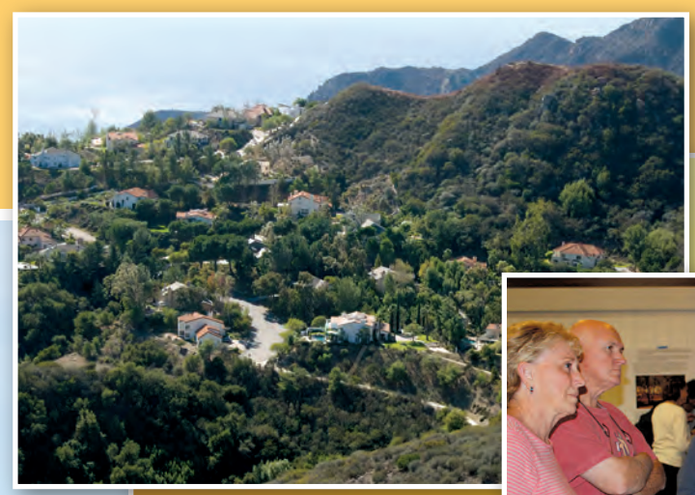

SANTA MONICA MOUNTAINS COMMUNITY
WILDFIRE PROTECTION PLAN

Public Draft, 2010

Written by ForEverGreen Forestry
www.forevergreenforestry.com

Welcome to the Santa Monica Mountains Community Wildfire Protection Plan (CWPP). This document is written as a resource guide, primarily for Santa Monica Mountains residents—especially those working together under the banner of a local Fire Safe Council. It is designed to help you prepare your homes and properties to increase your chances of surviving inevitable wildfire.

This CWPP was written in 2010 by Tracy Katelman, Registered Professional Forester #2483, of ForEverGreen Forestry, for the Malibu West Fire Safe and Sustainability Council. Funding was provided by a National Fire Plan grant from the USDA Forest Service, through the California Fire Safe Council.

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PRINTING INSTRUCTIONS

This document was formatted to print double-sided, with an inside margin for binding, to fit into a 3-ring binder.
See the website for binder cover, tabs, and spine graphics.
www.forevergreenforestry.com/SantaMonicaMountainsCWPP.html

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PUBLIC DRAFT

Santa Monica Mountains Community Wildfire Protection Plan Executive Summary[1]

I. CWPP Background, Purposes, and Principles

Introduction to Living with Wildfire in the Santa Monica Mountains

The increasing incidence of wildfire, with its potentially disastrous consequences, has brought fire safety concerns to the attention of residents of southern California and particularly the Santa Monica Mountains region. Living with wildfire in a dry and often remote environment demands awareness, cooperation with neighbors and emergency response personnel, and compliance with building codes and other regulations, guided by a willingness to self-educate on this issue in advance of disaster. In this way it's possible to contribute to making one's immediate environment and neighborhood safer and better prepared for the very real possibility of wildfire. Taking the time to read this Community Wildfire Protection Plan (CWPP) and thinking ahead in relation to one's own situation may motivate small but critical acts that make a vital difference when wildfire arrives.

Recent history in southern California shows a direct correlation: the more people, the more wildfires. As housing developments and other human activity (both commercial and recreational) expand into formerly wild areas, they push the boundary of that critical zone where structures of value meet large tracts of mostly undeveloped land, both open (grassland or chaparral) and forested. Not only can fires from these wild areas advance on established neighborhoods, but more commonly, human activities and infrastructure (vehicles, power tools, electrical lines, to name a few) in this so-called "wildland-urban interface" or WUI[2] zone can start a fire that spreads quickly into forests, fields, or open areas, encompassing both nearby structures and many acres of adjacent wildland. If the winds are strong that day, a small fire could quickly become a major emergency. Readers of this plan have seen the stories and possibly been part of such a fire incident.

Source: NPS/SMMNRA

The Santa Monica Mountains is a desirable place to live and recreate. It is also a very high fire-hazard area for reasons of climate/weather, topography, and sheer numbers of people on the edges and in the twisting canyons of this mountainous region by the sea. Since large, destructive wildfires will continue to occur here, this Community Wildfire Protection Plan aims to provide tools to reduce the negative impacts of these fires, primarily through **proactive community planning, preparation of homes to reduce the probability of them catching fire, and focused hazardous fuel reduction around structures.**

While this document is mainly addressed to an audience of area residents, the information it contains will be useful in planning by local agencies and other stakeholder groups, and as a basis for applying for federal and other grant funding targeted for fire safety and prevention.

Sponsored by the Malibu West Fire Safe and Sustainability Council through a US Forest Service National Fire Plan grant via the California Fire Safe Council, the Santa Monica Mountains Community Wildfire Protection Plan or

[1] This summary was written by Kathy Glass, in conjunction with ForEverGreen Forestry.

[2] A glossary of terms can be found at the end of this plan.

CWPP represents the collective knowledge, work, and community effort of many individuals and organizations. Registered Professional Forester Tracy Katelman of ForEverGreen Forestry[3] was hired to organize collaborative efforts to create this CWPP.

What is a CWPP?

A Community Wildfire Protection Plan is a component of federally identified processes to address wildfire hazards and reduce risk. It is a local plan led by residents to identify what they can do to prepare their communities for wildfire. This CWPP has been developed for the coastal Santa Monica Mountains region to help identify such hazards, as well as to provide information and tools that residents and agencies can use to reduce the frequency of catastrophic wildfire, protect vital community assets, and live in balance with the land.

A collaborative effort involving many different groups and area residents, this plan for neighborhoods of the Santa Monica Mountains is intended to be a guiding document for future actions of private landowners, local Fire Safe Councils, land management agencies, and emergency service providers wanting to take proactive steps to minimize risks and protect local communities.

Specifically, this CWPP will:

- Provide direction to create safer human communities and protect natural areas by involving and educating stakeholders, sharing information, and mapping and prioritizing community wildfire safety needs.
- Identify Best Management Practices (BMPs) to minimize wildfire risks in the wildland-urban interface. These BMPs are designed to prevent structure loss and create defensible space while protecting the environmental integrity of the Santa Monica Mountains wildlands. Referred to throughout this CWPP, the "wildland-urban interface" is a general term for the area where homes and wildland meet. It has a definition in the Federal Register as the "line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuel."[4]
- Identify priority projects to reduce risks and hazards from wildfire at the neighborhood or community scale while protecting conservation values in the Santa Monica Mountains. These projects include incorporating fire safety into structural improvements and the design of private landscaping and open spaces adjacent to communities in order to provide or increase safety and defensible space for homes, communities, and firefighters.
- Provide community priorities for conservation-based fuel management on public lands, as well as community input to public land management within the Santa Monica Mountains National Recreation Area.
- Meet community collaboration requirements under the National Fire Plan and other government funding sources, in order to qualify for public funds allotted to this purpose.

