10]*.*

4.2.11 EDUCATION

Many people are happy to create a fire-safe home if they understand why it is to their advantage. To this end, educational programs targeted at local residents are very successful.

- *Amador Fire Safe Council work with CAL FIRE, United States Forest Service, Bureau of land Management, Amador County, insurance industry, and others to implement a countywide community fire safety education program, including Public Service Announcements in all local media.*

Educational programs in the local schools are a great way to get the word out about fire safety and emergency preparedness. Several curricula exist and likely would only need minimal adjustments to be used in Greater Pine Grove Planning Unit. Community projects such as "fire safety education" signs created by schoolchildren can be very effective. Informative signs could be created by local children and placed in high fire risk and hazard areas throughout the community.

- *Amador Fire Safe Council work with agencies and School District to implement fire safety curricula in all grade levels throughout the Pioneer/Volcano in conjunction with community educational projects.*
- *Amador Fire Safe Council work with insurance industry to fund and develop a service-learning program in local high schools focused on fire safety and defensible space.*

As stated elsewhere, development and real estate are healthy industries in Greater Pine Grove Planning Unit. Through those ventures, new people are moving to the planning unit many of them from urban areas. These new residents often do not have experience with fire in a wildland-urban interface. Educational programs are needed targeting both the development and real estate industries, as well as their clients.

- *The Amador Fire Safe Council CAL FIRE, BLM, Fire Chiefs, and Amador County Office of Emergency Services target fire safety educational efforts to real estate and development industries.*
- *The Amador Fire Safe Council, CAL FIRE, BLM Fire Chiefs, and Amador County Office of Emergency Service target fire safety educational efforts to new planning unit residents, especially those coming from urban areas and others with little experience with fire in the wildland-urban interface.*
- *The Amador Fire Safe Council develops a welcome-neighbor program where a welcome basket with fire safety information is given to new residents. These baskets can be distributed by realtors, insurance agencies, and the Chamber of Commerce.*

4.2.12 POLICY

There are several polices the Amador County Board of Supervisors can implement that will assist fire agencies. These are

- *Establish a process wherein the Building Department notifies the Information Technology Department of any swimming pools or water tanks constructed in the unincorporated area.*
- *Establish a process wherein the Building Department notifies the Information Technology Department of new hydrants.*
- *Require the Information Technology Department to maintain a GIS based database of all water sources (tanks, hydrants, ponds, and swimming pools) in the unincorporated area and post that data on the County's website - the data to be downloadable in a map and table format. The map to indicate locations of water sources along with streets and other information needed to locate the water sources. The table will include at a minimum the volume of water, physical location, and type of water source. Where type of water source is a hydrant include type of hydrant and fire flow (if available).*
- *The County create additional signage standards to augment existing signage standards that includes water tanks*

[1] *Federal Register* (January 4, 2001), Vol. 66, No. 3, pp. 751–754,"Implementation Direction for Identifying and Prioritizing Hazardous Fuel Reduction in Wildland-Urban Interface/Intermix," Region 5.

[2] Healthy Forests Initiative and Healthy Forests Restoration Act (February 2004). Interim Field Guild, Title I, Wildland-Urban Interfaces Within or Adjacent to At-Risk Communities, FS-799.

[3] Office of State Fire Marshal, Fire Hazard Zoning Guide, Appendix D, osfm.fire.ca.gov/pdf/fireengineering/zoning/AppendixD.pdf

[4] www.firelab.org/index.php?option=com_content&task=view&id=43&Itemid=82, outreach.cof.orst.edu/resilientfire/finney.htm

[5] Agee, J.K.et al. (2000). "The Use of Shaded Fuelbreaks in Landscape Fire Management." *Forest Ecology and Management* 127: pp. 55–66.

[6] Agee et al. (2000). p. 56.

[7] Agee et al. (2000). p. 60.

[8] Foote, Ethan. (August 2004). "Wildland-Urban Interface Ignition-Resistant Building Construction Recommendations." Community Wildfire Protection Plan Workshops. California Fire Alliance and the California Fire Safe Council.

[9] Further information on this available through the California State Fire Marshal's Building Materials Listing,. osfm.fire.ca.gov/bmllisting.html.

[10] Refer to 1991 Bartholomew Engineering study

CHAPTER 5- WILDFIRE ENVIRONMENT

TABLE OF CONTENTS

5. WILDFIRE: CURRENT ENVIRONMENT AND BEHAVIOR[1]

Describing the wildfire environment within the planning area provides an understanding of factors that influence *fire behavior*[2].

5.1 INTRODUCTION: DEFINING THE WILDFIRE PROBLEM

The Pine Grove planning unit is the *second most-at-risk* area in the county. It is also one of the most populated areas of the county.

Subdivisions are scattered throughout the area. Some of these subdivisions are served by substandard roads restricting the movement of firefighting resource and making large-scale evacuations challenging. Some areas are served by municipal water systems and others rely on wells.

Upper Amador County has a rich history of wildfire dating back to 1900. Fire history records show that periodic large fires burned within the planning unit and adjacent to it. All these fires occurred during a foehn wind event. These large fires occur roughly every twenty to thirty years in Amador County. These wildfires occurred at a time when the area was less populated. Should a similar large fire occur today the damage to the environment and structures could be devastating.

Periodic large wildfires are not the only wildfire threat to humans, infrastructures, and the environment. Because of extensive human development in the unit and the unwillingness of some residents to comply with defensible space regulations, even relatively small fires can cause significant property damage and greatly complicate suppression efforts.

Unnatural accumulations of forest fuels on steep slopes are typical within this planning unit. Large blocks of continuous forest fuels within and adjacent to the unit also increase the wildfire threat. This combination of terrain, fuels, weather, and human improvements creates the Pine Grove Planning Unit's *second most-at-risk* designation.

Other factors such as substandard roads, lack of or poor road and address signage, water supplies and building materials add to the wildfire threat in the planning unit. All the factors discussed above work together to create a potentially devastating fire environment.

Later in this section, there is a comparison between pre-European and post-European era fuel conditions. Changes in fuel quantities and distribution between the two periods are dramatic. The volume and type of fuel in forests of today is much different from pre-European time.

Much can be done to reduce this risk and assist emergency agencies to deal effectively with wildfire. This plan defines the wildfire problem, catalogs man-made hazards, and identifies ways of mitigating this problem through a partnership with the community and those responsible for protecting the public from wildfires.

5.2 PLANNING UNITS

Planning units are a product of a Community Wildfire Protection Plan (CWPP) completed in 2005. The 2005 plan divided the county into nine planning units for assessing relative risk from wildfire. Each planning unit represents a unique wildfire environment.

The following table from the 2005 plan lists the factors used to make this assessment. The ratings for the Pine Grove Planning Unit are highlighted in yellow.

TABLE 1-Risk Factors By Fuel Modification Area[3] (Highest Risk = 1, Lowest = 7)

Risk factor	Assets at Risk	Weather	Slope	Residential Distribution	Hazardous Fuels Distribution	Ladder Fuel Distribution	Composite Score	Overall ranking
Pioneer/Vol.	1	2	3	2	1	1	10	1
Pine Grove	3	3	2	1	2	2	13	2
Upcountry	2	1	1	9	4	4	21	3
Fiddletown	6	3	5	7	3	3	27	4
Sutter/Amd.	5	4	4	5	5	5	28	5
Jackson	4	5	6	3	6	6	30	6
Plymouth	9	6	8	8	7	7	45	7
Ione	8	8	9	4	8	8	45	7
Comanche	7	7	7	6	9	9	45	7

5.3 FIRE BEHAVIOR CHARACTERISTICS

Understanding the factors that affect wildfire behavior is important in understanding the threat from wildfire and how best to mitigate this threat. The following section describes these factors.

5.3.1 SURFACE FIRES

Surface fuels consist of duff, grass, forest litter, small trees, and brush up to six feet above the ground. Surface Fuel models are used to predict fire behavior. Each model describes a set of fire behavior outputs (flame length, rate of spread etc.). Surface fuel models are stylized vegetation types that can exhibit burning characteristics similar to that output by the fuel model assigned.

On flat or moderate slopes in light fuels, fires usually burn on the surface of the ground. Surface fires may advance quickly with short or long *residence time*[4] and low to high heat output, and as such, they respond well to suppression. All things being equal, surface fires are easy to manage and control. A manageable fire is one of the desired results of *fuel modifications.*[5]

Hint:

Landowners, large and small, can substantially reduce their risk of crown fire by reducing the surface fuels. Those large landowners (ten acres and larger) can accomplish this using prescribed fire, pile and burn, and mastication.[1]

5.3.2 CROWN FIRE POTENTIAL

FIGURE 1 - Crown Fire

Crown fires usually occur when there is a connection between the fuels on the surface and the crowns of the trees. This connection is usually brush and smaller trees. Called *ladder fuels*[7] these fuels also include man-made structures such as homes, barns, etc. The higher the tree crowns are from the surface fuels the less likely a crown fire will occur. One of the goals of fuel modification is to keep wildfires as surface fires by eliminating intermediate fuels and creating a safe separation between individual tree crowns.

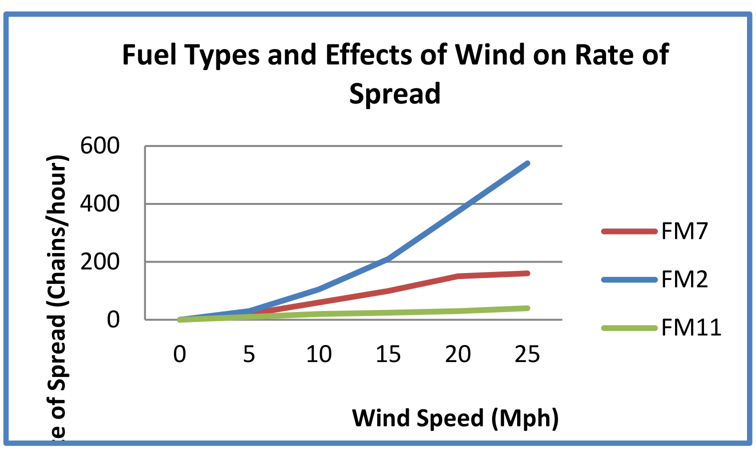
Crown fires occur when fuel and/or weather conditions allow a wildfire to burn the tops (crowns) of trees. These fires usually spread rapidly and produce a lot of heat. When a crown fire occurs, it can cause *embers*[8] that are carried by convection and wind great distances from the main fires. These embers often cause new fires called *spot fires*[9] in advance of the main fire. Spot fires can cause the main fire to increase in size dramatically as these new fires expand and eventually merge with the main fire.

Similar to most fuels within Sierra Nevada Forests, much of the forest fuels in Pine Grove Planning Unit are Fuel Model #10 (*see 3.4 Description of Fuel through Fuel Models*). These forests have some live fuels in the surface layer, and an ample amount of dead branches and logs that fuel a more intense fire, creating fire suppression challenges. These fuels provide the opportunity for crown fires during bad fire weather conditions[10].

> Hint:
>
> Landowners, large and small, can substantially reduce their risk of crown fire by removing surface fuels (ground and ladder fuels) and providing space between crowns of over-story trees. Contact a local Registered Professional Forester or a CAL FIRE forester for more information.

5.3.3 FIRE INTENSITY

FIGURE 2 -Effect of Fuel and Wind on Rate on Spread



Fire intensity refers to how hot a wildfire burns. Fire intensity varies throughout the life of a wildfire and at different locations within the fire. The three main factors affecting fire intensity are fuel, slope, and weather. Do not confuse fire intensity with fire severity. Fire intensity describes heat production (energy release) while fire severity describes damage caused by the fire.

Fire intensity is directly proportional to a fuel's heat of combustion, the amount of fuel consumed, and a fire's rate of spread. As such, fuels, weather, and topography are very important in determining the rate of heat released by a fire. Fuel properties that directly or indirectly affect fire intensity include fuel loading, moisture content, arrangement, chemical composition, and size. Wind speed and other weather conditions that influence fuel moisture also influence fire intensity.

Wind speed has one of the greatest effects on fire intensity and rates of spread. As wind blows across a fire, it pushes the flame forward and closer to the unburned fuel in front of the fire. This increases convection and radiation, which dry the fuel and increase its combustibility. In general, the higher the wind speed, the further the flame leans and the faster it dries the fuels, increasing both fire intensity and rate of spread. Wind also adds oxygen to the existing fire, further increasing combustion rates in the flaming zone.

Wind also influences the direction of spread and can carry sparks and firebrands downwind of fires, greatly increasing spread rates. A shift in wind direction could rapidly turn a slower moving flanking fire to a head fire, increasing its rate of spread.

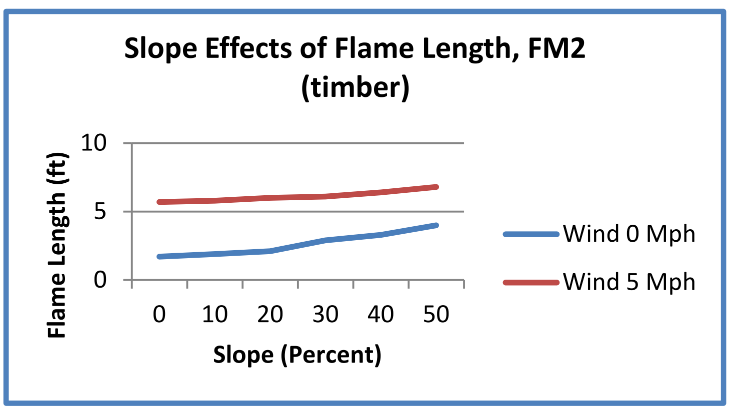
5.3.4 FIRE SEVERITY

Fire severity describes the resulting effects of a fire based on the amount of soil damage and tree mortality. Long flame lengths, large amounts of torching, crowning, high fire intensity, and high heat per unit area are all indicators of potentially severe fires.

5.3.5 FLAME LENGTH

Flame length has the greatest impact on damage to structures and difficulty of control. This is because flame lengths longer than twelve feet increase the chance of crown fires. In the pre-European Settlement era, flame lengths less than four feet were the norm and produced low intensity fires. Typically, fuel management goals aim for production of flame lengths less than four feet.

FIGURE 3 - Slope Effect on Flame Length



Slope also affects flame length - the steeper the slope the longer the flame length. This in*crease in length occurs* as the flame is bent toward the slope pre-heating the fuels ahead of it. Thus, the fire burns with greater intensity creating a longer flame.

5.3.6 RATE OF SPREAD

The rate of spread refers to how fast the *leading edge*[11] of a wildfire advances. Fast rate of spread makes controlling the fire more difficult and can increase the danger to the public and firefighters. High spread rates also indicate the potential for quick changes in fire spread direction, which could endanger firefighters and increase the potential damages. High rates of spread in grass can exceed *300 feet/minute*. In rare crown fires, rates of spread can exceed *100 feet/minute*.

For wildland fires, mathematical models are used to predict the likely burning conditions for expected weather conditions. These models, which are also known as operational models, have been largely developed through empirical correlations over several decades. Generally, these operational models have served well as long as the fires are confined to wildlands. They are based on the assumption that the variety of forest fuels, which may be inhomogeneous and anisotropic[12], are continuous. These models are inaccurate when conditions differ from those used to develop the model.

5.3.7 RESIDENCE TIME

The residence time of a fire defines how long the leading edge of the fire burns in any one location. Usually grass fires are consumed quickly and have a short residence time (e.g. 30 seconds), in contrast to the residence time of fires in a deep *duff*[13] layer, which can burn for hours. Foliage and *suspended dead material*[14] are usually consumed in less than 90 seconds. Residence time is useful in predicting tree mortality and potential for fire-induced *hydrophobic*[15] soils.

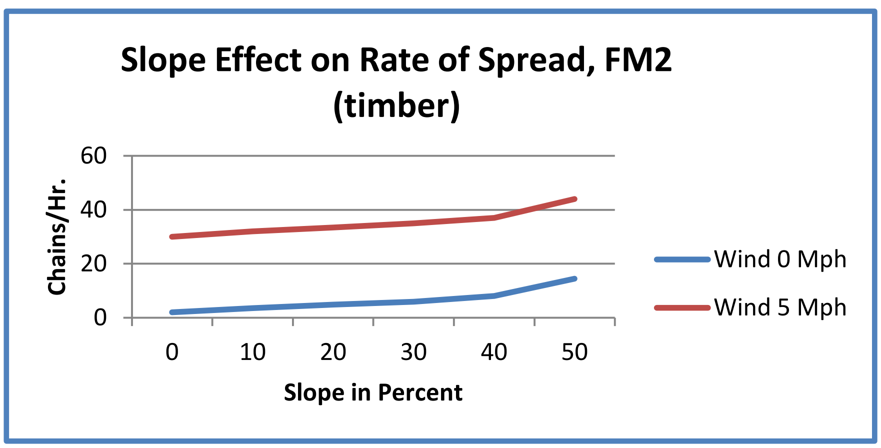
5.3.8 HEAT PER UNIT AREA

Heat per unit area is defined as the total heat produced by flaming combustion in any one location. This does not include long *burn-out times*[16] and smoldering. This factor is especially important in determining soil heating and is a good predictor of potential root damage and *cambium*[17] heating, all indicators of fire severity. Smoldering produces the majority of smoke in a fire, but most models do not include smoldering combustion.

5.4 GENERAL WILDFIRE ENVIRONMENT DESCRIPTIONS

5.4.1 TOPOGRAPHY

FIGURE 4 - Slope Effect on Rate on Spread (note a chain = 66 feet)



Topographic features such as slope, *aspect,*[18] and the overall form of the land have a profound effect on fire behavior. Topography directly and indirectly affects the intensity direction, and spread rate of wildfire. Fires burning in flat or gently sloping areas tend to burn more slowly and to spread in a wider ellipse than fires on steep slopes. Streams, rivers, and canyons tend to channel local winds. These topographic features can accelerate the fire's speed and affect its direction, especially during *foehn*[19] wind events on the west side of the Sierra Nevada. Local winds are greatly affected by topography, which "bends the wind" as it flows around or over landforms.

Topography also causes daily upslope and down slope diurnal[20] winds. The topographic features of aspect and elevation affect vegetation. The direction a slope is facing (aspect) influences fuel moisture. South and west facing slopes receive greater solar exposure thus reducing fuel moisture. Conversely, north and east facing slopes receive less solar radiation and tend to support vegetation with high fuel moistures.