[3] www.forevergreenforestry.com

[4] *Federal Register* (January 4, 2001), "Implementation Direction for Identifying and Prioritizing Hazardous Fuel Reduction in Wildland-Urban Interface/Intermix." Region 5. Vol. 66, No. 3: pp. 751–754.

Fire Safe Objectives

This plan was developed as a result of concerns about community and firefighter safety, as well as the desire to protect natural resources and quality-of-life values in the Santa Monica Mountains. The objectives identified in this CWPP are to:

Minimize Ignitions

Human-caused ignitions are the leading source (98%[5]) of wildfire in the Santa Monica Mountains, accounting for nearly all damages and losses to ecosystems, property, and human lives in the Planning Area. Natural ignitions are extremely rare. While it is difficult or impossible to control a wildfire during extreme fire weather, it is certainly possible to reduce the chance of starting one. Fire-prevention activities are more cost-effective than fire suppression.

Decrease Fire Intensity around Homes and Structures

The natural fire regime of the Santa Monica Mountains is one of infrequent, high-intensity fires that consume most or all of the aboveground biomass. The local patterns of summer drought and fall Santa Ana winds occur as a result of large-scale weather patterns that have existed for millennia. Forecasts for expected climate change in southern California predict more extreme climate variation. Substantially reducing fire intensity over large portions of the landscape is not possible. However, reducing fire intensity and frequency in the immediate vicinity of homes and other potentially flammable assets is a very practical approach to protecting them during wildfires.

Decrease Damage to Natural and Human Assets

Although infrequent high-intensity wildfire is part of the natural ecology of the Santa Monica Mountains, the area currently experiences many more human-caused fires than ever before (as noted). Property loss from southern California wildfires has increased steadily over time as more and more valuable homes are built in harm's way. This trend needs to be reversed. Taking steps to reduce structural ignitability as described in Chapter 4 can decrease this damage.

Source: NPS/SMMNRA

There are limits to the resilience of native plant communities, which are well adapted to surviving fires as long as they do not occur too frequently (i.e., more than every 25 years or so). Too much fire damages natural resources as well as destroys property and threatens lives. In many areas of the Santa Monica Mountains, short fire-return intervals are causing an ongoing process of conversion from one vegetation type (native shrublands) to another (weedy exotic grasslands). Type conversion is a significant problem for several reasons. The weedy grasslands are more prone to fire than the native shrublands, more dangerous for fighting fire, more likely to experience landslides and slope failures and to degrade water quality, and are less valuable than native ecosystems as wildlife and threatened and endangered species habitat, as well as a recreational or scenic resource.

[5] Current Tract Ownership Data of the National Park Service (2005), Santa Monica Mountains National Recreation Area, Thousand Oaks, CA. http://nrdata.nps.gov/samo/samodata/nps_tracts.zip (6/17/2010).

Increase "Permeability" of the Landscape, Acknowledging that Wildfire Will Continue to Occur Here and that Minimal Damage can be Left in its Wake

Wildfires will continue to shape the landscape of the Santa Monica Mountains and likely become more frequent and costly in terms of property and natural resource losses until humans can be more careful and/or adopt fire-safe practices that will improve the chances of structures surviving a passing fire. The concept of permeability means that a fire can spread through a human community with minimal negative impact. The ideal situation would be one where all structures can withstand a wildfire—i.e., hardened homes and effective defensible space—and all people living there could safely evacuate when necessary.

Increase Resiliency, Enabling Both the Community and Environment to Rebound Quickly After a Wildfire

An important objective is a rapid rebound after a wildfire burns through a human community or wildland area. Communities with greater preparation for wildfires (hardened homes, rehearsed evacuations, established communication protocols, effective collaboration among agencies, etc.) have greater resiliency against fire and other disasters. Less frequent fire is not only desirable for people but is vital for native ecosystems to survive.

These fire safety objectives drove development of the risk assessment and action plan for the Santa Monica Mountains.

Conservation Principles for Community Wildfire Protection

Living within or near the wildlands of the Santa Monica Mountains carries a responsibility. To conserve an attractive way of life, people need to be good stewards of the land, learning to live in balance with the natural world, of which fire is an inevitable part.

Central questions to this plan are how human communities can live safely in an area with severe wildfire, what actions can bring them closer to this goal, and what precautions must be taken to ensure that fire-safety measures preserve the ecological integrity and values associated with the naturally wild areas of the Santa Monica Mountains. Thus conservation of natural resources is given high consideration in all actions contemplated by this CWPP.

This document is based on the following Conservation Principles.

Remember the Vegetation

- Observe and monitor your vegetation's dynamic changes.
- Act conservatively.
- Protect native species that share your home.
- Keep the oldest and biggest native trees.

Remember the Wildlife

- Provide local wildlife a place to live.
- Provide access to food and water.
- Protect future generations of wildlife.
- Value the standing dead trees.
- Conserve threatened and endangered species.

Remember the Soil

- Maintain the life in your soil.

Source: NPS/SMMNRA

- Ensure that soil cover is fire safe.
- Minimize erosion.
- Protect soil after a fire.

Remember the People

- Plan your actions with your neighbors.
- Find experienced workers and treat them well.
- Work with your local fire department.

For a complete description of the Conservation Principles, see Chapter 1, Section 1.8.