The Pine Grove Planning Unit ranges from 1700 to 3000 feet in elevation with several large ridges running through it. These ridges are oriented east to west. This orientation makes the unit susceptible to wind driven wildfires under weather conditions that influenced past large fires in the county. The dominant aspects are south and north facing. The long exposure to the rays of the sun during the mid and late summer dries out the fuels on the south aspects making them prone to a fast rate of spread. (*See Plate 8 - Shaded Relief Map*)

Many ridges in the unit have stands of conifers that add the potential for spot fires from embers cast off when trees crown. Ladder fuels are abundant in much of the unit creating the potential for crown fires during dry windy weather conditions. Steep canyons formed by Sutter Creek and Mokelumne River and several large streams in the center of the unit contribute to the rate of spread of wildfires, especially during foehn wind conditions.

5.4.2 WEATHER

This section describes common weather conditions and weather patterns that exist at the time the most damaging fires could occur, along with routine conditions during which serious fires may burn. When the temperature is high, relative humidity low, wind speed is high and/or originating from the east during foehn winds, conditions are very favorable for large, severe wildfires.

WIND

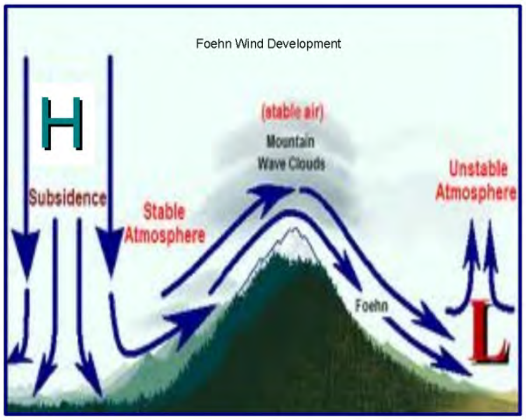
Several wind conditions affect the planning unit. Daytime heating in the valley causes warm air to rise. This rising air creates upslope winds in the afternoon on most summer days. The reverse happens as the air at higher elevations cools during the night creating down slope winds. These are called diurnal winds. Wildland firefighters consider these wind direction changes when planning their fire suppression strategy.

A wind condition called the marine flow can affect fire behavior in the planning unit. Marine flow is the wind (and cooling) that occurs when cooler offshore air pushes into the central valley. This happens when the Pacific High Pressure System weakens and can create strong westerly winds for short periods.

Normal prevailing winds during the fire season are out of the southwest. These winds can at times be quite strong.

Frontal systems moving through the area can also create difficult and dangerous fire conditions. Of particular concern are frontal systems associated with thunderstorms. CAL FIRE has suffered its greatest number of fatalities when two conditions exist - light fuels (grass fires) and thunderhead clouds overhead.

FIGURE 5 - Foehn Wind



Finally, foehn winds (pronounced Fon), which flow from the north and east, can cause extreme fire conditions and erratic fire behavior. Amador County is affected by foehn winds differently depending where one is located. In the lower elevations, foehn winds are from the north. In the upper elevations, winds are from the northeast or east.

Foehn winds are a special type of local wind associated with mountain systems, particularly in the Western United States. In most mountainous areas, local winds are observed that blow over the mountain ranges and descend the slopes on the leeward side. If the down-flowing wind is *warm and dry*, it is called a *foehn* wind. The development of a foehn wind requires a strong high-pressure system on one side of a mountain range and a corresponding low-pressure system or trough on the other side. Such pressure patterns are most common in the *cool months*; therefore, foehn winds are more frequent in the period from September through April than in the summer months.

Occasionally during late summer and fall, foehn winds will develop and affect fire behavior in Amador County. This type of foehn is related to a cold, dry, usually stagnated high-pressure air mass restricted by mountain barriers. If a low-pressure center or trough is located on the opposite side of the barrier, the strong pressure gradient will cause air to flow across the mountains. Since the mountains block the flow of surface air, the airflow must come from aloft. The air above the surface high-pressure system is subsiding air and is therefore dry and potentially quite warm. Any moisture is lost as the air mass rises on the windward side of the mountains. On the leeward side of the mountains, surface air is forced away by the strong pressure gradient, and it is replaced by the air flowing from aloft on the windward side and descending to the lowland on the leeward side. At times, they will affect only the western slopes of the Sierra Nevada, and at other times, they push across the coastal mountains and proceed out to sea. This depends upon the location of the low-pressure trough. Surface wind speeds of 40 to 60 miles per hour are common in foehn flow of this type, and speeds up to 90 miles per hour have been reported. The wind often lasts for 3 days or more, with gradual weakening after the first day or two. Sometimes, it stops very abruptly. These winds are most common in late summer and fall.

Fires during foehn events—or subsiding winds—usually result in extreme fire behavior because the winds are particularly strong and dry, thus preheating fuels and predisposing them to burning with intensity. These conditions are usually worse at night, as these foehn winds combine with downslope/down-canyon diurnal winds.

Fires occurring during foehn wind events burn with greater intensity and are very difficult to control. In 1961, the Rancheria fire began under a normal summer weather pattern that pushed the fire eastward and upslope during its initial stage. A rapidly developing foehn wind event reversed the direction of the fire and drove it down slope into Sutter Creek and Ione. Again, in 2004 the Power Fire in upper Amador County was likewise to come under a Foehn wind's influence *(See Plate 9 and 10, Power Fire Progression Maps)*. Fortunately, this type of wind driven fire is relatively rare. However, these fires:

- Exhibit extreme fire behavior
- Have a high potential to destroy hundreds of structures and other infrastructures
- Have a high potential for loss of life
- Have a high potential to adversely affect downstream values
- Cause major degradation of ecosystem and loss of key elements of ecosystem
- Can significantly reduce local government revenues for several years due to loss of property taxes
- Can significantly reduce visual enjoyment of large areas of the view shed for many years
- Are very expensive to control

TEMPERATURE

Normal summer temperatures in Amador County range between 80 and 107. Temperature affects fire behavior in two ways. Hot dry air dries forest fuels by reducing the fuel moisture in both live and dead forest fuels. The sun's rays preheat forest fuels, especially those on south and west facing (aspect) slopes. This preheating makes the fuels burn more intensely.

The Mt. Zion remote weather station (RAWS) has recorded summer air temperatures as high as 107 degrees. High temperature combined with wind dry forest fuels very quickly.

HUMIDITY

Humidity greatly affects wildfire behavior. How humid the air is varies during the day. Generally, the humidity rises at night and drops during the daylight hours. Usually, humidity deceases as the summer progresses. Low humidity draws moisture from forest fuels thus increasing the fire danger. Fuel moisture impacts fire behavior by causing fuels to ignite easier and burn hotter. The affect of dry air and humid air on moisture content is described by the class of the fuel. These classes are:

Table 2 - Fuel Moisture Classes

Fuel Class	Description
1 hour fuels	Fuels that are less than ¼ inch in diameter
10 hour fuels	Fuels that range in diameter from ¼ to 1 inch in diameter
100 hour fuels	Fuels that range from 1 to 3 inches in diameter
1000 hour fuels	Fuels that range from 3 to 8 inches in diameter

These fuel moisture classes define the number of hours to *lose or gain two-thirds of the moisture content of the surrounding air*. In practical terms, this means that if it rains for a short time in the late summer followed by dry weather, the 1-hour fuels are burnable in a little more than one hour from the rain event. In the same scenario, the 10, 100, and 1000 fuels have not had time to take on additional moisture and are still very flammable. Wind also affects the moisture content of forest fuels. Dry hot wind accelerates the drying process.

TABLE 3 - Relative Humidity Effect on Fire Behavior[21]

Fire Behavior Potential Related to Relative Humidity of 1 Hour and 10 Hour Fuels			
% RH	**1 Hour Fuel Moisture**	**10 Hour Fuel Moisture**	**Fire Behavior Potential**
Over 60	Over 20	Over 15	Very slight chance for ignition. Slight chance of spotting on windy days.
46 – 60	15 – 19	13 – 15	Low ignition hazard; glowing brands cause ignition when RH is less than 50%.
41 – 45	11 – 14	10 – 12	Medium ignition potential; mild burning conditions.
26 – 40	8 – 10	8 – 9	High ignition hazard; some crowning, spotting with gusty winds,
15 – 25	5 – 7	5 – 7	Fast ignition, rapid spread with crowning and spotting.
Less than 15	Less than 5	Less than 5	Fast ignition, extreme fire behavior including area ignition, spotting, and crowning.

5.4.3 HYDROLOGY

The *hydrology*[22] of an area defines the flow of water across and through the land. Lakes, ponds, streams, wetlands, and springs are just a few examples of features that contribute to the hydrology of an area. The presence of these features tends to increase the humidity of a local site and can make it more resistant to the effects of fire. In the case of ponds and lakes, their availability as water sources for suppression is also important.

5.4.4 VEGETATION AND FUELS

Fuel is anything that can burn including grass, shrubs, and trees, as well as fences, decks, furniture, cars, and houses. These can be described either as fuel models (as described in section 5.5), or in terms of sizes and volumes: light fuels (consisting of grass, dry leaves, and kindling-size twigs), medium fuels (shrubs and fences), or heavy fuels (logs, trees, or homes). The distribution of the volume and sizes of fuels in any one space, along with the moisture content and arrangement of fuels, greatly influence resulting fire behavior.

Vegetation varies by size, height, and density, and combined with other flammable material on the site, it provides the fuel that feeds wildfire. The volume and distribution of fuels, the *moisture content,*[23] and the arrangement of fuels influence resulting fire behavior.

The size and shape of fuels affect how forest fuels burn. Smaller fuels, such as grass and twigs, are easier to ignite. These fuels expose more surface area than similar volumes of large fuels (logs for instance). Smaller fuels require less heat to reach ignition than large fuels. Smaller fuels are consumed quicker. Large fuels take longer to burn and produce a greater amount of heat.

Wildland fuels vary in their combustibility depending on type, chemical composition, size, arrangement, moisture content, and quantity. Vegetative fuels are generally composed of cellulose, hemicelluloses, other sugars, lignin, resins, and other organic compounds. Dead plant material generally contains less moisture (due to a cessation of water uptake), a different arrangement of moisture (less intra-cellular water), and less long-chain organic compounds (due to decomposition), all of which influence combustibility (or fuel availability). *See Chapter 4 for more information on local vegetation types and their fire ecology.*

Homeowner's Hint:

Large fuels burn longer and more intensely. Thus, large fuels produce greater amounts of radiant heat. Large amounts of radiant heat close to a home or outbuilding can cause them to ignite. Keep wood-piles and other large fuels at least 30 feet from any structures.

5.4.5 WILDLIFE

Wildlife in the Sierra Nevada includes animals, plants, insects, other invertebrates, and fish. The variety of animals in the Sierra Nevada is extensive. A recent assessment indicates the presence of about 400 animal species in the region.[24] They include amphibians (25 species), reptiles (32), birds (230), and mammals (112). In addition, there are 40 kinds of fish with 26 species represented in the Sierra and foothills.[25] Over 50% of the native plant species (more than 2,700 species) found in California occurs in the Sierra Nevada.[26] These include 405 *endemic*[27] species, i.e., found only in the Sierra Nevada. Wildlife species all depend on the environment around them to provide the food, water, and shelter they need to survive.

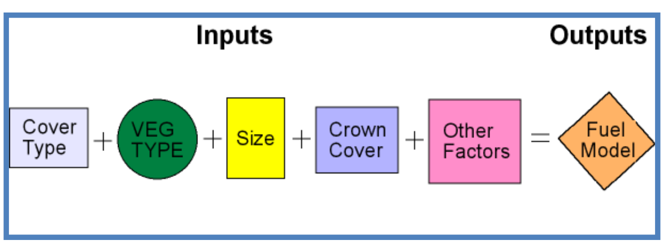
5.4.6 THREATENED AND ENDANGERED SPECIES

California has a large number of threatened and endangered species. While most biologists acknowledge that fire plays a role in the environment in which these species live, little is known about the relationship of these species to fire. Their response to fire of varying intensities, frequencies, and seasons is also not well understood; even less the effects of potential hazard reduction treatments on rare species.

5.5 FUEL: DESCRIPTION OF FUEL THROUGH FUEL MODELS

A fuel model describes the fuels available to a fire. Models are based on the amount, distribution, and continuity of vegetation. These models are used by fire managers to predict how fires will burn. Information regarding fuel volumes and fire behavior descriptions is available from the publication *How to Predict the Spread and Intensity of Forest and Range Fires.*[28]

TABLE 4 - FUEL MODELING PROCESS



Fuel models also describe the structure of the fuel. Fuel structure largely determines the fuel that will support the wildfire. For example, understory is more important than overstory. The amount and distribution of smaller-diameter fuels are a significant factor in fuel models. This is because these materials generally spread wildfires.

The amount of dead vegetation and the ratio of live-to-dead material also help determine the fuel model. Dead vegetation has less fuel moisture than live vegetation and carries flames more readily.

Fuel models may be delineated by several methods, from drawing polygons on maps, to field surveys and samples, to defining spectral bands on satellite imagery.

The following table illustrates the relationship between Sierra Nevada typical fuel models and vegetation types. The vegetation types are broad classifications of vegetation communities. These vegetation types and their fire ecology are discussed in detail in Appendix 4.

TABLE 6 - Relationship between Sierra Nevada Vegetation Types and Typical Fuel Models.

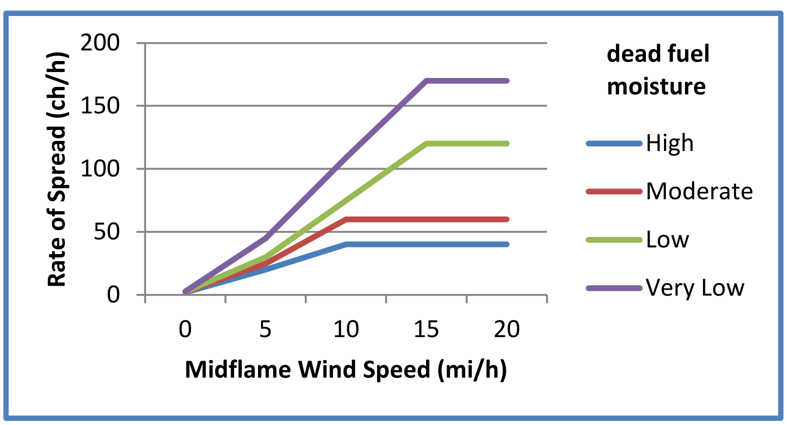
Vegetation Type	Typical Fuel Model[29]
Grassland and Dry Meadows	Fuel Model 1
Chaparral	Fuel Model 4,6
Montane Chaparral	Fuel Model 5
Foothill Woodland	Fuel Model 2, 8
Ponderosa Pine and Mixed Conifer	Fuel Model 9, 10
Upper-Elevation Fire Forests	Fuel Model 8, 10
Lodge pole-Meadow-Aspen	Fuel Model 8.9
Sagebrush-Bitterbrush	Fuel Model 5

The dominant fuel models in the Pine Grove Planning Unit are fuel models 10, 6, 5, 2, and 1 with fuel models 2 and 10 being the most dominate. The wide distribution of fuels in fuel models 2 and 10 throughout the planning unit suggests the potential for large damaging fires. Additionally, the potential for significant property damage following small fires is also evident.

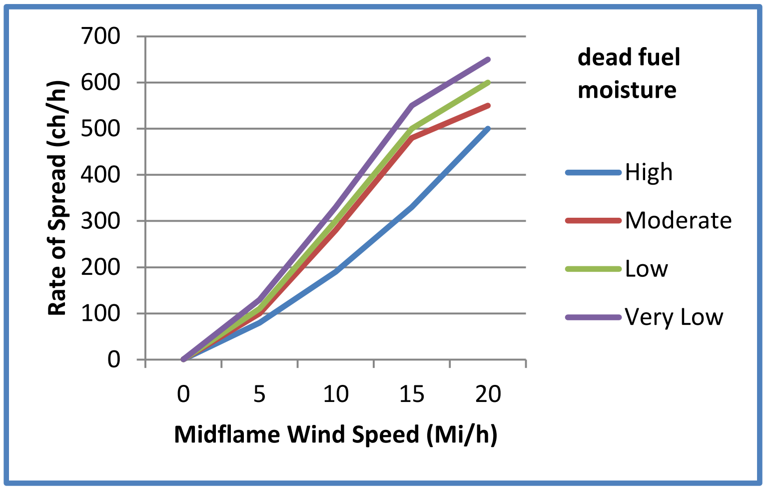
The Fire Behavior Prediction System describes fire behavior in these fuel models as:

5.5.1 SHORT GRASS – FUEL MODEL #1

The fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured govern fire spread. Fires are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber overstory is present, generally less than 1/3 of the area. Both annual and perennial grasses are included; grasslands and savannas are represented along with grass-shrub combinations that meet the above area constraint



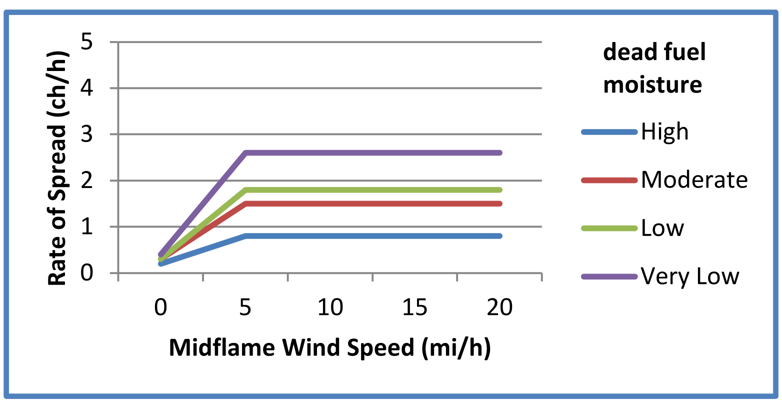
5.5.3 SCRUB OAK AND PINE – FUEL MODEL #2



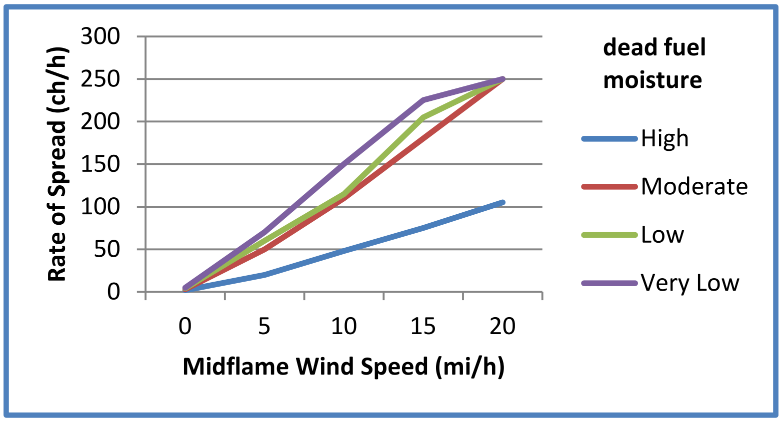
Fire spread is primarily through the fine herbaceous fuels, either curing or dead. These are surface fires where herbaceous materials, in addition to litter and dead-down stemwood from the open shrub or timber overstory, contribute to the fire intensity. Open shrub lands and pine stands or scrub oak stands that cover one-third to two-thirds of the area may generally fit this model; such stands may include clumps of fuels that generate higher intensities and that may produce firebrands.