In regard to "Remember the Wildlife" above, the Santa Monica Mountains provide habitat for at least 57 threatened or endangered plants and animals, plus hundreds of vertebrates, birds, amphibians, and reptiles, and about a thousand native plants. Wildfires and fire management (i.e. fuel treatments or fire-suppression activities) affect wildlife and native vegetation in many ways. Consideration of species' habitat needs is an important part of fire planning: think about and avoid potential fragmentation of habitat[6] while ensuring food availability, denning habitat, security, and movement ability. For plants, work to ensure the continuation of native species and minimize conditions that allow invasive weeds to flourish. (Many of the latter are highly flammable.) Incorporate these Conservation Principles fire safety and defensible space actions. They are especially important when required to do fuel management in native vegetation. *See Chapters 4 and 5 for recommended best management practices for reducing hazardous fuels around homes that are consistent with these general conservation principles.*

II. The CWPP Planning Area

This Community Wildfire Protection Plan (CWPP) covers the coastal watersheds and communities of the Santa Monica Mountains (SMM) of southern California (approximately 129,000 acres). Bordered in part by the Pacific Ocean, the mountain range spans two counties, encompassing the lands from about 10 miles east of Oxnard in Ventura County to the eastern end of Griffith Park in the city of Los Angeles. This CWPP does not cover the entire range of the Santa Monica Mountains.[7]

The CWPP Planning Area is roughly congruent to, though not as extensive as, the boundaries of the Santa Monica Mountains National Recreation Area, (SMMNRA is the corresponding long acronym used in this document).The CWPP focuses on approximately 84%[8] of the SMMNRA, in what is referred to throughout these pages as the "Planning Area," or the "Santa Monica Mountains," or "SMM." At roughly 154,000 acres, the SMMNRA completely encompasses the CWPP Planning Area. The SMMNRA areas north of Highway 101 and east of the East Topanga Fire Road were not included in the CWPP Planning Area, which was drawn to reflect the distribution of primarily residential communities within the rural areas of the SMMNRA. Most of the SMMNRA lies in Los

[6] This refers to discontinuity in an organism's preferred environment, such as interruption of usual movement or migration patterns, or breaking up (via roads and human development) of formerly intact chunks of suitable wild territory.

[7]

[8] Gregory Elwood, National Park Service Partner, GIS Technician, CWPP Planning Units v4, October 2009.

Angeles County, while about one third of the western section extends into Ventura County. The Planning Area does not include any of the City of Los Angeles on its eastern boundary.

Despite the existence of urban pockets in this region, the SMMNRA is 90% undeveloped.[9] The Santa Monica Mountains region was federally designated in 1978 as a National Recreation Area, becoming one of the largest urban recreation areas in the world.[10] Administered by the National Park Service, which manages approximately 20% of the land, **the SMMNRA is nationally significant for encompassing the greatest expanse of mainland Mediterranean-type ecosystem in the US National Park System (exhibiting one of the world's rarest and most endangered ecosystems), as well as for having more than 1,500 archeological sites within its boundaries.[11] It is the largest and most heavily visited urban recreation area in the US.[12]**

The purpose of the National Recreational Area designation is to "preserve the scenic, natural and historic, as well as public health values of the Santa Monica Mountains."[13] This CWPP aims to do the same. The mix of public and private land extending from the beaches through the rugged Santa Monica Mountains is characterized by the extensive presence of wildland-urban interface areas, where developed lands intersect with undeveloped natural wildlands, and wildfire ignitions are frequent.

More than 70 government and municipal entities (federal, state, local, private, and nonprofit groups) share jurisdiction in and collaborative management of the extensive public lands within the Santa Monica Mountains National Recreation Area.[14] Each has different mandates, areas of focus, and degrees of regulatory authority. This creates a challenge for coordinating policies and actions across the CWPP Planning Area. Understanding this jurisdictional setting is essential to manifesting an effective CWPP. A core tenet of the National Recreation Area designation is partnership between federal/state agencies and private landowners. A large portion of the Planning Area (54%[15]) is privately owned. Major participating agencies and organizations include the following:

- Los Angeles and Ventura counties
- the cities of Calabasas and Malibu
- State of California Department of Parks and Recreation
- Santa Monica Mountains Conservancy
- Mountains Recreation and Conservation Authority
- National Park Service

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[9] National Park Service (2002), General Management Plan and Final Environmental Impact Statement, Santa Monica Mountains National Recreation Area, Volume 1, p. 3.

[10] NPS (2002), General Management Plan and Final EIS, SMMNRA, Volume 1, p. 3.

[11] NPS (2002), General Management Plan and Final EIS, SMMNRA, Volume 1, pp. 34–35.

[12] http://samofund.org/About/about.htm

[13] NPS (2002), General Management Plan and Final EIS, SMMNRA, Volume 1, p. 34.

[14] NPS (2002), General Management Plan and Final EIS, SMMNRA, Volume 2, p. 443.

[15] Current Tract Ownership Data of the National Park Service (2005), Santa Monica Mountains National Recreation Area, Thousand Oaks, CA. http://nrdata.nps.gov/samo/samodata/nps_tracts.zip (6/17/2010).

- The Mountains Restoration Trust and several other nonprofit land conservancies who manage land in the CWPP Planning Area.

Parklands and natural areas include national, state, and county parks as well as beaches, municipal parks, and privately managed recreation sites.[16] A total of 69,099 acres of parkland are encompassed by the SMMNRA.[17] It is popular for hiking, horseback riding, birding, camping, and more. *For further details of recreational uses see Chapter 6, section 6.3, "Public Lands" and Part II. See Chapter 1 for a map of land ownership.*

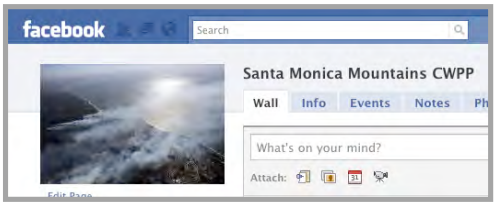
III. Bringing Residents Together to Create This Plan

The CWPP Planning Area was designed to encompass the human populations surrounding the mountains' wildland core and thus includes urban areas as well as outlying rural neighborhoods. These inhabited areas were grouped to form **20 planning units** within the larger CWPP Planning Area. Local meetings and action plans have been organized around the planning-unit structure, in order to increase community input. Planning units were created by considering existing population centers, governance jurisdictions, access routes, fire history, watersheds, and other geographical boundaries.

Chapter 2 provides general information about the planning units and an overall map of the CWPP Planning Area. The individual Community Fire Safety Action Plans, in Part II of this document, contain detailed descriptions of each planning unit. The resulting Community Fire Safety Action Plans contain the data and more detailed maps gathered from community meetings, summarize pertinent issues in each unit, and list priority actions for community implementation.