5.5.2 SAGEBRUSH AND BITTERBRUSH /MONTANE CHAPARRAL - FUEL MODEL #5

Fire behavior is not normally explosive. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs, and the grasses or forbs in the understory. The fires are generally not very intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.



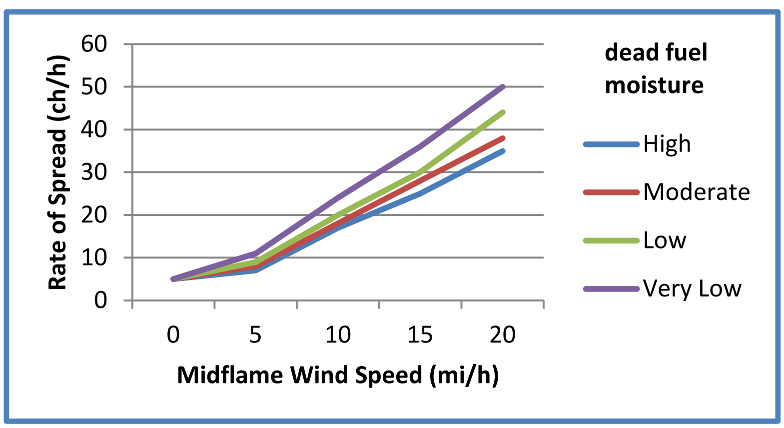
5.5.3 DORMANT BRUSH FUEL MODEL #6



Fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at mid-flame height. Fire will drop to the ground at low wind speeds or at openings in the stand. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, oak brush, low pocosin, Alaskan spruce taiga, and shrub tundra. Even hardwood slash that has cured can be considered. Pinyon-juniper shrub lands may be represented but may over predict rate of spread except at high winds, like 20 mi/h (32 km/h) at the 20-foot level.

5.5.4 CONIFER FOREST WITH DEAD, DOWNED LOGS - FUEL MODEL #10

Fires in this model burn in the surface and ground fuels with greater intensity than the other timber litter models. Dead down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching is more frequent in this fuel situation, leading to potential fire control difficulties.



CHARACTERISTICS OF FUEL MODELS

As stated in section 5.3.1., Surface Fires, surface fuel models are used to predict fire behavior. The California Department of Forestry and Fire Protection (CAL FIRE) developed a fuel assessment methodology for the California Fire Plan[30]. This methodology is called *Fuel Ranking*. This method assigns ranks based on expected fire behavior for unique combinations of topography and vegetative fuels under a given severe weather condition (wind speed, humidity, and temperature). The fuel ranking procedure makes an initial assessment based on the fuel model(s) present in a given area. It then raises the rank based on the amount of ladder fuels and/or crown fuel present to arrive at a fuel rank. In addition to the 13 fuel models in the table above, CAL FIRE includes six other fuel models: plantation, desert, urban, agricultural, water, and rock/barren. There are four fuel ranks (predicted fire behavior) derived from this method: non-fuel, moderate, high, very high. *See Section 5.7.1.*

TABLE 4 – Summary of Fuel Models

Fuel model	Typical fuel complex	Fuel loading (tons/acre)				Fuel bed depth (ft)	Moist extinction dead fuels (%)[31]	Ros* chains/hour	Fl* (ft)
		1 HR.	10 HR.	100 HR.	LIVE				
1	Short grass	0.74	0.00	0.00	0.00	1.0	12	78	4
2	Timber	2.00	1.00	0.50	0.50	1.0	15	35	6
3	Tall grass	3.01	0.00	0.00	0.00	2.5	25	104	12
4	Chaparral	5.01	4.01	2.00	5.01	6.0	20	75	19
5	Brush	1.00	0.50	0.00	2.00	2.0	20	18	4
6	Dormant brush	1.50	2.50	2.00	0.00	2.5	25	32	6
7	Southern rough	1.13	1.87	1.50	0.37	2.5	40	20	5
8	Closed timber litter	1.50	1.00	2.50	0.00	0.2	30	2	1
9	Hardwood litter	2.92	0.41	0.15	0.00	0.2	25	8	3
10	Timber	3.01	2.00	5.01	2.00	1.0	25	8	5
11	Light logging slash	1.50	4.51	5.51	0.00	1.0	15	6	4
12	Medium logging slash	4.01	14.03	16.53	0.00	2.3	20	13	8
13	Heavy logging slash	7.01	23.04	28.05	0.00	3.0	25	14	11
*Rate of spread (ROS) and flame length (fl) are represented under fine fuel moisture of 8%, a mid-flame wind speed of 5 mph and live fuel moisture, if present, of 100% (Anderson 1982)									

For a complete description of Fuel Ranks, see section 5.7.1.

5.6 FIRE HISTORY

The fire history of an area is a description of the time, space, and cause of fires. In fire jargon, “risk” is often associated with fire history because this term describes the events that cause a fire to start (i.e., ignitions).

The fire history of an area is important because it illustrates the potential for future fires. Large fires often repeat themselves; thus, it is useful to understand burning patterns over time. An area’s fire history also portrays ignition patterns that can target effective prevention programs. For example, if there is a history of frequent fires along a well-traveled route, roadside vegetation management may be in order. Additionally, fire history discerned through fire scars on tree rings may indicate the way fires have changed over time, in both frequency and intensity. This may point to appropriate goals for future fuel conditions.

The last time a large fire burned in the Pine Grove Planning Unit was in 1961 (*See Plate 11*). Since 1961, large fire has been excluded from this area. The result of this exclusion is an unnatural accumulation of forest fuels throughout much of the unit.

5.6.1 FIRE CAUSED BY LIGHTNING

Lightning caused fires are common in the summer and fall. They are less common in the spring. Most lightning strikes occur between 4000 and 7000 feet elevation. Lightning caused fires usually are not a significant threat because at these elevations they are usually accompanied by moisture. However, on rare occasions, lightning occurs without moisture. When this happens, the fires caused by lightning can pose a threat to resources, life, and property. Wide spread dry lightning storms cause large numbers of fires that can overwhelm the resources of fire protection agencies.

5.6.2 THE ROLE OF INDIGINOUS PEOPLE ON FOREST STRUCTURE

What was the role of indigenous people in shaping the pre-European settlement landscape? Many people believe that prior to European settlement California forests were pristine, natural, wildernesses. The popular notion that somehow the thousands of indigenous people populating them inflicted a barely perceptible disturbance on the landscape is incorrect. This belief ignores the Native Americans use of fire behavior over thousands of years.

In fact, the most significant type of environmental change brought about by Pre-Columbian human activity was the *<u>modification of vegetation</u>*. Vegetation was primarily altered by the clearing of forest and by intentional burning. Natural fires certainly occurred but varied in frequency and strength in different habitats. Anthropogenic[32] fires, for which there are ample documentation, tended to be more frequent but weaker, with a different seasonality than natural fires, and thus had a different type of influence on vegetation. The result of clearing and burning was, in many regions, the conversion of forest to grassland, savanna, scrub, open woodland, and forest with grassy openings[33]. The following are a few of the many uses of fire by Native Americans:

<u>Hunting</u> - The burning of large areas was useful to divert big game (deer, elk, bison) into small unburned areas for easier hunting and provide open prairies/meadows (rather than brush and tall trees) where animals (including ducks and geese) like to dine on fresh, new grass sprouts. Fire was also used to drive game into impoundments, narrow chutes, into rivers or lakes, or over cliffs where the animals could be killed easily. Some tribes used a surround or circle fire to force rabbits and game into small areas. The Seminoles even practiced hunting alligators with fire. Torches were used to spot deer and attract fish. Smoke was used to drive/dislodge raccoons and bears from hiding.

<u>Crop management</u> - Burning was used to harvest crops, especially tarweed, yucca, greens, and grass seed collection. In addition, fire was used to prevent abandoned fields from growing over and to clear areas for planting corn and tobacco. Clearing ground of grass and brush was done to facilitate the gathering of acorns. Fire was used to roast mescal and obtain salt from grasses.

<u>Insect collection</u> - Some tribes used a "fire surround" to collect and roast crickets, grasshoppers, Pandora Pine moths in pine forests, and collect honey from bees.

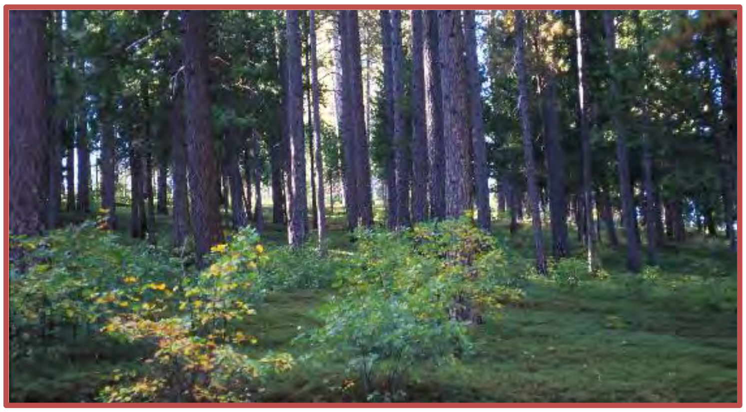
<u>Pest management</u> - Burning was sometimes used to reduce insects (black flies, ticks, and mosquitoes) and rodents, as well as kill mistletoe that invaded mesquite and oak trees and kill the tree moss favored by deer (thus forcing them to the valleys). Fire was also used to kill poisonous snakes.

Improve growth and yields - Fire was often used to improve grass for big game grazing (deer, elk, antelope, bison), horse pasturage, camas reproduction, seed plants, berry plants (especially raspberries, strawberries and huckleberries), and tobacco. Fire was also used to promote plant structure and health, increase the growth of reeds and grasses used as basket materials, beargrass, deergrass, hazel, and willows.

Fireproofing areas - There are some indications that fire was used to protect certain medicine plants by clearing an area around the plants, as well as to fireproof areas, especially around settlements, from destructive wildfires. Fire was also used to keep prairies open from encroaching shrubs and trees.

Warfare and signaling - Use of fire to deprive the enemy of hiding places in tall grasses and underbrush in the woods for defense, as well as using fire for offensive reasons or to escape from their enemies. Smoke signals, actually large fires rather than the movie version of using blankets and smoke, were used to alert tribes about possible enemies or in gathering forces to combat enemies. On the other hand, fire was merely used to announce leaving camp.

FIGURE 6 - SLY PARK AREA MANAGED BY PRESCRIBED FIRE



Economic extortion - Some tribes also used fire for a "scorched earth" policy to deprive settlers and fur traders from easy access to big game and thus benefiting from being "middlemen" in supplying pemmican and jerky.

Clearing areas for travel - Fires were sometimes started to clear trails for travel through areas that were overgrown with grass or brush, especially along ridgelines. Burned areas helped with providing better visibility through forests and brush lands for hunting and warfare purposes. It also reduced cover for wolves, bears, cougars, as well as enemy tribes who often hid along the edges of trails.

Felling trees - Fire was used to fell trees by boring two intersecting holes into the trunk, then dropping burning charcoal in one hole, allowing the smoke to exit from the other. This method was also used by early settlers. Another way to kill trees was to surround the base with fire, allowing the bark and/or the trunk to burn causing the tree to die (much like girdling) and eventually topple over. Fire also used to kill trees so that it could later be used for dry kindling (willows) and firewood (aspen).

Clearing riparian areas - Fire was commonly used to clear brush from riparian areas and marshes for new grasses and sedges, plant growth (cattails), and tree sprouts (to benefit beaver, muskrats, moose, and waterfowl), including mesquite, cottonwood, and willows.

Fire scientists and ecologists often find old fire scars in trees going back hundreds of years. Geographers studying lake sediments often find evidence of charcoal layers going back thousands of years, attributing the data to prehistoric fires caused by climatic warming and drying conditions. Since the trees and sediments cannot document how the fires started, lightning becomes the easiest "natural" explanation. Early researchers thought that no large burning was carried out by natives, but research during the latter half of the 20th century has shown that many or most of the pre-settlement fires were intentionally caused.

Keeping large areas of forest and mountains free of undergrowth and small trees was just one of many reasons for using fire in ecosystems. Intentional burning has greatly modified landscapes across the continent in many subtle ways that have often been interpreted as *natural* by the early explorers, trappers, and settlers. Many research scientists who study pre-settlement forest and savanna fire evidence tend to attribute most prehistoric fires as being caused by lightning (natural) rather than by humans. This problem arises because there was no systematic record keeping of these fire events. Thus the interaction of people and ecosystems is down played or ignored, which often leads to the conclusion that people are a problem in "natural" ecosystems rather than the primary force in their development.

Prior to European settlement, Sierra forests were more open and park-like than today. This is because Native Americans inhabiting this area periodically burned the forest in the fall to improve game hunting and other purposes. While the severity of these annual fires varied greatly, researchers estimate that the fire frequency ranged between 5 and 25 years. The pre-European Sierra forests were likely to have large widely spaced trees with patches of young trees. More of the area was covered by wildflowers, grasses, and hardwoods. These species were more fire-tolerant.

5.6.3 EUROPEAN SETTLEMENT FIRE HISTORY

During European settlement, logging, primarily of the largest, oldest trees, became common, with subsequent changes in forest structure and fuel volumes. As the European population grew, there was an increased desire for fire protection. At the turn of the last century, forest policy in national forests was influenced following several large fires that burned nearly 5 million acres in Montana and Idaho in 1910. By the mid-twenties national forest policy was to control all fires before they reached 10-acres in size. The idea was to control all fires before they became large and destructive. In 1935, this policy was amended to include the “first burning period” policy.

This policy declared that fires exceeding ten acres be extinguished before 10 a.m. of the next day. Clearly, the intent was to keep fires small. These federal forest fire policies were adopted by the then California Division of Forestry (CAL FIRE today) and are still in effect today.

Plate 12, Historic Photos demonstrates the effects on the forest structure because of these and other land management policies.

5.6.4 RECENT FIRE HISTORY

During the last century, fire history has changed dramatically. Forest fuels have changed through modern cultural practices of timber harvesting, mining, and grazing. Fire control in the Sierra Nevada has been extremely effective, particularly since the 1930s where today less than 2% of fires get larger than ten acres. However, these 2% cause most of the damage.

The Sierra Nevada Ecosystem Project (SNEP) report[34] compared historic *fire-return intervals*[35] and present patterns, resulting in the following table.

Table 5 - FIRE RETURN INTERVALS FOR SIERRA NEVADA VEGETATION TYPES

Fire Return Interval (Years)		
FOREST TYPE	HISTORIC (PRE-1900)	PRESENT
Red Fir	26	1,644
Mixed conifer-fir	12	644
Mixed conifer-pine	15	185
Ponderosa Pine	11	192
Blue Oak	8	78

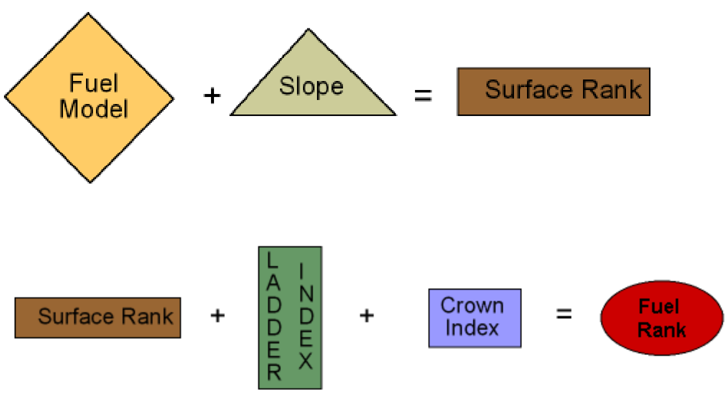
5.7 FIRE HAZARD

The term "hazard" is usually used in the fire community in relation to topography and *fuel complex*[36] (the volume type, condition, arrangement, and location of fuels).[37] After several decades of successful fire-suppression efforts and reduced forest management, the Sierra Nevada has an increasing problem of loss from wildfire. Fuel loads have increased to unnatural levels, and land-use patterns place valuable resources at risk from unnaturally intense wildfires. Fire hazard is influenced by past disturbances. The history of fire or management activities greatly alters the hazard for better or worse by changing the overall moisture of the site, as well as the volume and spatial arrangement of the fuels. This history is characterized by three fire management eras: the time before human occupation when lightning was the only ignition source, the era of Native American occupation when fire was used extensively, and the era after European Settlement when fire was largely curtailed and suppressed (as discussed in the Fire History section)."[38]

5.7.1 HAZARD ASSESSMENT

CAL FIRE's Fire and Resources Assessment Program developed a method to identify and prioritize projects that reduce damage from large wildfires. This method, fuel hazard ranking, *predicts fire behavior during severe weather conditions*. CAL FIRE developed the Fuel Rank assessment methodology for the California Fire Plan to identify and prioritize pre-fire projects that reduce the potential for large catastrophic fire. The fuel ranking methodology assigns ranks based on expected fire behavior for unique combinations of topography and vegetative fuels under a given severe weather condition (wind speed, humidity, and temperature). The procedure makes an initial assessment of rank based on an assigned fuel model and slope.

CAL FIRE then raises ranks based on the amount of ladder and/or crown fuel present to arrive at a final fuel rank. The following diagram demonstrates this process.



See Plate 13 – Fuel Rank Map for the Fuel Rankings within the Greater Pine Grove Planning Unit.