A community-intensive process was used in development of this Community Wildfire Protection Plan to ensure maximum resident and stakeholder input, and to take advantage of opportunities for public education and participation. The core of this process was a series of more than twenty public meetings, one in each planning unit, held between October 2009 and January 2010. About 250 people in total attended one or more of these meetings.

Social networking tools such as Facebook, a website, and an email list were also used to share information about the CWPP and fire safety in the Santa Monica Mountains.



Subsequent to the meetings that generated local data, there were several opportunities for public input to this document. A Community Review Committee (CRC) was created for any Santa Monica Mountains resident who wanted to further participate in the process. Participants were identified from all planning units.

A parallel group of Internal Reviewers was chosen to represent the various stakeholder groups in the Planning Area, including government, fire agencies, state and federal land management agencies, local businesses, and

[16] For a complete list of parks in the SMM, see www.lamountains.com/searchresults.asp?regionid=3.

[17] NPS (2002), General Management Plan and Final EIS, SMMNRA, Volume 1, p. 19.

nonprofit organizations. *For a list of CRC and Internal Reviewers, please see Appendix D: Community Review Committee and Internal Reviewers.*

The CRC and Internal Reviewers were provided opportunity to comment on draft CWPP documents between January and May 2010. It was a virtual, Web-based review process whereby documents were uploaded onto a private website for participants to download and comment. In late April and early May, six working sessions were held with the CRC and Internal Reviewers, as well as with the Planning Committee, to achieve maximum resolution of outstanding issues in the CWPP before publishing the Public Draft.

Comments were incorporated from the CRC/Internal Review, and a Public Draft was published in July 2010. CWPP partners distributed the Public Draft for review. The final CWPP is anticipated to be signed and published in late 2010 or early 2011.

IV. The Santa Monica Mountains' Wildfire Environment

Geography

The topography of the Santa Monica Mountains consists of alternating steep canyons and ridges, forming an overall rugged terrain, extending from sea level to a maximum elevation of 3,111 feet, with an average elevation of around 1,000 feet. Most of the region is rural and unincorporated, particularly the western part of the mountain range in Ventura County (with the exception of the Hidden Valley and Lake Sherwood areas). Further east in Los Angeles County are more concentrated urban populations, including the Planning Area's two incorporated cities, Malibu and Calabasas.

Certain kinds of terrain are notoriously dangerous when wildfires come and are recognized by wildland firefighters as "Watch Out" situations. Steep slopes, saddles and passes, box canyons, narrow canyons, and chimneys are all examples of fire-hazardous terrain, and they are common features of the Santa Monica Mountains. Fire spreads most rapidly where strong winds blow (e.g. saddles, passes, and ridge-tops) and where slopes are steep. Steep terrain also tends to limit movement of people trying to fight fire or escape from it. Canyons and chimneys often channel winds and create situations where slopes and winds are in alignment. This can result in long flame lengths and very rapid fire spread. When fire burns up steep slopes, flames and convection columns often lie closer to the ground. This pre-heats fuels ahead of the flaming front, which increases fire intensity and rates of spread. The Santa Ana winds so prevalent in the SMM region and the fire-conducive terrain are a potent combination for out-of-control wildfire, as has been seen here frequently.

Weather

Climate and local weather patterns largely determine the fire ecology of the Santa Monica Mountains. The region's Mediterranean climate is defined by mild, wet winters and warm, dry summers. Average precipitation is approximately 15 inches, with wide annual variation of rainfall from 6 to 43 inches recorded from 1948 to 2001.[18] The majority of precipitation is delivered in numerous multi-day deluges November through April. In comparison to

[18] National Park Service (2007), Fire Management Plan, Santa Monica Mountains National Recreation Area, pp. 31–32.

inland areas, coastal Mediterranean systems exhibit a more moderate climate that does not commonly reach freezing temperatures in winter or sustain such high summer temperatures. Coastal areas are also characterized by more frequent morning fog than are inland areas,[19] usually resulting in denser vegetation cover and heavier fuel loads than found inland. There is sufficient rain to support substantial vegetation growth throughout the region, and the Santa Monica Mountains area also experiences an annual six- to eight-month dry season that allows this vegetation (i.e., wildland fuels) to become very dry every summer or fall.

Santa Ana winds coming at the end of the dry season create some of the most extreme fire weather in the world. These winds are very dry, warm, and fast-moving, originating from a high-pressure system in the Great Basin desert and flowing westward toward a low-pressure zone in the Pacific Ocean off the coast of southern California.[20] Santa Ana winds are present nearly year round but occur with the greatest frequency from September to December. When Santa Ana winds coincide with an out-of-control fire situation (e.g. ignitions), extreme wildfires routinely occur. Because they are highly resistant to suppression efforts, such a rapidly moving, weather-driven wildfire can spread before a break or shift in the weather allows firefighters to effectively control it. Large Santa Ana wind-driven fires can occur in the fall of drought and non-drought years alike. Wildfires occur in approximately equal number in summer and fall, but almost 90% of the total area burned in all recorded wildfires here happens in late fall when Santa Ana winds are blowing.[21]

Source: City of Malibu

Interestingly, fire records dating back to 1919 show that lightning storms as a source of wildfire ignitions are relatively rare in coastal southern California and the Santa Monica Mountains, as lightning tends to coincide with wet winter and spring conditions.[22] Coastal areas receive less total lightning than do inland areas. It has been estimated that, on average, only 3–5% of all lightning strikes in a year result in wildfires in southern California Mediterranean-climate systems. This points to human sources for most wildfire ignitions.

The Legacy of Fire in the Santa Monica Mountains

It appears that large wildfires were relatively infrequent (one to two per century) before the arrival of Native Americans in the region, as fires were dependent on a rare overlap of natural lightning ignitions and Santa Ana winds, or very large fires blowing down from higher mountains to the east where lightning is more common. The association of warm, dry Santa Ana winds and destructive wildfire in the SMM dates back as far as our local record-keeping and much longer. Yet even these big fires were not nearly as frequent or cumulatively destructive as today's multiple fire events.

The Santa Monica Mountains were historically inhabited by the Chumash and Gabrieliño/Tongva Native American groups, evidenced by more than 1,500 archeological sites dating back to 5000 BC.[23] Native Americans

[19] National Park Service (2005), Final Environmental Impact Statement for a Fire Management Plan, Santa Monica Mountains National Recreation Area, Chapter 3, p. 10.