5.8 FIRE REGIME

Fire regime is a measurement of fire's historic and natural occurrence in the landscape. It includes the season, frequency, distribution, and intensity of wildfires. There is great variation in each of these factors. Each vegetation type has its own fire regime. There are five fire regimes generally accepted nationwide.[39] [40]

The five fire regimes are based on average number of years between fires combined with the severity of the fire on the dominant overstory vegetation. These five regimes include:

TABLE 6 - FIRE REGIMES

Regime	Frequency (yrs)	Severity
I	0-35	low (surface fires most common) to mixed severity (less than 75% of the dominant overstory vegetation replaced)
II	0-35	high (stand replacement) severity (greater than 75% of the dominant overstory vegetation replaced)
III	35-100+	mixed severity (less than 75% of the dominant overstory vegetation replaced)
IV	35-100+	high (stand replacement) severity (greater than 75% of the dominant overstory vegetation replaced)
V	200+	high (stand replacement) severity

Plate 14-Fire Regimes shows the fire regime most common in the Pine Grove Planning Unit is Fire Regime I.

5.8.1 FIRE CONDITION CLASS

Condition class describes the difference in fire regime between pre- and post-European settlement. Usually where the condition class indicates the absence of fire for an unnaturally long period of time, the fire risk to both the environment and human improvements is high. Condition class does not relate directly to fire hazard but is designed to better predict the effects from a fire, specifically, fire-related risks to ecosystems.

There are three condition classes for each fire regime – low (FRCC[41] 1), moderate (FRCC 2), and high (FRCC 3). These classes represent the departure from the natural (historic) fire regime. Condition class FRCC1 is considered to be within the historical pre-European fire regime. Moderate and high condition classes are outside the historic and natural fire regime and represent areas experiencing dramatic increases in fire behavior, intensity, severity, and fire size.[42]

Where the condition class departs from the historic regime, vegetation characteristics are changed. For example in areas where fire burned every 3-10 years in the pre-European era and now burn every 50-70 years, it can be expected, without other forest treatments, that the volume of forest fuel will be ~~much~~ greater today. Fuels will also be more continuous. This change in fuel conditions will create more intense fires that are likely to kill trees that have survived fires for centuries. Fires are likely to be larger and risk of losing key parts of the ecosystem greater.

Years of highly effective fire suppression have excluded widespread low- to moderate-severity fires. As a result, the *structure*[43] and *composition*[44] of most Sierra Nevada vegetation types, especially in low- to middle-elevation forests, are affected. Forest stands are denser consisting of mainly small- and medium-size trees. These trees (for example, White Fir) are often shade tolerant and *fire-sensitive*[45] tree species.

Fuel management projects can restore the vegetation type and structure through prescribed fire and/or other types of management techniques in a spatial distribution that can mimic the effect of historic and natural fire regimes. Thus fuel management can move a condition class to one more closely resembling pre-European settlement, regardless of recent fire history.

The condition classes in the planning area are mostly Class 3, based on a fire regime of I and a recent fire history showing an interval of 200 to over 300 years. The following map shows Condition Classes for the planning area. *See Plate 15 Condition Class*.

5.9 FIRE THREAT

Fire threat can be used to estimate the potential for impacts on various assets and values susceptible to fire. Impacts are more likely to occur and/or be of increased severity for higher threat classes. Fire threat is derived from a combination of fire frequency (how often an area burns) and expected fire behavior under severe weather conditions. Fire frequency is derived for fifty years of fire history data. Fire behavior is derived from fuels and terrain data.

These two factors are combined to create threat classes measuring threat to people ranging from little to extreme threat. The process for accessing the wildland fire threat to people is too complex to discuss here. Readers interested in this process works can search the website, *http://frap.fire.ca.gov/data/frapgisdata/select.asp*. Select the Metadata file for Fire Threat. For those using the just map, impacts are more likely to occur and/or be of increased severity for the higher threat classes.

Plate 16-Fire Threat map on the last page of this chapter displays the predicted fire behavior for the planning unit.

5.10 CHANGING FUELS IN THE WILDLAND URBAN INTERFACE

The above information and assessments provide a context and history of the changing fire environment. Many recognize that the changing fire environment, along with increasing urbanization and human use of the Sierra Nevada, have created conditions where human life and property, as well as key ecosystem components, are at increasing risk from the effects of high-intensity wildfires.[46]

For wildland fires, mathematical models are used to predict the likely burning conditions for expected weather conditions. These models, which are known as operational models, have largely developed through empirical correlations over several decades. Generally, these operational models have served well as long as the fires are confined to wildlands. They are based on the assumption that the variety of forest fuels, which may be inhomogeneous and anisotropic[47], are continuous. These models are inaccurate when conditions lie outside of those used to develop the model.

These models do not take into account the affect of wind generated by the fire itself. Nor do these models account for fire spread by radiation between structures in an urban environment. When the fire environment includes large numbers of structures, these models are ineffective at predicting fire spread. When the wildfire environment includes structures, as in the Oakland and Berkeley Hills fire of October 21, 1991, these models cannot predict the spread of fire because the building fuel loads are larger and discrete. In urban interface fires, buildings must be regarded as discrete fuel elements. Thus, the factors that control the spread of fire are substantially different from those in wildfires burning native vegetation only. The empirical correlations upon which the wildland-fire models have been developed are no longer valid.

The first point concerning the potential fuel loading differences between structural fires and wildland fires is illustrated in Table 8.1 of Chapter 8 of Chandler et al. (1983b). This table shows the land use (or area) in one column and the corresponding mass loading of fuel in the second; it is reproduced below with the addition of columns showing the potential mass load in kilograms per acre and the corresponding potential energy load in GJ[48] per hectare.

TABLE 7 - Available Fuel Load (From "Fire at the Urban-Forest Interface," Chapter 8, Volume II, Chandler Et Al. (1983). Here *A* Is the Age of the Forest in Years and *N* Is the Number of Floors in a Multistory Building

Area	Fuel Type	kg/hectare[49]	Fuel Load/hectare (GJ/hectare)
Forest	Grass & sward (Tasmania)	4900	94
Forest	Heavy brush (Southern Cal.)	101,000 √	1680 √
Forest	Maximum	27,000× *A*	490× *A*
Urban	Dwellings, offices, schools	202,000-504,000	3700-9400
Urban	Apartments	490,000 ×*N*	8900 ×*N*
Urban	Shops	500,000-1,010,000	9400-18800
Urban	Industrial & storage	300,000-3,000,000 or more	5,700-57,000 or more

Finally, the following table[50] divides land use into four basic categories: wildland, rural, suburban, and urban; and the wildland and rural categories have been further subdivided. In this table, wildland covers the upper left corner of the table, where the number of structures is small and the vegetation energy load is relatively high, whereas the urban area occupies the lower right corner.

In the suburban and urban setting, the key quantity is the density of houses, together with the combustible material in these houses, in determining fuel loading and fire behavior. The density of trees, shrubs, and ground cover (grass) may still be important for determination of the fire behavior, but clearly, house density is critical.

The potential fuel loadings for various land uses demonstrates that structures generally provide much higher loadings than wildlands do. While this comparison is useful, it could also be misleading since generally, not all of the potential fuel in either the wildland or the built environment will burn. Furthermore, often the time scales for ignition and the heat release rates for the wildland fuel and the fuel in the structures will be widely disparate, and these differences will influence both the spread rate of the fire and its persistence.

TABLE 8 - Land Use Described by Tree and Housing Density (Units/Acre)

Description	Tree Density (Trees/ acre)	House Density (Houses/acre)	Tree Fuel Load GJ/acre	House Fuel Load GJ/acre
Wildland Unhealthy Forest	300 - 891 Nelson (2000)	0	15-45	0
Wildland Healthy Forest	20-50 Ponderosa Pines Nelson (2000)	0	0.9-2.5	0

Rural Area 0-0.03 people/acre	0-30	0-0.02	0-1.5	0-6.5
Grass & Brush	0-10	0-0.02	0-0.05	0-6.5
Forested	10-30	0-0.02	0.08-1.5	0-6.5
Suburban Area	10-30	1-4	0.5-1.5	330-1296
Urban Area	≈ 0	15-or more	0	4858 or more

5.11 SUMMARY

Before the mid-1800s, fires generally were frequent and mostly of low to moderate intensity, from lower-elevation blue oak woodlands through upper-montane red fir forests.[51] Fire exclusion, logging, grazing, forest clearing, and urbanization have combined to alter fire regimes that are now quite different from their historical character. These modified fire regimes have corresponding modified ecosystems, often with increases in vegetation density and accumulation of forest litter and duff that support a larger proportion of high-intensity fires than occurred under historical conditions.[52] The problems were created over a long time, and they will not likely be solved rapidly. The use of shaded fuelbreaks and other fuel reduction efforts along the interface can reduce these fire risks.[53] This plan provides a list of projects designed to mitigate the potential damage from wildfire.

[1] Much of the information appearing in this section was taken from original material provided by Carol Rice, Wildland Resource Management. It was modified to apply to the Pine Grove Planning Unit.
[2] Fire Behavior: The combination of fire spread, heat output, flame length intensity, etc. as the fire responds to weather, topography, types of fuels, etc.
[3] Fuel Modification Area is synonymous with Planning Unit
[4] Residence Time: How long the flaming front burns in any one location.
[5] Fuel Modification: The management of fuels for fire safety. Examples include prescribed burns and creation of firebreaks.
[6] Power Fire 2004 upper Amador County
[7] Ladder Fuels: Materials such as shrubs or small trees connecting the ground to the tree canopy or uppermost vegetation layer. In forests, this allows fire to climb upward into trees.
[8] Embers: Small glowing or smoldering pieces of wood or other organic debris, often dispersed ahead of a fire, also known as firebrands
[9] Spot Fire: A smaller fire outside the boundary of the main fire (usually ahead of the direction the fire is traveling), started by airborne sparks or embers.
[10] Normal bad fire weather refers to the normal weather experienced during the peak of fire season
[11] Leading Edge: The foremost part of a fire that is guiding the fire in the direction of travel.
[12] Anisotropic: describes something with physical properties that are different in different directions
[13] Duff: A layer on the forest floor that is made up of decomposing organic matter such as leaves, needles, and small branches.
[14] Suspended Dead Material: Typically composed of pine needles that are draped on living brush. Made up of dead fuels not in direct contact with the ground, consisting mainly of dead needles, foliage, twigs, branches, stems, bark, vines, moss, and high brush. In general these fuels easily dry out and can carry surface fires into the canopy.
[15] Hydrophobic: Literally meaning “water-fearing” as in a substance such as oil, which does not mix well with water. Also refers to a soil that will no longer absorb water.
[16] Burn-Out Time: The length of time in which flaming and smoldering phases occur in a given area or for the whole fire.
[17] Cambium: The growing layer of a tree, located between the bark and wood of the stem.
[18] Aspect: The direction that a slope faces (as in north, south, east, or west).
[19] Foehn Events: A wind that blows warm, dry, and generally strong, creating extremely dry fuel and dangerous fire potential.
[20] Diurnal: Belonging to or active during the day.
[21] The information on this chart taken from “Firefighter’s Handbook on Wildland Firefighting”, William C. Teie
[22] Hydrology: A science that deals with the waters of the Earth including movement, distribution, seasonal patterns, and conservation.
[23] Moisture Content: The dry weight of a material, such as wood or soil, compared to the wet weight of the same material. It is not unusual for live material to have moisture content greater than 100% because it could contain more water than solid material by weight.
[24] Graber, D.M. (1996). “Status of Terrestrial Vertebrates.” *Sierra Nevada Ecosystem Project, Final Report to Congress, Volume II, Assessments and Scientific Basis for Management Options.* Davis: University of California, Centers for Water and Wildland Resources.
[25] Moyle, P.B., R.M. Yoshiyama, and R.A. Knapp (1996). “Status of Fish and Fisheries.” *Sierra Nevada Ecosystem Project, Final Report to Congress, Volume II, Assessments and Scientific Basis for Management Options.* Davis: University of California, Centers for Water and Wildland Resources.
[26] Shevock, J.R. (1996). “Status of Rare and Endemic Plants.” *Sierra Nevada Ecosystem Project, Final Report to Congress, Volume II, Assessments and Scientific Basis for Management Options.* Davis: University of California, Centers for Water and Wildland Resources.
[27] Endemic: A plant that is native to a certain limited area and found nowhere else.
[28] Rothermel, Richard C. (1983). General Technical Report INT-143, published by the USDA Forest Service Intermountain Forest and Range Experiment Station.
[29] There is a wide variety of fuel volume, structure, and size class distribution within vegetation types; fuel models should be determined by site-specific conditions. Fuel models can be classified by comparing photographs of fuel models with on-site conditions (Anderson 1982), by using expert opinion to translate vegetation types to fuel models, or by using a “key” provided in Rothermel (1983).Anderson, Hal E. (1982). “Aids for determining fuel models for estimating fire behavior.” Res. Pap. INT-305. Ogden, UT. Intermountain Forest and Range Experiment Station. 26 pp.
[30] A plan required by the California Board of Forestry which is a road map to reduce the risk of wildfires.
[31] Moisture of extinction: The fuel moisture content at which a fire will not spread, or spreads only sporadically, and in a non-predictable manner.
[32] Anthropogenic: Caused or produced by humans
[33] David L. Lentz, ed (2000). *Imperfect balance: landscape transformations in the Precolumbian Americas*. New York: Columbia University Press. pp. xviii-xix. ISBN 0-231-11157-6.
[34] Sierra Nevada Ecosystem Project (1996a) An assessment of the Sierra Nevada ecoregion which was requested by Congress in 1992.
[35] Fire Return Interval: A period of time between fires in a specific region or area.
[36] Fuel Complex: The volume type, condition, arrangement, and location of fuels.
[37] Husari et al. 2006.

[38] Stephens, S.L., and N.G. Sugihara (2006). "Fire management and policy since European settlement." In: Sugihara, N.G., J. van Wagtendonk, K.E. Shaffer, J. Fites-Kaufman, and A.E. Thode, editors. *Fire in California's Ecosystems.* Berkeley: University of California Press. Pp. 431–443.

[39] Hardy, K.M., C.C. Schmidt, J.M. Menakis, and N.R. Samson (2001). "Spatial data for national fire planning and fuel management." *International Journal of Wildland Fire* 10: 353–372.

[40] Hann, W.J., and D.L. Bunnell (2001). "Fire and land management planning and implementation across multiple scales." *Int. J. Wildland Fire* 10: 389–403.

[41] Fire Regime Condition Class website (October 2006), Definition, www.frcc.gov.

[42] Fire Regime Condition Class website, Definition, (October 2006), www.frcc.gov

[43] Structure: The composition of a forest or vegetation type, specifically looking at the density, cover, size or diameter, and arrangement.

[44] Composition: The percentage of each species that comprise a given area.

[45] Fire-Sensitive: A species of tree that is more susceptible to fire damage. Sensitivity may be due to thin bark or easily ignitable foliage.

[46] Biswell (1989); California Spotted Owl Federal Advisory Committee (1997); SNEP (1996a).

[47] Anisotropic: describes something with physical properties that are different in different directions

[48] Gigajoule = One billion joules (947 817.12 BTU's)

[49] Hectare: Land surface measurement, one hectare = 2.47105 acre

[50] Rehm, Ronald G. et al. (2002) "*Community-Scale Fire Spread'* National Institute of Standards and Technology (NIST)

[51] Skinner and Chang 1996.

[52] Skinner and Chang 1996.

[53] Husari et al. 2006.

CHAPTER 6 FIRE ECOLOGY

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CHAPTER 6 -FIRE ECOLOGY AND MANAGEMENT IN SIERRA NEVADA VEGETATION TYPES[1]

Landowners wishing to improve the forest health and reduce the potential of long lasting damage from wildfire need to understand the traditional role of wildfire in maintaining the Sierra.

FIGURE 1-CHAMISE DOMINATED CHAPARRAL

In the past, wildfire was often seen as a bad thing. More recently, fire managers and resource experts recognize fire as the historic, natural, and often necessary process. For eons, fire played a dominate role in shaping the Sierra Nevada ecosystems. Because of the role of fire, most Sierra Nevada plant communities are *fire-adapted*[2].

It is generally believed that today fires are less frequent and more severe than before Europeans settled the area.[3] The absence of fire in combination with other land management practices has led to a build-up of surface and ladder fuels. This is particularly true in ecosystems that once experienced frequent low to moderate intensity fire regimes.[4] Today, much of the Sierra is tinder dry and overstocked with many small trees and shrubs. These areas have become a fire hazard to the natural environment as well as the human inhabitants.

6.1 RESPONSE OF VEGETATION TYPES TO FIRE

The following vegetation types are found in the Pine Grove Planning Unit. For each type, the role of fire in shaping the type of plants, the fire regime, and vegetative adaptations to fire is discussed.[5,6] These features are then considered in the development of management plans that:

1. *are consistent with the historic and natural role of fire expected for each type*
2. *promote the Conservation Principles identified in Section 1.3*
3. *improve the fire resiliency of the vegetation type*

In each vegetation type, the fire regimes and plant adaptations are quite varied. However, there are some common themes describing the role fire plays in each type. Some of these are:

1. *fire burns the vegetation and releases nutrients to the soil and air that can be recycled into new plants or used by surviving plants*
2. *vegetative removal by burning creates space or openings that encourage the re-growth or reseeding of plants, leading to stand renewal*
3. *fire has historically been able to fragment[7] the vegetation and provide for a diversity of age classes[8] and species*
4. *today fires generally burn larger areas, making the age classes more uniform and in larger patches*

In addition to these general benefits and consequences of periodic fire, fire plays a unique role in shaping each vegetation type, as the sections below illustrate.

6.2 FOOTHILL AND MONTANE CHAPARRAL[9]

Most shrub communities in the Sierra Nevada are referred to as chaparral. Chaparral often occurs on hot, dry slopes and on sites with poorer soils. Chaparral can also dominate areas where the vegetation has been recently cleared, e.g. by fire or timber harvest. Foothill chaparral occurs up to an elevation of 2,000 to 3,000 feet and includes shrubs such as

1. toyon *(Heteromeles arbutifolia)*
2. white-leaf manzanita *(Arctostaphylus viscida)*
3. buck brush *(Ceanothus cuneatus)*
4. chamise *(Adenostoma fasciculatum)*

Montane chaparral occurs at elevations above 3,000 feet and includes shrubs such as

1. green-leaf manzanita (*Arctostaphlyus patula*)
2. pinemat manzanita *(Ceanothus nevadensis)*
3. deer brush *(Ceanothus integerrimus)*

6.2.1 Chaparral Role of Fire

FIGURE 2-WILDFIRE IN DENSE MATURE FOOTHILL CHAPARRAL

Chaparral species benefit from fire. Some chaparral requires fire for regeneration. Fire also reduces competition. In the absence of fire, montane chaparral particularly tends to become a coniferous forest as tree seedlings grow up through the shrub layer.