[20] NPS (2005), Final EIS for a Fire Management Plan, SMMNRA, Chapter 3, p. 9.

[21] NPS (2005), Final EIS for a Fire Management Plan, SMMNRA, Chapter 3, p. 13.

[22] J.E. Keeley (2006), "South Coast Bioregion." In: N.G. Sugihara, J.W. van Wagtendonk, K.E. Shaffer, J. Fites-Kaufman, and A.E. Thoede (eds.), *Fire in California's Ecosystems* (Berkeley and Los Angeles: University of California Press), p. 352.

[23] NPS (2005), Final EIS for a Fire Management Plan, SMMNRA, Chapter 3, p. 3.

used fire as a management tool to keep areas open, increase the productivity of useful plants, improve forage for animals such as deer and elk, and to favor clearings around oak groves, but we do not know how extensive this practice was. It was likely primarily near their villages and foraging grounds, not in remote mountain canyons. Indigenous fire use had the greatest impact on lower-elevation areas, in grasslands, and in oak savannahs. Early residents had no economic incentive to convert chaparral with fire, which they also relied upon for fuel, food, medicine, and game.

European settlement of the southern California coast began in the late 18th century, bringing a number of changes to the area's fire ecology. Primary among these were changes induced directly and indirectly by intensive stock grazing. Chaparral and sage scrub vegetation was cleared in order to increase grass forage and to facilitate animal movement, primarily by setting uncontrolled wildfires. These practices contributed to some of the region's largest mega-fires, ranging from tens to hundreds of thousands of acres in size.[24] Burning was combined with the introduction of what would prove to be invasive exotic grasses and herbs to provide cattle forage. Invasion of native shrublands by exotic annual grasses over the last 150 years has become a serious resource management problem affecting millions of acres of the western US. It is an ongoing problem in the Santa Monica Mountains.

Source: NPS/SMMNRA

During the 1920s, developers and individuals began turning toward the Santa Monica Mountains in search of building alternatives to the increasingly populated downtown areas of Los Angeles and Hollywood.[25] There was a significant spike in the area's development between 1970 and 1990, as the suburban sector along the border of the SMMNRA grew at four times the rate of development in the rest of Los Angeles County. This increased human presence is escalating the frequency of wildfire in the area.

In addition to the hazard that increased wildfire has posed to human communities, there have also been significant negative ecological impacts to the flora and fauna of the Santa Monica Mountains. Among these impacts has been a reduction in the area of mature chaparral vegetation and the conversion of large areas of chaparral and coastal sage scrub habitat to fire-prone annual grasslands dominated by exotic species, which are now far more widespread than native grasslands. ("Exotic" here refers to plants introduced in relatively recent decades, particularly invasive ones that prosper in their new locale, often at the expense of native plants.) **Although many plant species in the region are adapted to high-severity fires, increased fire frequency has led to a reduction in long-lived species that require fire-free periods of several decades. It also has depleted soil seed banks in some cases, reducing the diversity or rapidity of post-fire recolonization. Alternatively, repeated fires in short succession that do not allow for sufficient fuel accumulation to produce an intense fire can fail to scarify seeds in soil banks and therefore result in low post-**

[24] NPS (2005), Final EIS for a Fire Management Plan, SMMNRA, Chapter 3.

[25] Julie D. Clark De Blasio (2007), "Defensible Space: Environmental Implications of Fire Clearance Regulations in the Santa Monica Mountains National Recreation Area," PhD dissertation, University of California, Los Angeles (LD791.7 U7 D351 2007), pp. 21–22.

fire seed germination.[26] In this manner, significant portions of the SMM have been converted from native vegetation types (mainly the chaparral) to heavily disturbed and weed-infested vegetation types[27] because today's artificially high recurrence of fire unfortunately favors expansion of exotic species. Appropriate fuel treatments for these invasive plants are discussed in Chapters 4 and 5.

Most of the grassland area in the SMM has been heavily disturbed, often to the point of being type-converted from native chaparral or sage scrub vegetation to grasslands dominated by non-native species. "Type conversion" refers to the long-term shifting of one vegetation type to another by some form of disturbance. Most large, relatively level areas were converted to severely grazed rangeland and dryland farming over the last century. In the rugged mountains, type conversion of shrubland plant communities is primarily caused by repeated burns in short succession in the same general area, thereby preventing successful re-establishment of perennial native shrub communities.

Current patterns of wildfire activity in the Santa Monica Mountains show a trend of increased annual area burned, resulting from dramatic increases in the number of human-caused ignitions, particularly those coinciding with the Santa Ana winds. The increase in wildfire activity is particularly pronounced for coastal systems, which historically burned infrequently.

See Chapter 3 for more details on fire history in the Santa Monica Mountains.

Vegetation and Fuels

In the Santa Monica Mountains, "Mediterranean Chaparral" is the predominant ecosystem type, known for extensive biological diversity and a limited worldwide geographic distribution. Chaparral vegetation is generally very dense and produces high-intensity fires. Most chaparral species are able to survive and/or soon recolonize an area following wildfire, *if* the fires are not too frequent. Many distinct plant strategies exist to accomplish this fire tolerance, such as sprouting from the underground rootstock, the stimulation of seed germination by fire (heat), vegetative dormancy during high fire season, and thick protective bark (such as that of some oak species).

In this regard, most of the vegetation types of the Santa Monica Mountains can be considered "fire-adapted" systems. However, although many local species are fire-adapted, they are not necessarily "fire-dependent." This is to say that although many species have traits that help them to survive or otherwise reduce negative impacts of wildfires (fire-adapted), they are able to exist without the influence of fire (i.e., are not fire-dependent). *See Chapter 5 for details on fire-adapted ecosystems and vegetation types of the CWPP Planning Area.*

The Santa Monica Mountains are predominantly non-forested, even at higher elevations. In addition to the widespread range of chaparral, local vegetation includes grasslands, coastal sage scrub,

[26] Richard Halsey, personal communication, January 2010.

[27] R. Halsey, personal communication, January 2010.

riparian woodlands, coastal oak woodlands, and oak savannahs. The volume and distribution of fuels, their moisture content, and the arrangement of these fuels are all factors that can influence fire behavior. It is important to recognize that many human-made sources of fuels also contribute to fire behavior, including homes, fences, decks, landscaped vegetation and planted trees, gardens, and wood piles—these can be referred to as "urban fuels."