However, in foothill chaparral, the absence of fire can result in dense, tall stands of shrubs that have a low diversity of both shrub and herbaceous species. This situation creates high fire hazard and has less ecological value than a high diversity of younger shrubs. Over-mature chaparral is often impenetrable and the ground level – receiving little sun light – is usually sterile and devoid of new sprouts. Thus, the forage value of mature chaparral as a food source for browsing wildlife is poor.

6.2.2 Chaparral Fire Regime

Old mature stands of foothill and montane chaparral usually produce high-intensity fires. These fires are hot enough to consume all of the aboveground plant material. In the pre-European era, frequent fire led to *fragmentation*[10]. Fragmentation reduces the continuity of vegetation[11]. Discontinuous fuels in chaparral usually results in medium-sized fires that burn at varied intensities.

Infrequent fire has led to dense and continuous stands of chaparral which burn in a unique pattern, and those fires that escape can lead to enormous high-intensity conflagrations. Fires in chaparral today generally are larger, less scattered, and more uniform than those in pre-settlement times.

Chaparral fires generally occur in summer and fall, depending on the dryness of the year and site. The time between episodes of fire (the fire return interval) in chaparral is highly variable, ranging from ten to more than one hundred years.

6.2.3 Chaparral Plant Adaptations to Fire

Chaparral plant communities have developed important adaptations for fire survival and re-growth. Sprouting from the underground rootstock and the stimulation of seed germination are examples of such adaptations. Some shrub species that usually reproduce by seeds are able to re-sprout from rootstock after fire.

The seeds of many herbaceous plants remain dormant in the soil until germination is triggered directly or indirectly by fire. Examples of fire-related stimuli include heating of seeds for a particular amount of time or to a certain temperature in order to scar the seed coat to allow germination and sunlight. Smoke can cause seed germination in some species, whereas it is lethal to other species.

6.2.3 Chaparral Conservation and Fuel Modification Objectives

Chaparral plant communities in the Sierra Nevada comprise an extremely important niche of regional biodiversity. These communities support more than seventy species of native plants. They provide nesting habitat for birds, and food for bears and other wildlife from the abundant flower and berry *crops.*[12]

Prior to the implementation of modern fire-suppression policies, chaparral was an abundant native plant community where stand-replacing fire was the historic natural fire regime. Because high-intensity fire occur every twenty to forty years in chaparral, and the presence of chaparrals within many *WUI*[13] communities, it is important that fuel mitigation strategies be combined with the conservation and protection of this important, under-appreciated vegetation community.

The goal is to retain and protect portions of this valuable habitat while still modifying fire behavior through *mosaic thinning*[14] prescriptions. In addition to meeting fuel reduction objectives, both the retention and reduction of chaparral patches will improve wildlife habitat by restoring plant communities to their *natural range of conditions.*[15] Reinvigorating and maintaining chaparral will be advantageous to species dependent upon this habitat. Fuel reduction objectives will not only increase community wildfire protection, they will refresh the chaparral stand.

Chaparral fuel reduction objectives are:

1. mosaic or *patch-retention thinning*[16] that focuses on separating *fuel continuity*[17] by incorporating fuelbreaks in strategic locations where fire-suppression efforts have a higher chance of effectiveness
2. concentrate higher levels of chaparral reduction along main roads, key ridges, secondary logging roads, *spurs,*[18] and other strategic areas within treatment boundaries
3. on steep and mid slopes where chaparral patches can be isolated, focus on retaining *thickets*[19]

Chaparral conservation objectives are:

1. avoid cutting *obligate-seeding*[20] chaparral species - these plants will not continue to be present in the stand and produce less seeds when cut
2. avoid cutting species that are infrequent or unusual

3. if there is only one or two of a type of plant in the area, retain those specimens to maintain the present species diversity
4. wherever possible, use prescribed fire in chaparral to refresh the species that require fire to perpetuate
5. create a mosaic of different aged patches

6.2.4 CHAPARRAL FUEL MODIFICATION TREATMENT PRESCRIPTION

Treatment Preparation and Layout

It is important to plan fuel reduction carefully in chaparral before starting work. Since chaparral tends to be contiguous and dense, it is easy to cut too much. Remembering the Conservation Principle, "you can always take more, but you can't put back what you have cut" is a key guiding concept for treatments in chaparral. Landowners planning to manage chaparral should consider hiring a professional forester to create a management plan. The plan should include:

FIGURE 3 - MOSAIC TREATMENT

1. Identification of areas to clear and create openings
2. Identification of select leave-patches[21] that have a high proportion of obligated seeders to retain.
3. Identification of natural features that will benefit from retaining vegetation – steeps slopes, wildlife habitat zones, along ravines, etc.
4. Identification of healthy pines and oaks to retain and methods to protect them (see *"drip-line thinning"*[22] technique described in Background C.
5. Identify "no-cut, no-entry boundary" in which all of the material both dead and alive will be retained.

Landowners who wish to a create management plan without the assistance of a professional forester should contact the local CAL FIRE forester for advice and direction. If the parcel is large enough and strategically located, CAL FIRE may enter into a cost share agreement with the landowner to create and maintain the desired mosaic using prescribed fire. Contact CAL FIRE's Vegetation Management Program forester at 530-644-2345.

Thinning

- Thin chaparral to create a mosaic of islands, thickets, corridors, open understory shrub, and herbaceous plant communities of random size, shape, and distribution
- Thin to create random patches or strips with long axis oriented along contours of the slope. Vary spacing by ten to thirty feet between patches. To reduce continuity and potential erosion, offset strip patches from one another so as not to lie directly up or down the slope from each other.
- Retain old-growth chaparral specimens by leaving surrounding chaparral intact. Old-growth tree-form-sized chaparral manzanita exceeding thirty feet in height is present in many chaparral zones. These plants are susceptible to breakage if too much of the surrounding vegetation is removed.

- Remove chaparral and smaller trees from under *drip lines*[23] and to ten feet beyond drip lines. When thinning around sun-loving pines emphasize thinning on the south and east because pines thrive with abundant sun exposure.
- Retain clumps and groupings of trees where appropriate. Thin vegetation in a ten-foot radius beyond the outer drip line of these clumps. Break up fuel continuity by thinning smaller vegetation in between and around tree groupings to a minimum of fifteen by fifteen foot spacing. Limb up[24] remaining trees ten feet from the ground. Keep forked trees for wildlife habitat.
- Create wildlife browse with smaller patches of *tip-sprouting*[25] shrub species (e.g. deer brush *[Ceanothus integerrimus]* and buck brush *[Ceanothus cuneatus])* outside the leave-patches. Prune these species at chest level to encourage fresh browse. Also, consider including some smaller patches of root-sprouting shrubs (e.g. oceanspray, *[Holodiscus discolor]*, mock orange *[Philadelphus lewisii]*, and California hazel *[Corylus californica]*). These species can be cut to the ground to encourage diversity through regeneration. Mosaic treatments are recommended.
- Throughout the chaparral, areas of trees may need thinning to achieve fuel reduction goals. When thinning in tree stands—particularly conifers—a *variable density treatment*[26] approach is recommended. Mosaic thinning pertains to areas of brush that are thinned into patches, while variable density or uneven-aged thinning is more specific to forest stands where representatives of all species and age classes will be retained throughout the treatment areas. This is done in a fashion that still meets fuel reduction objectives.
- Smaller snags, less than ten inches DBH, may be cut and left as downed wood. Larger snags may be left standing for wildlife habitat. In areas where snags are not abundant, smaller snags may also be retained.

Slash Treatment

Slash[27] accumulated from fuel treatments in chaparral will be abundant; the disposal of this material will need to be performed carefully. Regardless of what methods are used for slash treatment, it is important that a portion of the cut material be left on site and placed across the slopes of the treatment area for erosion control and soil productivity.

Preferred materials for scattering on the slopes are the main chaparral trunks greater than four inches in diameter. The fine (smaller) branches are best removed. These main trunks should make contact with the ground and be left as intact as possible, four to ten feet long. Manzanita trunks are generally smaller in diameter; they can be combined by lying them along the contour of the slope, where they are placed together (either on top of or below each other) to make ground contact. Lay them as close together as possible.

Within a year, the material will sink into the ground. Once it does, it will become anchored in place. By combining four to six smaller-diameter pieces, you can increase their total diameter, replicating a log. Wood placement should be done randomly in openings or at the edge of leave-patches. The goal is to have coarse woody material present on the site without creating a fuel problem. Note that this lopping and scattering of the thinned chaparral throughout the site will not significantly reduce fuel hazards; therefore, the majority of the cut material will need to be chipped, utilized for biomass, or burned.

Prior to planning treatments and utilization strategies, it is best to take into consideration each specific treatment location and to estimate both the ecological and economic implications of your biomass and slash disposal strategies. Slash disposal may have greater impact than the initial treatment. An example is steep areas with lengthy yarding distances. Plan slash treatments in a site-specific manner. Even within a twenty-acre property, several different slash treatment methods may be used.

Burning

Following *initial-entry*[28] chaparral fuel treatments, burning slash may be the most economical treatment option, if planned and executed properly. In areas further away from roads, burning is often the main method.

Swamper burning[29] is generally the preferred method of burning initial-treatment chaparral slash. Swamper burning is a prescribed fire method in which fuels are gradually added (over the course of a day) to a hand or machine pile. Pay attention to weather conditions when initiating the swamper-burning method. When possible, burn during or following rain. Chaparral fuels burn very hot and send a strong *convection column*[30] toward the surrounding leave-trees or patches. This is the preferred method to deal with chaparral slash because material can be gradually added to the pile (thereby providing more control over burn operations). Since chaparral patches contain a good mixture of dead fuels, prepare burn operations by building small ignition piles with dead materials. Stack smaller fine fuels together (mixing both dead and live). Stack half the pile two feet high then cover the pile with *slash paper.*[31] Complete the task by piling the remaining slash on top of the pile. (Use slash paper instead of plastic; it burns clean and is better for the environment. Slash paper can be purchased at forestry outfit suppliers.)

An effective method is to burn several piles at once, working in a rotating fashion from pile to pile. After adding slash to one pile, move to the next one, then return to the first pile where the fuels will have been consumed and it is time to add more slash. This method mitigates the convection columns, so as not to damage the remaining vegetation by scorching it.

Following burning operations, when the fires are *dead out,*[32] native grass suited to the site can be sowed into the mineral-rich ashes of the burn spots. This follow-up method will encourage herbaceous understory growth and help prevent non-native grasses from invading and taking over the site.

Broadcast burning can be conducted in chaparral stands following initial entry, when the grass is green and foliar moisture is still low (in the late fall). As with the grasslands, involve agencies, local landowners, resource managers, and private industry to plan and carry out the burn.

For more detailed instructions regarding burning, see Background C.2.1.

Chipping, Biomass Utilization, and Mastication

Three other ways to dispose of slash are chipping, biomass utilization, and mastication. All can be expensive, depending on the *site-specific*[33] location of the treatment area. All are best used on large sites where enough slash is generated to offset the cost of equipment.

There are two private companies[34] currently utilizing biomass within Amador County. One requires very clean chips of a specific size and the other is just beginning operation. Chipping and biomass utilization requires a processing plant close enough to the treatment site to make utilization economical and a system to collect the wood material and transport it to the plant. Other areas that are not economically feasible for chipping and biomass utilization are usually areas where ecological impacts would increase from activities due to the difficulties of material extraction. For example, removing biomass or chipping away from roads will require an increase in ground-based machinery use in the forest where the potential of damaging soils or the residual forest stand is more likely to occur. In areas that have limited access or are located at mid-slope or on steeper locations, it can be very expensive (both ecologically and economically) to remove or chip treatments slash.

Mastication is not technically a slash disposal method. It is a treatment method that uses mechanical masticators (like forest sized lawnmowers) to shred plant material into small pieces and scatter them through the treatment area. This scattered material does not need further handling. It is in contact with the soil and will decay rapidly. It also acts as an erosion control treatment. Modern mastication equipment has very light track weight and generally do not compact soils when properly used. Mastication can be used economically on sites as small as ten acres.

Grazing

Grazing with goats is sometimes used to reduce fire hazard and to remove weeds (since they eat them). Goats are best used in areas that do not have a large number of plants to be retained since all plants (other than large trees) will likely be damaged or killed unless protected. Grazing under contract with a large herd of goats is a possibility for larger acreages; or one to three goats can be grazed on smaller parcels. In this situation, alternate locations should be arranged for additional grazing when they have eaten all undesirable plants on the site. Goats can be placed on any steepness of slope and can generally graze any shape or size of parcel. However, care should be taken with steep slopes because goats can denude the site and cause significant erosion. Goat predation is also a concern and is usually avoided by the use of specially trained herd dogs.

6.3 PONDEROSA PINE AND MIXED CONIFER

The ponderosa pine and mixed conifer fuel type contains a variety of conifers including:

1. ponderosa pine *(Pinus ponderosa)*
2. incense cedar *(Calocedrus decurrens)*
3. white fir *(Abies concolor)*
4. sugar pine *(Pinus lambertiana)*
5. Douglas fir *(Pseudotsuga menziesii)*

In addition, black and canyon live oaks *(Q. kelloggi* and *Q. wislizenii),* and herbaceous and shrub species are intermixed with these conifers species. As one moves up in elevation toward the crest of the Sierra, foothill woodlands transitions into pine and then mixed conifer forests.

6.3.1 PONDEROSA PINE AND MIXED CONIFER ROLE OF FIRE

Fire in this forest type is particularly important for maintaining species composition. Pine species are generally *shade-intolerant.*[35] Therefore, fire that creates gaps or openings in the vegetation can support their germination and growth.

With the general exclusion of fire and lack of use of woody biomass over the last 75 to 100 years, shade-tolerant tree species (e.g. white fir) are far more abundant, reducing pine's historic role in this ecosystem. This often results in overly dense stands of trees.

Some conifer species (e.g. ponderosa pine) germinate best when there is a small amount of litter and duff. Periodic fire keeps these levels low enough to support germination. Fire kills understory trees and top-kills shrubs, simplifying the structure to consist of a tree overstory with an herbaceous understory.

6.3.2 PONDEROSA PINE AND MIXED CONIFER FIRE REGIME

These forest types are often characterized by a historic regime of frequent fires that were low to moderate intensity. Exceptions to this have been noted where topographic position, vegetation, and other site factors led to more severe fires. A great deal of variation in fire intensity and effect has been noted among similar sites, even within a single fire. Historically, few fires exceeded ten thousand acres in size, whereas such large fires are now more common in the Sierra Nevada.

Fire return intervals for these types range from two to forty years, with median values ranging from five to twenty years. Variability in fire return intervals is linked to the species composition of the stand and landscape location (i.e., types dominated by pine, as well as hotter and drier sites, often have shorter fire return intervals).

These types are the most dominate fuel types within the planning unit. Most of the homes and businesses within the planning unit are located in or near these forest types. Crown fires are likely where crown closure in many areas exceeds 70%. Wildfires occurring during foehn wind events in these forest types burn with high intensity and exhibit extreme fire behavior.

6.3.4 PONDEROSA PINE AND MIXED CONIFER PLANT ADAPTATIONS TO FIRE

Ponderosa pine is especially well adapted to periodic fire. Seedlings rapidly develop a thick insulating bark, deep taproots, and needles with high moisture content. These adaptations help protect seedlings from low and moderate intensity surface fires.

Similarly, mature ponderosa trees have thick bark, deep roots, and *crown structures*[36] that are less vulnerable to flames. This pine is also more tolerant of *crown scorch*[37] than many other conifer species.[38] Ponderosa pine also produces resin when its bark is damaged. This resin seals off any wounds made in the bark.

Other conifers resist fire differently depending on the thickness of their bark. The bark of mature sugar pine, Jeffrey pine, Douglas fir, and incense cedar is thick and fire-resistant. In contrast, the bark of white fir is considerably thinner and poorly protects the growing portions of the tree that are just under the bark.

6.3.5 PONDEROSA PINE AND MIXED CONIFER CONSERVATION AND FUEL MODIFICATION OBJECTIVES

The objectives of managing fuels in the Ponderosa and mixed conifer type are:

1. reduce the tree density
2. reduce the volume of understory fuels
3. reduce the volume of mid-story fuels
4. restoration of natural plant composition and structure

5. recruitment of old-growth forest stands for long-term fire safety and ecosystem health

6. reintroduction of low- to moderate-intensity fire for the long-term maintenance and health of this forest type

Brown, Agee, and Franklin (2004) state these objectives as three principles for creating "*a forest that is fire-resilient has characteristics that limit fire intensity and increase the resistance of the forest to mortality.*"

1. "The first principle is to manage surface fuels to limit flame length…"

2. "The second principle is to make it more difficult for canopy torching to occur by increasing the height to flammable crown fuels..."

3. "The third principle is to decrease crown density by thinning overstory trees, making tree-to-tree crowning less probable. This will not be necessary on all sites and will be effective only if linked to the application of the first two principles.[39]"

6.3.6 PONDEROSA PINE AND MIXED CONIFER FUEL MODIFICATION TREATMENT PRESCRIPTION

Thinning

- Understory thinning is the preferred treatment.[40, 41] Treatment goals include:
    1. Eliminating ladder fuels
    2. Thinning surface fuels
- Create additional crown clearance if the crown fire potential is high and hazard cannot be reduced adequately through treating the surface and ladder fuels.
- Thinning treatments will focus on maintaining species diversity, making allowances for favoring species best suited for a given location. Trees favored to leave in decreasing order[42] are:
    1. black oak
    2. sugar pine
    3. ponderosa pine
    4. .incense cedar
    5. Pacific madrone
    6. Douglas fir
    7. white fir
    8. Mountain dogwood
    9. Tanoak (these are high flammable and should be kept as isolated specimens)
    10. Canyon live oak (these are high flammable and should be kept as isolated specimens)
- Restore the historic fire regime of low to moderate intensity forest *underburns.*[43] This requires an overstory with a sparse understory consisting of patches of even-aged young trees, shrubs, and native grasses to facilitate low intensity fires.

Figure 4 - general openness and discontinuity of crowns, both horizontally and vertically

- Pine and oak leave-trees will be released[44] by thinning small trees and brush ten feet out from drip lines.

Emphasis is placed on thinning on the southern and western exposures because pines thrive in open forests stands with abundant sun.

- Variable density treatment is a thinning practice to create diversity in a forest stand, leaving portions of the stand un-thinned, with other areas thinned more thoroughly. It can be implemented within mixed-conifer forest types by reducing both understory and crown density within the stand. Separate fuel continuity through the creation of *repeating skips and gaps*[45] of varying sizes and shapes. Treatments will emphasize the retention of randomly spaced tree groupings by identifying the largest trees for old-growth recruitment, moisture retention, and wildlife habitat. Release around the drip lines of groupings and some individual trees by thinning excessive stems, pole-sized trees, and shrubs. The objectives are to release individual trees:
  - limit competition
  - reduce fuel loads around groupings (clumps) of trees
  - Enhance site structural diversity.[46]

- To reduce the possibility of beetle infestation, landowners should consider not cutting pines until the fall between August to May to remove pines and their slash, as beetles tend to be dormant during this period. After cutting, slash should be treated by burning or used as biomass as soon as possible. *See www.fire.ca.gov/rsrc-mgt_pestmanagement_socalbeetle.php for more information on beetle infestations in California.*

- In areas with no overstory, small conifer saplings and poles should be thinned to a minimum of fifteen by fifteen feet between live trees. In more open, arid, savannah-type locations, pine and oak should be favored. In some openings, shrub species may be favored or complete vegetation removal may occur to create variable density.

- Landowners should retain all age and *size classes*[47] of all native species for *vertical and horizontal structural diversity*[48] throughout the landscape, but not within the same stand. However, thinning around the edges of multi-canopied, vertically structured tree groupings of varying sizes separates them from other fuels.

- Seedlings and saplings of favored species should be retained to replace future trees that will die.

- Landowners should retain a wide variety of age, size, and *decay classes*[49] including dead and dying vegetation, *consistent with fire hazard reduction goals*. Retaining some deformed trees (e.g. *pistol* *butts,*[50] forked tops, trees with a low percentage of live crown, etc.) maintains genetic diversity and wildlife habitat.[51]

- Creating or maintaining light conditions (sun, shade, or *dappled light*[52]) that are site-specific to species currently less common to the site helps preserve diversity. Prevalence of native species tends to discourage weedy exotic or native *generalist*[53] species and favors native endangered or threatened wildlife and plants. *Sensitive species*[54] likely require very specific habitat *niches*[55] and are hence generally uncommon, rare, or threatened. Conservative species have restricted distribution on a particular site, but the site could support more individuals. Generalist species are those that are already everywhere on the site. This can be accomplished by:
    - Retaining vegetation with evidence of wildlife use (e.g. bird or wood rat nests, burrows, cavities, and hollows, etc.) provide wildlife habitat.
    - Retaining *sheltered connectivity*[56] and major game trails between selected tree and vegetation patches.
    - Retaining lichen and moss species diversity, including some mistletoe-infected trees and live trees with heart rot *(conks*[57]*).*
    - Retaining large *downed woody debris*[58] for moisture retention, *mycorrhizal*[59] inoculation sites, and wildlife habitat
    - Retaining or create large snags for wildlife.[60]

- Leaving *green islands*[61]*or patches* of tree or shrub thickets (e.g. *doghair*[62] conifer patches) improves wildlife habitat. This can be accomplished by retaining an average of one patch per acre no greater than twenty by twenty feet and protecting green islands by reducing fuels around it.

- Retain as much canopy closure as possible in ephemeral and perennial stream gulches. Mechanical equipment must not be operated within these areas.

- Enhance productive understory shrub and herbaceous vegetation by thinning conifers to allow dappled sunlight. Retain ten to thirty percent of understory shrub cover as scattered and isolated patches.

- When thinning in scattered stands of oak and madrone clumps, landowners should thin clumps to leave the largest, healthiest stem. Those stems cut will then create fresh, nutritious shoots for wildlife browse.

- Releasing dominant pines or oaks (possibly for *merchantable*[63] materials) by thinning and/or removing *codominant*[64] white fir and Douglas fir. If these trees cannot be economically utilized, leaving them on site will serve as downed wood for wildlife habitat.

Slash Treatment

- Landowners should avoid any treatment that involves lop and scatter of slash under the tree canopy.

- Avoiding lop and scatter of pine limbs and tops over two inches diameter reduces the opportunity for pine beetles to enter downed, freshly cut treatment slash. It is best to avoid lop and scatter in pine sites to prevent beetle infestations. If cut materials must sit over the summer and are greater than two inches in diameter, putting into piles and covering with clear plastic will help control beetle populations. Dry stems can be left uncovered and un-stacked.

- Ensure surface fuels are less plentiful and more compact than before treatment. Do this by lopping into small pieces, weighing them down with larger pieces, and ensuring that all slash is in direct contact with the ground to facilitate quick decomposition. Cutting material from the mid-story and crown and placing it on the surface will increase short-term fire hazard, but reduce long-term hazards.

Burning

- Swamper-burn pine slash in winter when possible to prevent beetle infestations.
- When cutting pine in winter (October and May), treat fuels immediately with swamper burning.
- Always use caution when burning in pine stands. When broadcast burning, pull duff back from the base of trees approximately ten feet to prevent steaming of the roots that grow into the duff.
- Follow general chaparral and foothill woodland burning prescriptions as described above for treatment of slash in ponderosa pine and mixed conifer forests.

For more detailed information on burning, see Appendix C.2.1.

6.4 MONTANE MEADOWS

Montane meadow communities in the Sierra Nevada occur above the foothill zone. These areas are dominated by grasses, sedges, rushes, and perennial herbs. These areas can be very small (less than one acre) or quite large (over sixty acres), but are commonly ten to twenty acres. Species found in this vegetation type include:

1. Blue grass (*Poa* spp.)
2. blue wild rye *(Elymus glaucus)*
3. Sedges (*Carex* spp.)
4. Bulrushes (*Scrirpus* spp.)

Various perennial herbs are also found in these meadows including:

1. Paintbrush (*Castilleja* spp.)
2. alpine aster *(Aster alpingenus)*
3. Various clovers (*Trifolium* spp.)

6.4.1 MONTANE MEADOW ROLE OF FIRE

A primary role of fire in meadow systems is to control conifers encroaching on the boundaries of a meadow.

6.4.2 MONTANE MEADOW FIRE REGIME

Low- to moderate-intensity fires will generally not burn through meadow and riparian communities because of their moistness. However, groundwater availability can influence the frequency and severity of fire. For instance, fires are most likely to burn though meadows of high productivity and biomass, but only during periods of prolonged drought. Fire greatly influences the dynamics of the forest-meadow boundary.

6.4.3 MONTANE MEADOW PLANT ADAPTATIONS TO FIRE

Plants in the meadow system are not usually subjected to fire since the systems are generally too moist to carry fire and therefore are not generally adapted to fire. The herbaceous plants present in meadows can burn when conditions are dry; *tillering*[65] is enhanced with burning; adaptations are similar to perennial grasses.

6.4.4 MONTANE MEADOW CONSERVATION AND FUEL MODIFICATION OBJECTIVES

Meadow ecosystems of the Sierra Nevada play a critical role in the health and sustainability of watersheds as they filter and capture sediment from surrounding slopes. Meadows also provide forage for wildlife through a diversity of grasses, sedges, and rushes. An abundance of insects, rodents, and reptiles utilize meadows and in turn provide food for other wildlife.

FIGURE 5 - MEADOW WITH EDGES IN THE BACKGROUND

In addition to meadows being a valuable ecosystem in the Sierra Nevada landscape, they also serve an important role as natural fuelbreaks during wildfire events, providing safety zones and anchor points for fire-suppression activities.

Ecological edges between forests and meadows contain rich diversity. Over time, they have become compromised and impacted by conifer encroachment. In drier meadow systems, shrub species and drought-tolerant conifers may begin to colonize these sites. Fuel reduction activities in and around meadows will contribute to community wildfire protection and assist in the ecological recovery and conservation of these valuable habitats.

Meadows that historically flooded during spring runoff prevented the establishment of conifers and other plants by saturating soils, preventing sufficient oxygen to the roots, and increasing the likelihood of root rot and early mortality. Meadow hydrology has been altered through the construction of roads, developments, and encroaching conifers. Conifers and other species may completely take over historic meadows and increase fire hazards. In this situation, the overstory warrants removal. It can be sensitively removed from meadows with a *one-way transport route*[66] strategy.

Focus fuel reduction efforts on re-opening meadows by removing encroaching conifers and shrubs. Certain meadows are completely closed in, therefore removal and treatment of encroaching vegetation should be planned as a several-entry activity as to not shock the system. Planning these activities will be very site-specific and depend on the meadow type. Is it wet, moist, or dry? This will influence fuel treatments. Removing pine and other species will likely increase the water table, further enlarging the meadow.

6.4.5 MONTANE MEADOW FUEL MODIFICATION TREATMENT PRESCRIPTION

Thinning

- In dry meadows where drought-tolerant conifers and shrubs are encroaching, tree species should be removed and utilized or burned.
- In wet meadows colonized by conifers and other plants, remove smaller encroaching species. Additional trees may need to be selectively removed. Care must be taken when working in wet meadows. This can be accomplished
    1. Using one-way ingress and egress transport route and
    2. Removing during the driest time of the year to minimize ground disturbance.
    3. Alternatively, transporting material over snow.
- Retain some groupings of aspen within meadow systems. If aspen groves are encroaching into meadow habitat, reduce fuel connectivity from meadow to forest edge. Retain larger aspens.
- Some cut logs can be left on the ground in long lengths to serve as downed wood for wildlife habitat.
- Retaining a few, well-established vigorous trees within meadow systems is desired. Some trees can be selected to create snags by girdling. If snags are present, retaining them provide habitat for local fauna.
- Along the edges—where the forest meets the meadow—fuel reduction efforts are continued into the neighboring vegetation community. The type of forest or plant community bordering the meadow will determine what type of treatment prescription will be carried out (review other vegetation type treatment prescriptions).

Slash Treatment

Following the removal of thinned materials by either burning or chipping, landowners should consider getting the professional expertise of prescribed fire practitioners to assist in broadcast burning meadows for the long-term enhancement of native herbaceous plant communities and management of fine fuels.

[1] This section was adapted from material originally written primarily by Marko Bey, Lomakatsi Ecological Services., and Susan Britting, PhD.

[2] Fire-Adapted: The ability of organisms or ecosystems to make long-term genetic change for the most advantageous response to fire-prone environments.

[3] Mckelvey, Kevin, S. et al. (1996). “An Overview of Fire in the Sierra Nevada.” In: *Sierra Nevada Ecosystem Project, A Final Report to Congress, Volume II, Assessments and Scientific Basis for Management Options.* Davis: University of California, Centers for Water and Wildland Resources.

[4] Sierra Nevada Ecosystem Project (SNEP). (1996a). “Fire and Fuels.” Final report to Congress, Vol. I.Assessment summaries and management strategies. Wildland Resources Center Report No. 36. Davis, CA: Centers for Water and Wildland Resources, University of California; 62-71.

[5] Much of the information contained in these sections was summarized from; Skinner, C.N., and C. Chang (1996). “Fire Regimes, past and present.” *Sierra Nevada Ecosystem Project, Final Report to Congress, Volume II, Assessments and Scientific Basis for Management Options.* Davis: University of California, Centers for Water and Wildland Resources., and; Chang, C. (1996). “Ecosystem responses to fire and variations in fire regimes.” *Sierra Nevada Ecosystem Project, Final Report to Congress, Volume II, Assessments and Scientific Basis for Management Options.* Davis: University of California, Centers for Water and Wildland Resources., as well as vegetation models used in wildland fire planning (www.landfire.gov/models_EW.php); also Rice, C. (1983). “A literature review of the fire relationship of antelope bitterbrush.” In: Tiedemann, Arthur R., and Kendall L. Johnson, compilers. *Proceedings: Research and Management of Bitterbrush and Cliffrose in Western North America;* April 13–15, 1982, conference, Salt Lake City, UT. Gen. Tech. Report INT-152. (1982). (Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station), pp. 256–265.

[6] Sugihara, N.G., J. van Wagtendonk, K.E. Shaffer, J. Fites-Kaufman, and A.E. Thode, editors (2006). *Fire in California’s Ecosystems.* Berkeley: University of California Press.

[7] Fragment: Used as a verb, the transformation of forests or vegetation into one or more patches of smaller size than the original area. Can also refer to one of the patches.

[8] Age Classes: The range in age of vegetation such as trees, forests, or stands; generally placed into 20-year age groups.

[9] Photos by University of Wyoming Department of Renewable Resources and University of California , Davis, Department of Land, Air, and Water Resources

[10] Fragmentation: The transformation of forests or vegetation into one or more patches of smaller size which can occur by natural means such as fire, disease, etc., or by management practices such as timber harvesting.

[11] Biswell, Harold H. (1989). Prescribed Burning in California Wildlands, Vegetation Management. Berkeley: University of California Press, London. 255 pp.

[12] Crop: The amount of fruits a group of plants yields in one growing season.

[13] WUI: Wildland Urban Interface, the area where wildlands and communities converge, often assumed to be at high risk of wildfire.

[14] Mosaic Thinning: A style of vegetative thinning that creates openings and patches of vegetation to increase the potential variety of habitat types.

[15] Natural Range of Conditions: The normal assortment of circumstances under which an organism or group can survive.

[16] Patch-Retention Thinning: A silvicultural thinning practice where patches of trees and vegetation are retained in a given area while other parts of the treatment area are thinned (selectively cut) at intermediate levels.

[17] Fuel Continuity: The amount of continuous fuel materials in a fire’s path that allows the fire to extend in a horizontal and/or vertical direction.

[18] Spur: A road branching off the main road to provide access to a designated area.

[19] Thicket: A thick area of brush containing close-growing plants. Provides habitat to wildlife but may be difficult for humans to pass through.

[20] Obligated seeder: a plant that reseeds itself after a fire as a means of recovery and regeneration

[21] Leave-Patches: Swaths or clusters of trees or other vegetation that have been selected to remain standing in an area of fuel treatment.

[22] Drip-Line Thinning: Clearing ladder fuels under the drip-line circumference of a leave tree. *See Background C for more detailed information.*

[23] Drip Line: The boundary of a tree's canopy, generally estimated by the extent of the tree's outermost limbs and the circular moisture line formed when rainfall drips from the limb tips.

[24] Limb Up: To remove the lower branches from a woody plant to create a defined space between the forest floor and the canopy.

[25] Tip-Sprout: The ability of a shrub to resprout from a cut limb.

[26] Variable Density Treatment: Silvicultural thinning practice where some portions of a stand are left lightly or completely unthinned ("skips"), providing areas with high stem density, heavy shade, and freedom from disturbance; while other parts of the stand are heavily cut ("gaps"), including removal of some dominant trees to provide more light for subdominant trees and understory plants. Intermediate levels of thinning are also applied in a typical variable-density prescription. This practice is also known as "free thinning."

[27] Slash: The wood debris left on the ground after pruning, thinning, or brushing—may include branches, bark, chips, or logs.

[28] Initial Entry: The first stage of vegetation and tree thinning performed in a fuel reduction treatment.

[29] Swamper Burning: A method of prescribed fire where fuel is added gradually and continually to a burning pile over the course of a day.

[30] Convection Column: Heat generated from a fire into a column that rises into the air at varying heights, depending on the size of the burn.

[31] Slash Paper: Paper used to cover slash piles before ignition with the intention of keeping the slash dry or allowing it to dry. Paper is more environmentally appropriate than plastic.

[32] Dead Out: When a fire has completely burned out or been entirely extinguished.

[33] Site-Specific: A specific unit of land marked as a designated area.

[34] Buena Vista biomass Power and Sierra Fresh Eco Farm Fuel Source

[35] Shade Tolerant: Attribute of a species that is able to grow and mature normally in and/or prefers shaded areas.

[36] Crown Structure: The structure or arrangement of the uppermost branches and foliage of a tree.

[37] Crown Scorch: When a fire or a convection column burns a portion or the entire crown of a tree.

[38] Stephens S.L., and M.A. Finney (2002). "Prescribed fire mortality of Sierra Nevada mixed conifer tree species: effects of crown damage and forest floor combustions." *Forest Ecology and Management* 162: 261–271.

[39] Brown, Richard T., James K. Agee, and Jerry Franklin (2004). "Forest Restoration and Fire: Principles in the Context of Place." *Conservation Biology* 18(4): pp. 903–912.

[40] Stephens, S.L. (1998). "Effects of fuels and silviculture treatments on potential fire behavior in mixed conifer forests of the Sierra Nevada, CA." *Forest Ecology and Management* 105: pp. 21–34.

[41] Stephens, S.L., and J.J. Moghaddas (2005a). "Experimental fuel treatment impacts on forest structure, potential fire behavior, and predicted tree mortality in a mixed conifer forest." *Forest Ecology and Management* 215: pp. 21–36.

[42] Commercial forest managers may favor other species

[43] Underburn: A prescribed fire method where burning is conducted in the understory of the forest below the dominant trees.

[44] Free to grow with less competition

[45] Repeating Skips and Gaps: The forest structure throughout a treatment area following a variable density treatment where some areas are retained and not thinned (skips) and other portions of the stand are heavily harvested (gaps). The range of size of the skips and gaps are from a few hundred square feet to up to an acre where site conditions dictate.

[46] Stephens, S.L., and P.Z. Fule (2005). "Western pine forests with continuing frequent fire regimes: Possible reference sites for management." *Journal of Forestry* 103(7): pp. 357–362.

[47] Size Class: The division of trees by the size of their diameter, sometimes split into three categories—seedlings, pole, and saw timber—or by diameter in inches.

[48] Vertical and Horizontal Structure Diversity: Describes the configuration of trees within a forest stand that create a variation of structure where trees stand straight up and down (vertical) or grow at an angle (horizontal).

[49] Decay Classes: Decomposing wood is categorized based on the level of decomposition, broken into five classes.