An important overarching point must be made about the role of vegetation in relation to fire behavior and patterns of wildfire in the vegetation types of these mountains. Given that large fires are so strongly associated with Santa Ana winds, **annual patterns of wildfire are not as closely correlated with vegetation conditions here as in other parts of the western US,** where factors such as fuel composition, vegetation (fuel) age, and elapsed time since the last fire (with a fuel build-up over time) play a more significant role in fire behavior. This situation and fuel-treatment rationale do not apply to the mostly shrubland vegetation types of the Santa Monica Mountains, where **human activities are mainly responsible for an increase in annual area burned.** Therefore fuel management in the Santa Monica Mountains area is most efficient when carefully considered and strategically placed—especially near homes—to have the greatest effect on home protection efforts, as opposed to attempting to change landscape-level fire behavior. *See Chapters 4 and 5 for more information and directions for fuel management (reducing and removing easily ignited dead and downed wood and debris).*

In many places, but *not* the Santa Monica Mountains, the application of prescribed fire and mechanical vegetation removal are common forms of fuel reduction. However, because of prescribed fire's relative ineffectiveness in altering landscape-level fire growth in this region, as well as the potential negative impacts on chaparral and sage scrub of increased annual area burned, **prescribed fire is not recommended in this CWPP as a fuel-reduction management tool in the Santa Monica Mountains.**[28,29] Other fuel treatments, when focused on a smaller scale (near structures) are more effective in reducing fire intensity and structure vulnerability and therefore enable more effective and safer fire-suppression efforts immediately around homes and other buildings.[30]

Conservation of California Oaks

Source: NPS/SMMNRA

Intense urbanization of former valley oak woodlands has caused this vegetation community to be among the most threatened of the Santa Monica Mountains. There is a low occurrence of successful sapling recruitment, making conservation of juvenile valley oak critical. Remaining valley oak savannahs have been greatly altered by grazing, frequent fire, and other forms of human use, which have cumulatively shifted their understory vegetation from perennial bunchgrasses and native forbs to annual grasslands dominated by exotic species.

[28] J.E. Keeley et al. (2004), "Lessons from the October 2003 Wildfires in Southern California," *Journal of Forestry* 102 (7): pp. 26–31.

[29] J.E. Keeley et al. (1999), "Reexamining fire suppression impacts on brushland fire regimes," *Science* 284 (5421): pp. 1829–1832.

[30] Keeley et al. (2004), "Lessons from the October 2003 Wildfires in Southern California."

Although regeneration of coast live oak and walnut woodlands is not as limited as it is for valley oak, both forest types, especially walnut, have a small range within the Santa Monica Mountains and serve as important sources of wildlife habitat and natural fuelbreaks.

Fuel treatments in this vegetation type should occur only within the first 100 feet[31] around homes and access roads, or other strategic fire-protection areas (as identified by trained arborists as well as fire agency professionals). Any fuel treatment should be carefully planned and conducted to retain and avoid damage to large trees, especially oaks, while accomplishing the recommended fire hazard reduction measures. A permit is required nearly always in the SMM to cut or trim oaks.

V. Santa Monica Mountains Communities at Risk

The Santa Monica Mountains' increasing popularity and desirability as a place to live can be attributed to its proximity to the metropolis of Los Angeles and the appealing combination of beaches and mountains. Communities include a mix of historic ranches, decades-old houses on land purchased long before it was prime real estate (the Monte Nido area, for example), and newer upscale houses and gated communities built after more recent population influxes.

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 Communities Within the Vicinity of Federal Lands That Are at High Risk from Wildfire." A community designated as "At Risk" theoretically will receive more fuel-reduction projects on adjacent federal lands, and be more competitive when competing for National Fire Plan and other state or federal funds.

After the 2000 fire season, the California Department of Forestry and Fire Protection (CAL FIRE) developed a list and associated map of Communities at Risk (CAR) from wildfire. Fourteen communities in this CWPP Planning Area are on the CAR list, all of which are in Los Angeles County. None of the Ventura County communities in the Planning Area are on the CAR list (though of course fire remains a risk for all of them).[32]

Existing CARs in the Santa Monica Mountains are:

- Cornell
- Fernwood
- Malibu
- Malibu Vista
- Point Dume
- Sylvia Park
- Topanga Park
- Calabasas
- El Nido
- Glenview
- Malibu Bowl
- Monte Nido
- Seminole Springs
- Topanga

[31] Up to 200 feet in special circumstances, and only on the advice of a fire or resource professional.

[32] Ojai Valley Fire Safe Council (2009), Ventura County Community Wildfire Protection Plan, p. 8.

There are other communities in the Planning Area not officially included in this list. Technically, any community in the Santa Monica Mountains would qualify as a Community At Risk. Many communities not on the list could make the argument that they fit within one of those already listed. It is believed in Los Angeles County that unlisted communities should decide themselves if they want to be listed. If so, they can work with LACFD to be added to the statewide list. The California Fire Alliance has a process for adding new communities to this list, which is found on its website: www.cafirealliance.org/communities_at_risk/communities_at_risk_addtolist.

In Ventura County, it is suggested that the following communities be added to the CAR list:

- Hidden Valley/Lake Sherwood/Carlisle Canyon,
- Yerba Buena Canyon Area (including Pacific View, Cotharin, Yellow Hill).

Fire Protection Agencies

Wildfire suppression in the Santa Monica Mountains is carried out by several agencies, principally the Los Angeles County Fire Department (LACFD) and the Ventura County Fire Department (VCFD), which together have the majority of fire-suppression resources in and near the SMMNRA. The two county fire departments provide fire protection for all structures in the CWPP Planning Area. Additional wildland fire protection (primarily for parkland) is provided by the National Park Service and the Mountains Recreation and Conservation Authority.