[50] Pistol Butts: Trees within a forest stand that have a crooked sweep beginning at the base of the tree, then growing straight toward the sky. A "pistol butt" tree indicates erosive soil movement on the slopes of a particular area.

[51] Stephens, S.L., and D.L. Fry, E. Franco-Vizcaino, M.M. Collins, and J.J. Moghaddas (2007). "Coarse woody debris and canopy cover in an old-growth Jeffrey pine–mixed conifer forest from the Sierra San Pedro Martir, Mexico." *Forest Ecology and Management* 240: pp. 87–95.

[52] Dappled Light: When the forest canopy has small openings where filtered sunrays project through the tree tops onto the forest floor.

[53] Generalist: A species with the ability to utilize a wide variety of resources and tolerate various environmental situations.

[54] Sensitive Species: A plant or animal species that can tolerate a small range of resources and environmental situations. These species raise concerns about population numbers and may be recognized locally as rare.

[55] Niches: A species or population's role and/or function within an ecosystem. Includes resource use, interactions, etc.

[56] Sheltered Connectivity: Contiguous areas within a thinning treatment that are retained for wildlife cover and to support wildlife movement.

[57] Conks: Shelf-like mushrooms that grow on trees, stumps, and downed wood. They are known for their wood-decaying characteristics.

[58] Downed Woody Debris: The remains of dead trees, branches, and various woody brush that sit on the forest floor—generally refers to trunks of trees.

[59] Mycorrhizal: The mutually beneficial relationship between plant roots and fungi "roots," AKA mycorrhizae, where the fungus receives sugar from the tree while helping the tree with water and nutrient uptake. The majority of plants depend on this relationship.

[60] Stephens et al. (2007) and Stephens, S.L., and J.J. Moghaddas (2005b). "Fuel treatment effects on snags and coarse woody debris in a Sierra Nevada mixed conifer forest." *Forest Ecology and Management* 214: pp. 53–64.

[61] Green Islands: Patches of live tree and plant communities retained within a mosaic thinning prescription.

[62] Doghair: An excessively dense stand of trees. An example is an acre with 35,000 trees, all smaller than seven inches DBH.

[63] Merchantable: Timber that is viable for sale under the current economic situation. Generally determined by the part of the stem that is suitable for timber products.

[64] Codominant: Species that share dominance or are of equal importance. For example, a fir-pine forest may be dominated by both firs and pines.

[65] Tillering: The process by which new aerial shoots emerge from the base of the plant.

[66] One-Way Transport Route: A hauling trail used during tree extraction activities where one entry pass is made.

CHAPTER 7- COMMUNITY FEATURES

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7 GREATER PINE GROVE COMMUNITY FEATURES

7.1. SOCIAL AND POLITICAL SETTING

The Planning Unit is not a cohesive community but rather a series of subdivisions and ranches. In some areas, significant distances separate individual subdivisions. Routes of travel to the urban areas can define community identity. This separation and individual community identities make it difficult to work collectively to solve common problems. However, there are numerous neighborhood organizations that can help mitigate some of the wildfire issues identified in this plan. The only community group capable of coordinating among the various homeowner association and special districts is the Pine Grove Community Council. However, the Pine Grove Community Council focuses on issues directly relating to the community of Pine Grove, not the greater Pine Grove Area this plan covers.

7.1.1. CULTURAL RESOURCES

Much of the reason for living in the Planning Unit is related to the natural beauty of the area. Spectacularly scenery is virtually everywhere. In addition to the landscape, several other assets enrich the area's ambiance. These are:

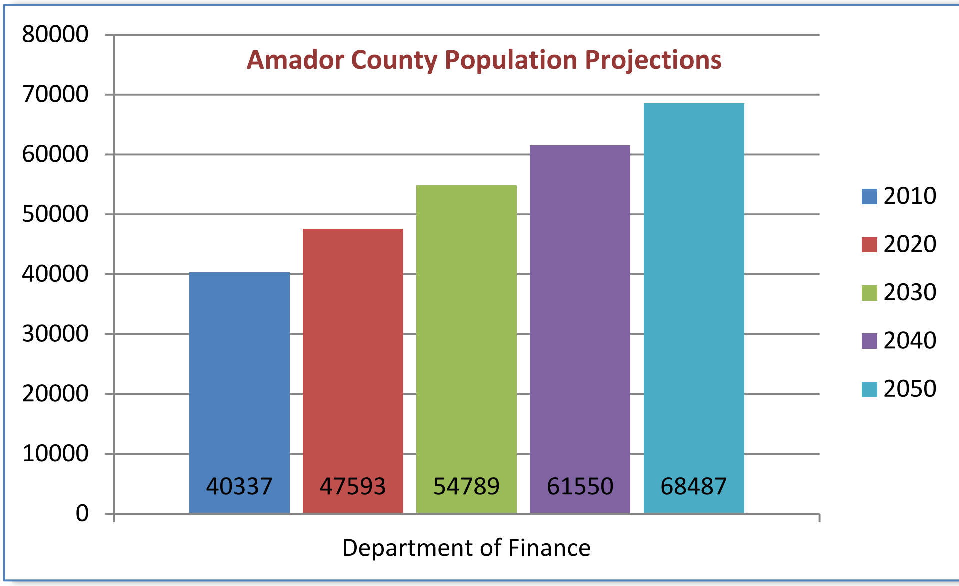
- Grinding Stone State Park
- Pine Grove School House
- Pine Grove baseball field
- Mount Zion State Demonstration Forest
- George Madeira Astrological Observatory (historical landmark # 715)
- Historical Pine Grove Buildings
- Irishtown historical landmark #37
- Pine Grove Community Park
- Roaring Camp
- Gold Country Resort Campground
- Aqueduct Cemetery

7.1.2. POPULATION AND DEMOGRAPHICS

The Pine Grove Planning Unit is one of the most populous of all nine Planning Units. There are approximately 3353 homes with an estimated population of 4713. There is an abundant supply of undeveloped parcels that eventual will develop adding additional structures and humans to the area. All alternatives for land use zoning proposed in the County General Plan update include residential zoning for the Highway 88 corridor. This area will likely continue to be one of the most desired living areas in the county.

The California Department of Finance projects an increase of over 25,000 additional residents by 2050 (see chart next page). The average project increase for each decade between 2010 and 2050 is 7032.

FIGURE 1 POPULATION PROJECTIONS



7.1.3. COMMUNITY LEGAL STRUCTURE AND JURISDICTIONAL BOUNDARIES

All of Pine Grove Planning Unit is unincorporated. Two local fire departments, Amador Fire Protection District and Lockwood Fire Protection District provide structure fire protection to the area (*see Chapter 6 – Fire Protection Organizations for additional information*). The Amador Water Agency provides domestic water to a portion of the Planning Unit. Police services are the responsibility of the Amador County Sheriff.

7.1.4. INFRASTRUCTURE

Transportation infrastructure in the Planning Unit varies greatly. Since many of the subdivisions were developed before the County adopted more stringent subdivision requirements, these early subdivisions lack adequate roads for fire protection. These narrow, at times unpaved roads hinder evacuation and make access for fire apparatus difficult.

Similarly, these early subdivisions lack water for firefighting. Some resident have installed water tanks but this is sporadic at best. Areas served by hydrants have fire flows estimated at 500 GPM or less. Most of the hydrants have not been tested to determine actual fire flow.

Road signage in older subdivisions is poor or completely lacking. Likewise, address signage throughout the planning unit is non-standard and of poor quality. Address signage is also non-standard and of poor quality even in the newer subdivisions.

Telephone infrastructure can be interrupted if one of the twenty-five remotes controlling ring tones is destroyed. These remotes are vital to the Reverse 911® notification system.

PG&E distribution lines are located throughout the area and are vulnerable to large-scale damage from wildfire.

7.2. PUBLIC AND INDUSTRIAL FIRE MANAGEMENT

7.2.2. USDI BUREAU OF LAND MANAGEMENT: MOTHER LODE FIELD OFFICE

The Bureau of Land Management manages 2050 acres of land within the Planning Unit. The entirety of the Pine Grove Planning Unit is within BLM's Mokelumne Fire Management Unit (FMU). The Federal Land Policy and Management Act (FLPMA) require BLM manage public lands to:

- protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values;
- preserve and protect certain public lands in their natural condition;
- provide food and habitat for fish and wildlife and domestic animals;
- provide for outdoor recreation and human occupancy and use;
- regulate the use, occupancy, and development of public lands

To meet these requirements, BLM's management plan includes the following actions:

- Conduct fuel reduction treatments to create fire-safe communities, protect private property, achieve resource management objectives, and restore ecosystem health.
- Use prescribed fire to reduce fuel hazard.
- Reduce heavy fuel loading by treating (prescribed burning, vegetation mastication, or manual treatment) at least 500 acres each year.
- Reduce hazardous fuels in WUI areas and communities at risk. *Prioritize fuel hazard reduction projects specified in community-based plans.* Prioritize fuel reduction projects to benefit both communities at risk and significant natural and cultural resources.

BLM is a major cooperator in the construction of the Cooperative Fire Defense System *(See Plate 3 – Landscape Scale Fire Defenses)*. In addition, BLM plans and implements major fuel reduction projects in key areas of the lands BLM manages.

These systems and projects are extremely important to residents living along the Highway 88 Corridor east of Pioneer, Pine Grove, and upper Shake Ridge Road east of Lockwood junction. These areas are at risk from wind driven wildfire originating on the federal lands and inter-mingled private holdings.

There are 739 acres of BLM lands within and 793 acres immediately adjacent to the planning unit. The location of some of BLM holdings within or adjacent provide opportunities for fuel management designed to reduce wildfire risk to private lands or to construct additional elements of the Cooperative Fire Defense System.

BLM has been one of the major funding sources for many of the Amador Fire Safe Council's projects since the Council was formed.

7.2.3. INDUSTRIAL LANDS

There are no large holding of industrial forestlands within the planning unit. However, individual landowners do harvest timber and other forest products from lands managed for other purposes such as livestock.

7.3. COMMUNITY PLANNING CONTEXT

In 2005, the Amador County Board of Supervisors adopted a countywide Community Wildfire Protection Plan (CWPP). This plan was prepared by the Amador County Fire Safe Council and was funded by a grant from the Bureau of Land Management. The primary thrust of this plan is a fire defense system designed to defend against the historic large wildfire occurrence in mid to upper Amador County.

Following adoption of the 2005 CWPP, the Fire Safe Council prepared an action plan (*Steps to Implementation*) that included a general risk analysis of the nine planning units identified in the CWPP. Amador County's three highest at risk areas are Pioneer/Volcano, Upcountry (now called the High Country Unit), and Pine Grove Planning Units.

Because of the risk analysis and previous public and private priorities, most of the effort constructing these fire defenses has been concentrated in these three areas. For purpose of identification, these are referred to as the "Cooperative Fire Defense System". This system includes projects on public and private lands. These projects are funded from public and private funds. Many of these projects involve more than one agency or organizations.

In 2006, all of the projects identified in the CWPP were incorporated into the Amador County Multi-Hazard Mitigation Plan. This additional plan is required by the Federal Emergency Management Agency (FEMA). This plan has been prepared to meet the Disaster Mitigation Act of 2000 (DMA 2000) requirements in order to maintain Amador's eligibility for the Federal Emergency Management Agency (FEMA) Pre-disaster Mitigation (PDM) and Hazard Mitigation Grant Programs (HMGP). More importantly, this plan and planning process lays out the strategy that will enable Amador County to become less vulnerable to future disaster losses.

All projects identified in the 2005 CWPP are incorporated into the Pine Grove Planning Unit Conservation and Community Wildfire Protection Plan (CCWPP). All projects identified in the Volcano Community Wildfire Protection Plan (2005) are also incorporated.

7.3.1 LAND USE GOALS AND OBJECTIVES

Amador County is in the process of updating its General Plan. Five alternative Land Use Maps are being considered. All five include zoning for residential development along the Highway 88 corridor. This area already is zoned for residential and business. As the vacant lots and undeveloped land zoned residential develop, more homes and people will be exposed to the risk of wildfire.

To minimize this risk and consistent with the goals and priorities in the 2005 CWPP, land mangers of public and private lands have been developing the elements of the Cooperative Fire Defense System. These agencies and private companies are Sierra Pacific Industries, Pacific Gas and Electric, the Eldorado National Forest, the Bureau of Land Management, CAL FIRE, and the Amador Fire Safe Council. In addition to these agencies, private foresters have been including fuel reduction recommendations in management plans developed for private landowners.

To improve the coordination of all these efforts the Fire Safe Council sponsors an annual meeting of all agencies and large private land managers. This meeting allows all participants to see what progress has occurred over the past year, what is planned for the next cycle, and what remain to be done.

7.3.2. LAND USE AND DEVELOPMENT TRENDS

The following is from the 2005 CWPP and is still valid today.

"Current land use and development in Amador County is shaped by customs and cultures, as defined in the Land Use Element of the General Plan and the Forest Reserve Act of 1891. The noted customs and cultures are mining, timber, agriculture, grazing, hunting, fishing, federal leaseholders, transportation, tourism, and watershed management. The Federal Reserve Act of 1891 created our national forests by authorizing the President of the United States to reserve timberlands on the public domain and prevent them from passing out of the possession of the Government. Today, the Eldorado National Forest covers about 22 percent of Amador County. Together, the customs and cultures and the establishment of the national forest land in Amador County provide the mold for today's land use and development trends.

GENERAL LAND USE CATEGORIES		
Land Use	Acres	%
Urban & Suburban (Residential, Commercial & Manufacturing)	108,619	29
General Agriculture *(Williamson Act - 1 Residence/40 ac.)*	94,028	25
Other Agriculture (*EBMUD, JVID, Non-Williamson Act)*	43,582	11
Timber Production *(Non-USFS/BLM)*	29,524	8
Federal Lands *(USFS, BLM & Mokelumne Wilderness)*	100,328	27
Total County	376,081	100
Source: Amador County Planning Department files, September 2003.		

"In over 70 percent of the County, residential growth is either prohibited (e.g. federal lands), or limited to large acreages. However, the major development trend is toward greater densities of homes where development is permitted. This is being driven by many factors including Amador County's desirable climate and rural ambience, proximity to major job markets, and general population growth. The growth of residences is particularly noticeable in, around the incorporated cities, and in the urban/forest intermix zone. The Amador County Development Policy states, "Future residential development will be encouraged to take place in the form of farms, ranches, and estates throughout the county or through expansion of existing towns and villages…" The increasing density of residences in the intermix zone is particularly important due to the extreme wildfire hazard in this area. "[i].

7.4. COMMUNITY INFRASTRUCTURE TO ADDRESS AND IMPLEMENT OBJECTIVES

Numerous groups and organizations capable of implementing the actions suggested in this plan exist in the Planning Unit. These groups are:

- Homeowners Associations

- Road Associations
- Recreation Associations
- Individual property owners
- The Amador Fire Safe Council
- The Pine Grove Community Council

The Pine Grove Community Council in particular has the potential to assume community leadership for those actions that can be achieved by residents within the immediate Pine Grove area without government funding.

The Fire Safe Council can apply for grants to achieve some of the costly items such as better road and address signage, community water tanks, and fuel reduction on vacant lots.

[i] Amador County Fire Hazard Reduction Plan (2005), also known as the Amador County Community Wildfire Protection Plan, and the Amador County Generic Community Wildfire Protection Plan

CHAPTER 8- FIRE PROTECTION SERVICES

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8. FIRE PROTECTION ORGANIZATIONS

8.1. FEDERAL, STATE, AND LOCAL FIRE AGENCIES

Pine Grove Planning Unit is served by two local government fire departments:

- Amador Fire Protection District
- Lockwood Fire Protection District

This area is also served by the California Department of Forestry and Fire Protection, Amador Eldorado Unit, (CAL FIRE).

8.2. MUTUAL AID

All fire agencies within the county participate in local mutual aid. Local mutual aid means that a fire department can request the services of another fire department based upon predetermined agreements to provide such services. The California State Mutual system exists to provide mutual aid resources from throughout the state for large or multiple-fire scenarios and for other emergencies, such as floods and earthquakes.

CAL FIRE and the USFS US Forest Service operate a joint station at Dew Drop. CAL FIRE and the US Forest Service resources are dispatched by the Interagency Dispatch Center located at the CAL FIRE unit headquarters at Camino in El Dorado County. This center dispatches also all local fire agencies in Amador County.

CAL FIRE and the Eldorado National Forest respond to wildfires on the closest resource concept regardless of agency responsibilities. This approach provides the best chance of suppressing wildfires before they become large or do significant damage. Local government fire agencies are dispatched in the same manner to wildfires.

CAL FIRE provides direct fire protection services to all Bureau of Land Management holdings within the county under a statewide agreement with the Bureau of land Management.

8.3. WILDFIRE PROTECTION RESPONSIBILITIES

Plate 17 shows local response area (LRA), State (SRA), and Federal Response Areas (FRA). CAL FIRE is primarily responsible for wildlands in the SRA. The Eldorado National Forest is responsible for wildlands in the FRA. All of the Pine Grove Planning Unit is within CAL FIRE's jurisdiction.

8.4. LOCAL FIRE AGENCIES

8.4.1 AMADOR FIRE PROTECTION DISTRICT

Amador Fire Protection District (AFPD) provides emergency fire, rescue, and medical aid services to approximately 85% of the unincorporated area of the county. AFPD provides service to Amador Pines, Pioneer, Pine Grove, Volcano, Martell, Drytown, Willow Springs, Fiddletown, River Pines, and the City of Plymouth.

The Amador Fire Protection District provides first-response fire and medical service to approximately 3610 residents and 2478 homes in their 26-square-mile response area in the Planning Unit.

Sixty-five local residents currently volunteer with Amador Fire Protection District as “active” firefighters. Within the Planning Unit, there are three paid personnel. The Amador Fire Protection District has identified a need for more volunteers. The District is funded primarily through a parcel fee and sales tax, totaling approximately $2,000,000 annually. The District has three fire stations located in or near the Pine Grove Planning Unit as shown in the following table.