The cities of Calabasas and Malibu are part of the Consolidated Fire Protection District of Los Angeles County (also known as the Los Angeles County Fire Department). LACFD provides structural fire protection for all unincorporated land in Los Angeles County in the CWPP Planning Area. VCFD provides structural fire protection for the Ventura County side of the Planning Area. *Please refer to Chapter 6, section 6.2, for further information on fire protection.*

The US Navy protects its jurisdictional lands on both sides of Pacific Coast Highway at Point Mugu in the northwestern part of the Planning Area. Naval Base Ventura County (NBVC) maintains its own fire-fighting force, which is responsible for fighting fires and protecting infrastructure at the facility. It maintains a Mutual Aid agreement with VCFD for fighting fire in the areas adjacent to NBVC, Point Mugu.[33]

Assets at Risk from Wildfire

Assets (or values) at potential risk from destructive wildfire include qualities or things important to what is called "quality of life" that can be threatened with degradation, destruction, or loss. Taking stock of community and personal assets is part of a process called "risk assessment" that identifies assets and potential threats to those assets, in this case in the form of wildfire. Such an assessment provides an overview of how to approach and prioritize fire-safety actions. Assets of value in the Santa Monica Mountains include homes, infrastructure, cultural sites, wildlife habitat, natural resources, air quality, recreational facilities and areas, historical structures, and other important attributes that individual communities rely on for their well-being or appreciate in their surroundings. Neither the

[33] Salim Rahemtulla, Community Planner and Liaison Officer, Navy Base Ventura County, personal communication, April 7, 2010. See Chapter 6, section 6.2.1, for more about NBVC.

term “assets” nor a dollar figure fully conveys the community value found in such facets of life. They are the precious and in many ways unquantifiable elements that make up the quilted fabric of community life and our place in the natural world. When an area with a concentration of high-value assets comes into contact with hazardous fuels and a high fire threat, its risk of loss due to wildfire increases.

As part of the scoping and outreach effort of this wildfire protection plan, community meetings were held throughout the Planning Area between October 2009 and January 2010 to identify community assets and discuss wildfire protection efforts. These meetings provided an opportunity for residents to identify locales and structures of value to their community. Some of the key community assets and values identified at these meetings included schools, churches, fire stations, hospitals, senior centers, neighborhoods, commercial districts, golf courses, and campgrounds. *Detailed information for assets at risk in each of the 20 planning units can be found in Part II of the CWPP, the Community Fire Safety Action Plans.*

At these meetings, residents also identified local community assets that represent essential infrastructure and/or serve as important community centers. Infrastructure includes all the roads, utilities, water, and all other services provided to the residents of the Santa Monica Mountains.

The primary commercial assets in the Planning Area are located in the incorporated cities, Malibu and Calabasas. Malibu is known for its beaches and coastline, and there is a large amount of tourist-oriented development in the city. Calabasas is the most developed area in the eastern side of the Planning Area, with shopping centers and other typical commercial development. The City of Malibu is also home to Pepperdine University and HRL Laboratories LLC, formerly Hughes Research Laboratories.

There are 29 schools and educational facilities in the CWPP Planning Area, as well as three senior care centers, two urgent-care facilities, and a health center.

Cultural assets, which include prehistoric or archeological resources, historic buildings, and locations of current community importance such as parks, churches, and community centers, are an important part of creating and strengthening a community.

In addition to archeological sites, there are hundreds of locally important historic sites in the Santa Monica Mountains. These include barns, ranches, homestead sites (nearly 1,300 recorded), and local works of renowned architects. There are only two structures on the National Register of Historic Places (the Adamson House and Looff’s Hippodrome), and 15 structures on National Park Service land that are recorded in the SMMNRA’s List of Classified Structures.

A number of natural assets within the Planning Area are susceptible to wildfire, including 450 different species of vertebrates and five distinct vegetation communities. Fire also damages air and water quality. The remnant run of steelhead and possibly lamprey eel in Malibu Creek is an important natural asset and an endangered one. Chemical

fire retardants that wash into water drainages negatively affect salmon and other aquatic species. They should be kept out of critical watersheds as much as possible.

Conflicts Between Natural Assets and Human Occupation

Public and private development projects in the Santa Monica Mountains are ongoing and increasingly controversial. There is growing support for limiting human impacts among stakeholders across the board: private, public, and local governments. Regulators say that the area is "built out" and the infrastructure cannot handle much more development, yet at any given time there are scores, if not hundreds, of proposed projects on the table.

Human encroachment into highly flammable wildland areas creates a conflict that often threatens life, property, and the natural environment. At the same time, nearly all areas of the Santa Monica Mountains are aesthetically pleasing and provide an atmosphere in which many seek to live. The greatest threat generally occurs where the wildland meets the community—which is common throughout the Planning Area—although wildfire can burn down houses well inside communities, especially in the event of large ember storms.

Habitat loss as a result of human encroachment may seem inevitable in the face of continued population growth and development activities. Fire, especially human-induced fire, is extremely dangerous to the remaining natural areas in the SMM. The ability of certain species and natural communities to survive is already compromised by habitat fragmentation and competition for resources. Preventing leap-frog development, minimizing the risk that urban fires will spread to wild areas, and effective fire-fighting efforts will help reduce future impacts to the SMM.

The seemingly conflicting goals of environmental protection and vegetation management for fuels reduction continue to challenge agency managers and policy makers across the state. These concerns have been addressed in some cases with habitat conservation plans, natural community conservation plans, or multi-species conservation plans, which provide an ecosystem approach to environmental protection on a landscape level. These types of plans are an effective way to balance fire protection with environmental standards.[34] Wildfires are especially complex to manage due to the cross-jurisdictional nature of the events and the urgency of response efforts. A number of mutual aid agreements and service contracts are in place between the counties, the National Park Service, the cities, and some of the nonprofit groups in the region.

Many of the policies and regulations in existing planning documents, such as those discussed in Chapter 6, are helping to reduce the negative impact of humans on the natural environment. The actions proposed in this document aim to advance those efforts, helping to preserve the natural beauty, ecological function, and overall health of the communities in the Santa Monica Mountains.

Risk Assessment

Throughout the Santa Monica Mountains the risk of wildfire is high. All residents who live here share this risk and the responsibility to minimize it.

[34] Christopher Zimny, California Board of Forestry, personal communication, March 5, 2010.