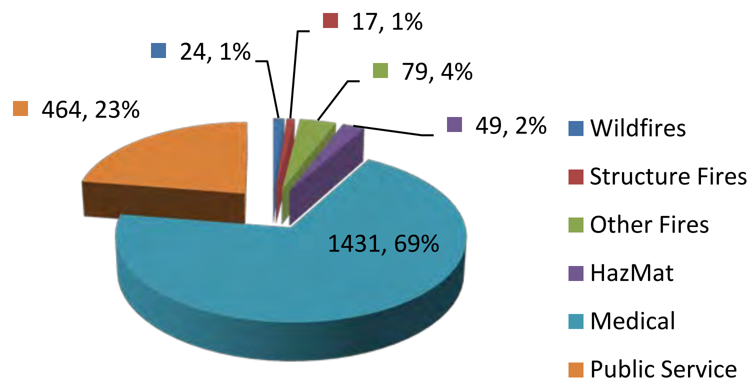
The following table shows the extent of equipment resources currently available to Amador Fire Protection District. These do not represent all resources available from the District or other departments. It lists what is available for first response.

FIGURE 1 - AMADOR FIRE PROTECTION DISTRICT STATIONS AND EQUIPMENT RESOURCES[i]

<table>
<tr><th colspan="4">Amador Fire Protection District Resources</th></tr>
<tr><th>Station Location</th><th colspan="2">Contact Title</th><th>Phone</th></tr>
<tr><td>Mace Meadows on Meadow Drive across from Mace Meadow Golf Course</td><td colspan="2" rowspan="3">Chief
AFPDHDQ@co.amador.ca.us</td><td rowspan="3">(209)-223-6391</td></tr>
<tr><td>Pine Grove at Irishtown Road and Highway 88</td></tr>
<tr><td>Van De Hei Road and Highway 88</td></tr>
<tr><th colspan="4">Mace Meadow (Station 111) Resources</th></tr>
<tr><th>Structure Engine</th><th>Wildland Engine</th><th>Water Tenders</th><th>Miscellaneous</th></tr>
<tr><td>None</td><td>One ICS[ii] Type 2</td><td></td><td>One Squad</td></tr>
<tr><th colspan="4">Pine Grove (Station 114) Resources</th></tr>
<tr><th>Structure Engine</th><th>Wildland Engine</th><th>Water Tenders</th><th>Miscellaneous</th></tr>
<tr><td>One ICS Type 1</td><td>One ICS Type 3, one ICS Type 4 engine</td><td></td><td>One Squads</td></tr>
<tr><th colspan="4">Van de Hei (Station 112) Resources</th></tr>
<tr><th>Structure Engine</th><th>Wildland Engine</th><th>Water Tenders</th><th>Miscellaneous</th></tr>
<tr><td>None</td><td>One ICS Type 3, One ICS Type 4</td><td></td><td>Two squads</td></tr>
</table>

The amount of time it takes first responders to arrive at a scene usually has a big impact on their ability to save a structure from fire or a person with a medical emergency. Within the Pine Grove planning Unit, AFPD can respond to incidents in the entire area within fifteen minutes. In 2011, AFPD responded to 2,064 incidents. The following chart summarizes the type and frequency of incidents.

FIGURE 2 - AMADOR FIRE PROTECTION DISTRICT NUMBER OF INCIDENTS BY TYPE OF INCIDENT



In addition to providing service within the Pine Grove Planning Unit, Amador Fire Protection District personnel and equipment will respond outside their boundaries to incidents where they have mutual aid agreements with other local departments, as well as to request from the wildland fire agencies.

Constructing a new fire station with living quarters in Pine Grove has been identified as a priority need for Amador Fire Protection District.

8.4.2. LOCKWOOD FIRE PROTECTION DISTRICT

Lockwood Fire Protection District (LAFPD) provides emergency fire, rescue, and medical aid services to approximately 1703 residents and 1000 homes unincorporated area of the county.

Sixteen local residents currently volunteer with Lockwood Fire Protection District as "active" firefighters. Lockwood has no paid personnel. The District has identified a need for more volunteers. The District is funded primarily through a parcel fee and sales tax totaling approximately $110,000 annually. The District has two fire stations located in or near the Pine Grove Planning Unit as shown in the following table.

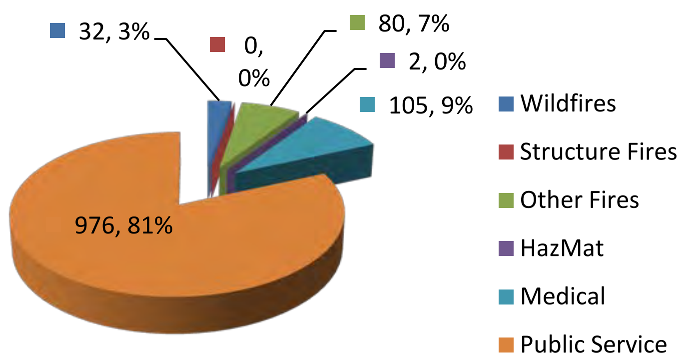
The following table shows the extent of equipment resources currently available to Lockwood Fire Protection District in or near the Planning Unit. These represent all resources available in the District for first response.

FIGURE 3 - LOCKWOOD FIRE PROTECTION DISTRICT STATIONS AND EQUIPMENT RESOURCES[iii]

Lockwood Protection District Resources		
Station Location	Contact Title , email	Phone
Shake Ridge Road (Station 151)	Chief Dave Long sunmtnroofing@aol.com	209-296-6445
Shake Ridge Road and Hale Road (Station 152)		
Shake Ridge Station 151 Resources		

Structure Engine	Wildland Engine	Water Tenders	Miscellaneous
One ICS Type 1 Engine	Two ICS Type 3	One Water Tender	One Squad, One Utility
Shake Ridge and Hale Road (Station 152) Resources			
Structure Engine	Wildland Engine	Water Tenders	Miscellaneous
None	One ICS Type 3	One Water Tender	One Squad

FIGURE 4 - LOCKWOOD FPD'S NUMBER OF INCIDENTS BY TYPE OF INCIDENT



In addition to providing service within the Pine Grove Planning Unit, Lockwood Fire Protection District personnel and equipment will respond outside their boundaries to incidents where they have mutual aid agreements with other local departments, as well as to request from the wildland fire agencies.

Lockwood Fire Protection District has identified the following priority needs.

1. Replace (or expand and remodel) station 151 with new structure complete with meeting/training room and living quarters. Adequate living quarters are required before Lockwood can take advantage of paid staffing available from Measure M (local sales tax for fire protection)

2. Replacement of water tender at station 152

3. More volunteers or addition of paid personnel (see item 1)

8.5 CALIFORNIA DEPARTMENT OF FORESTRY AND FIRE PROTECTION (CAL FIRE)

The California Department of Forestry and Fire Protection (CAL FIRE) provides wildland fire protection for private, industrial, county, state, and municipal forestlands. CAL FIRE provides wildland fire protection to approximately 320,000 residents in its 1618 square-mile service area in Amador, Sacramento, San Joaquin, and Eldorado counties.

All CAL FIRE staff is paid. CAL FIRE's Mt Zion Battalion (Battalion 13), which encompasses the entire planning unit, has 31 staff members including 4 Fire Captains, 4 Fire Apparatus Engineers, 21 firefighters, one relief

Battalion Chief, and one Battalion Chief. CAL FIRE is funded through the state. These staffing levels provide a four person staff on all engines and at least one Battalion chief every day during the fire season. CAL FIRE's Amador Eldorado Unit headquarters is in Camino. There are two fire stations located within or near the Pine Grove Planning Unit, as shown in the following table.

The following table shows the extent of equipment resources currently available to CAL FIRE.

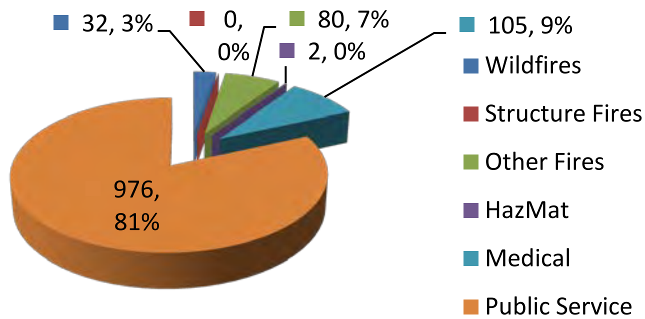
FIGURE 5 - CAL FIRE STATIONS AND EQUIPMENT RESOURCES

<table>
<tr><th colspan="5">Amador Eldorado Unit, Battalion 13 Resources</th></tr>
<tr><th colspan="2">Station Location</th><th colspan="2">Contact Title</th><th>Phone</th></tr>
<tr><td colspan="2">Dew Drop Station on Highway 88 east of the intersection of Highway 88 and Shake Ridge Road</td><td colspan="2">Duty Captain or Engineer</td><td>209-295-7735</td></tr>
<tr><td colspan="2">Pine Grove Station next to CALTRANS in Pine Grove</td><td colspan="2">Duty Captain or Engineer</td><td>209-2964435</td></tr>
<tr><td colspan="2">Pine Grove Conservation Camp</td><td colspan="2">Division Chief</td><td>209-296-7591</td></tr>
<tr><th colspan="5">Dew Drop Station</th></tr>
<tr><th colspan="2">Structure Engine</th><th>Wildland Engine</th><th>Dozers</th><th>Miscellaneous</th></tr>
<tr><td>None</td><td>One ICS[iv] Type 3</td><td>None</td><td colspan="2">None</td></tr>
<tr><th colspan="5">Pine Grove Station Resources</th></tr>
<tr><th>Structure Engine</th><th>Wildland Engine</th><th>Dozers</th><th colspan="2">Miscellaneous</th></tr>
<tr><td>None</td><td>Two ICS Type 3</td><td>None</td><td colspan="2">None</td></tr>
<tr><th colspan="5"></th></tr>
<tr><th>Structure Engine</th><th>Wildland Engine</th><th>Dozers</th><th colspan="2">Miscellaneous</th></tr>
<tr><td></td><td></td><td></td><td colspan="2">Four 13 person hand crews</td></tr>
</table>

In terms of response times, within the Pine Grove Planning Unit, CAL FIRE can respond to approximately 100% of its service area within fifteen minutes. Seventy percent of CAL FIRE's service area can be reached within ten minutes, 50% within five minutes, and 20% of their service area is within a three-minute response from one of the CAL FIRE stations or engines. This means that none of CAL FIRE's service area is located more than fifteen minutes away.

At times, CAL FIRE does respond to more than just wildland fires. This is primarily when a structural fire threatens wildlands, and usually during fire season. The following table summarizes the type and frequency of incidents responded to by CAL FIRE in 2010. These numbers indicate the response statistics for Battalion 13.

FIGURE 6 - CAL FIRE NUMBER OF INCIDENTS BY TYPE OF INCIDENT



In addition to providing service within Pine Grove planning area, CAL FIRE responds outside the area to incidents all over the state. CAL FIRE has mutual aid agreements with all fire agencies within Amador County. They have a contract with Amador County to provide structure protection and emergency medical services.

8.6. FEDERAL FIRE AGENCIES

8.6.1. ELDORADO NATIONAL FOREST (USFS)

There are no National Forest lands within the Pine Grove Planning Unit. However, the Eldorado National Forest participates in mutual aid and has some of the closest resources to the Pine Grove area. For this reason, the national forest resources located in Amador County are included for information purposes.

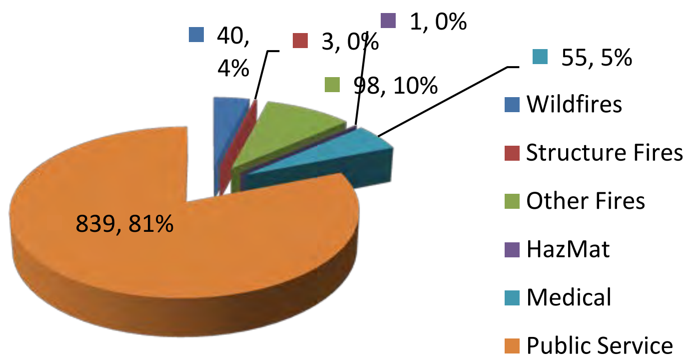
FIGURE 7 - AMADOR DISTRICT, ELDORADO NF USFS STATIONS, AND EQUIPMENT RESOURCES

Eldorado NF Resources			
Station Location	**Contact Title**		**Phone**
Dew Drop Station on Highway 88 east of the intersection of Highway 88 and Shake Ridge Road	Duty Captain		209-295-5971
Lumberyard	Duty Captain		209-295-5973
Dew Drop Station			
Structure Engine	Wildland Engine	Dozers	Miscellaneous
None	One ICS[v] Type 3	none	none
Lumberyard			
Structure Engine	Wildland Engine	Dozers	Miscellaneous
none	One ICS[vi] Type 3	none	none

All lands in the Planning Unit are within the State Responsibility Area (SRA). However, the Eldorado NF engine at Dew Drop can reach the Pine Grove Planning Unit within 25 to 35 minutes.

The following table summarizes the type and frequency of incidents responded to by Amador District, Eldorado NF in 2011.

FIGURE 8 - ELDORADO NATIONAL FOREST USFS NUMBER OF INCIDENTS BY TYPE OF INCIDENT



The Eldorado NF has mutual aid agreements with other federal agencies, CAL FIRE, and Local fire departments (agreements, not true mutual aid). The Eldorado NF also is signatory to the statewide OES "California Fire Assistance Agreement" which has access to all resources that are in the "California Fire Service and Rescue Emergency Mutual Aid System"

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[i] This table is adopted from Texas Forest Service, Texas A&M University, *A Guideline for Developing Community Wildfire Protection Plans,* tfsfrp.tamu.edu/_training/cwpp/assets/pdf/CWPPTemplate.pdf.
[ii] ICS Types are based on the fire fighting capacity of the apparatus.
[iii] This table is adopted from Texas Forest Service, Texas A&M University, *A Guideline for Developing Community Wildfire Protection Plans,* tfsfrp.tamu.edu/_training/cwpp/assets/pdf/CWPPTemplate.pdf.
[iv] ICS Types are based on the fire fighting capacity of the apparatus.
[v] ICS Types are based on the fire fighting capacity of the apparatus.
[vi] ICS Types are based on the fire fighting capacity of the apparatus.

9. FACILITATING FIRE SAFETY IN THE LONG TERM

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9.1. MONITORING

9.1.1. STRATEGIC PLANNING AND PROJECTS

The Amador Fire Safe Council[1] hosts an annual meeting open to all public and private entities that manage fuels to improve forest health and reduce damage from wildfire. This meeting is intended to coordinate efforts of all agencies and private land managers. While this meeting has a countywide focus, projects relating to this plan are also discussed.

With regard to landscape scale projects designed to reduce damage from wildfires that are not within the planning unit but have a direct affect on wildfires threatening values within the planning unit, these projects are ongoing as part of an overarching fuel modification scheme (Cooperative Fire Defense System, see Plate 3 - Landscape Scale Fire Defenses).

The CAL FIRE is in the process of designing a Geographical Information System (GIS) database that will catalog all fuel reduction projects statewide. This database will incorporate existing and future projects regardless of location or responsible agency(s).

The design and function of this database is currently being developed. When this database is completed, users will be able to manipulate the data:

1. To retrieve maps of projects on demand by type, agency, year, treatment, etc
2. To identified safety islands along with size and potential capacity
3. To create color coded maps that estimate fuels projects current effectiveness against wildfire
4. To enter and retrieve polygons representing identified fire defense systems
5. To identify individual projects within fire defense systems. Fire defense systems are differentiated from projects in that projects are used to create a system (i.e. Antelope Fuelbreak is a fire defense system while projects are the building blocks of a system.) This GIS database can be used to determine the completeness of a fire defense system ~~and~~ or to identify ~~key~~ parcels needed to complete the system.
6. To create a priority field to track progress against priorities established by the fire plan
7. To create maintenance schedules for fuel modification projects based on user defined criteria

9.1.2. PROJECT-SPECIFIC ECOLOGICAL MONITORING

All landscape scale projects require an environmental study. Depending on location and funding source, this study can be either a California Environmental Quality Act (CEQA) document or National Environmental Protection Act (NEPA) document. These environmental studies identify potential negative impacts of specific projects and require measures to mitigate these impacts.

The Amador Fire Safe Council has developed a set of standards for all its fuel reduction projects. These standards have two broad goals. The first goal is to achieve the desired fire safety result. Second goal is to improve forest health. Landowners participating in council funded projects must sign an agreement to allow the fuel reduction work to be done in a manner that will meet these two goals.

Almost without exception, agencies providing grant funding for council projects require both written and photographic progress reports. This information will be included in the database described in section 9.1.1.

Federal, state, and local government agencies must also comply with applicable environmental review processes. Private industry must comply with these review processes anytime a project falls within the scope of CEQA or NEPA.

9.2 PROJECT MAINTENANCE

Amador Fire Safe Council's maintenance committee periodically conducts on site inspections of completed projects. Where re-growth of vegetation is sufficient to render the fire protection and forest health benefits of the project ineffective, the council applies for grant funding to rehabilitate the project. Even when grant funding is not available, CAL FIRE may provide resources to maintain fuel reduction projects where the project improves public safety (public good criterion).

9.3 UPDATING THIS PLAN

No plan is ever permanent. This plan was written in 2012 based on current conditions and best available information. The field of wildfire safety is rapidly changing. It is likely that new developments will occur in the coming years. Therefore, it will be important to review this plan at least every five years and update it as needed. Copies of this plan will be available for public review at Amador County libraries, Amador County Office of Emergency Services website *www/co.amador.ca.us* and on the Amador County Fire Safe Council's website *www/amadorfiresafe.org*.

Progress on the plan's implementation and other projects affecting the planning unit will be reviewed at least annually at a public meeting hosted by the Amador Fire Safe Council. Since not all projects are public agency projects, community associations and citizens can provide input on progress towards meeting fire safety goals in their respective neighborhoods or communities at this meeting.

9.4 RESOURCES NEEDED TO SUPPORT ONGOING EFFORTS

The Amador Fire Safe Council is a non-profit corporation that is funded through grants and the 15% administrative fees charged to some grant projects. Originally funded by Federal Title III grants to the County of Amador, this funding source is no longer available for general operating expenses. Currently the council is solely dependent on administrative fees and specific projects such as this plan. The annual operating expenses of the council exceed $50,000 per annum.

If the council is unable to obtain enough grants on an annual basis to generate its operating expenses it will go out of business. To maintain in business the council needs to generate between $300,000 and $500,000 in new grant awards annually. Ideally, these projects need to be spread over eighteen months to allow for two burning seasons and to level out income over multiple fiscal years.

[1] Amador Fire Safe Council is a 501.c4 Nonprofit.