The risk assessment undertaken for this CWPP was done at a very coarse scale. A more detailed assessment (home by home) of risks is needed at the local level. Residents can assess their own risk based on a qualitative analysis of the issues below. Fire Safe Councils, homeowner's associations, and other neighborhood organizations can do this at the neighborhood or community scale. Two methodologies are provided in the appendices. Appendix B describes the methodology used for the mapping exercise during the CWPP community meetings. Appendix L, the Home Ignition Zone Structure Assessment Guide, is a risk assessment for analyzing a specific property. A localized risk assessment in the Santa Monica Mountains would include a parcel-level analysis of the following components:

- Hardened homes: local building materials, construction, and age of structures
- Community values at risk
- Urban fuels: home landscaping and defensible space
- Hazardous trees
- Topography and location in the landscape
- Santa Ana winds and Red Flag conditions
- Community education and awareness
- Community emergency preparedness
- Community preparedness plans provided to public safety agencies
- Sources of local ignitions
- Ingress and egress routes
- Water sources
- Existing fuel reduction
- Impact of surrounding wildlands/vegetation
- Post-fire effects (e.g. erosion, invasive species, etc.)

Every home contributes to the resiliency of an entire neighborhood or community and the collective ability to withstand the damaging effects of wildfire. Residents can lower their own wildfire risk and that of their neighbors by implementing the best management practices for hardening homes, improving defensible space within the home ignition zone, and following the "Ready, Set, Go" guidelines, all described in Chapter 4. In summary, this means residents should:

- Build homes in a safe location,
- of nonflammable materials consistent with the current WUI building standards,
- with fire-safe design features that strongly resist ignition by embers,
- surrounded by defensible space with fire-safe landscaping in the home ignition zone,
- in a whole community that was laid out with fire safety in mind,
- that includes adequate evacuation (ingress and egress) routes, and
- has good communication within and beyond the neighborhood.

The following factors were analyzed for this risk assessment. They are based on a qualitative scale from low to very high, with very high meaning the most risk. In the case of fire protection support, a lower rating signifies higher risk.

Assets at Risk

Given the combination of very high land values and the high-quality, rare Mediterranean ecosystem, the entire Santa Monica Mountains area is given a **high** asset rating. All neighborhoods and population centers are assumed to be equally important local assets and values. *For more information on assets at risk, see Chapter 7, section 7.1.*

Fire Hazard Severity

Fire hazard is a measure of the likelihood of an area burning and how it burns (e.g. intensity, speed, and embers produced). The entire Planning Area is classified as "Very High Fire Hazard Severity Zone," by CAL FIRE, a designation adopted by both Los Angeles and Ventura counties. Fire risk, on the other hand, is a measure of the potential for damage. The fire hazard zoning ratings are based only on fire hazard, without considering the value at risk.[35] Given this designation, the entire Planning Area was given a **very high** rating throughout. *For more information on Fire Hazard Severity ratings, see Chapter 3, section 3.4*

Risk of Wildfire Occurrence

"Risk of wildfire occurrence" refers to the possibility of a wildfire occurring. Based on the frequency and variety of human-caused ignitions, and the resultant extensive fire history of the Santa Monica Mountains, the risk of wildfire occurrence in the entire Planning Area is rated **very high**. *For more information on wildfire risk, see Chapter 3, section 3.1, "Fire History."*

Structural Ignitability

Structural ignitibility means the ability of structures, especially homes, to burn. It is generally tied to the age of a given development (or structure), with newer developments built to the current or recent WUI building codes receiving a "low" designation. Older wooden homes generally have higher structural ignitability than newer homes, unless they have been retrofitted to current WUI building standards. The complete range from **low to very high** structural ignitability is found throughout the Santa Monica Mountains, although most homes tend toward higher structural ignitability. *For more information on structural ignitability, see Chapter 4, section 4.1.1, "Hardened Homes."*

Urban Fuels

"Urban fuels" in this risk assessment generally refers to anything that can burn—including ornamental vegetation—that is surrounding a structure, and often directly adjacent to and including homes. The presence of urban fuels in the home ignition zone within the Santa Monica Mountains is one of the most relevant factors determining whether or not a structure will burn, distinct from the structural ignitability of the house itself. There are individual homes where urban fuels are low; however, **very high** levels of urban fuels are generally found throughout the Santa Monica Mountains, and this threatens everyone. *For more information on urban fuels, please see Chapter 4, section 4.1.3, "Urban Fuels."*

[35] www.fire.ca.gov/fire_prevention/fire_prevention_wildland_zones_development.php

Evacuation Vulnerability

A critical factor in the Santa Monica Mountains is the ability for residents and their animals to safely evacuate. Due to the steep topography and population density, the existing road infrastructure is marginally adequate under normal conditions. There are very few primary and secondary access routes; they are mostly narrow, winding roads. Hence, early evacuation significantly increases residents' ability to leave safely, while also reducing road congestion. Later evacuations limit travel routes and safe destinations. Therefore, evacuation vulnerability in the SMM is **very high**. *For more information on evacuation, please see Chapter 4, section 4.2.3, "Go: What to Do During Wildfire—Evacuating Safely."*

Fire Protection Support

Fire protection support is based on the ease of fire engine access to homes, and adequate water supply and pressure. It is dependent upon sufficient defensible space around structures and timely evacuations by local residents. Access is related to the fire codes at the time of development, the steep and windy terrain, and the high potential for road blockage. Water limitations are always present throughout the Santa Monica Mountains. Adequate defensible space allows firefighters the ability to protect a home safely. Timely evacuation allows firefighters to focus solely on structure protection. Local fire agencies have a high capability of providing fire protection, if access, water, defensible space, and timely evacuation are present. However, these four factors are highly challenging in the Santa Monica Mountains, making support for fire protection often **low**. *For more information on access, water supply, defensible space, and evacuation, see Chapter 4.*

Chapter 7 details assets at risk and the risk assessment.

VI. Fire Safety Begins at Home

Santa Monica Mountains residents can make a significant impact in their ability to survive wildfire. Of all the things a homeowner can do to be ready for wildfire, two of the most critical elements of fire-safe preparations are **defensible space** within the **home ignition zone** (see below) and the **building materials** of the home. Studies done after many large fires continue to conclude that homes built to "ignition-resistant" standards have a much higher fire survival rate than those that don't. Combining these ignition-resistant features with up to 100 feet of defensible space around the building will dramatically improve the likelihood that a structure will still be standing after a wildfire passes by—even if firefighters are unable to stay and actively protect it.

According to the Los Angeles County Fire Department:

> "Defensible space is the area around a structure free of flammable plants and objects that creates a zone in which firefighters can operate safely in order to help protect a home during a wildfire. This space is wide enough to prevent direct flame impingement and reduce the amount of radiant heat reaching the structure. The defensible space for each structure varies, depending on the type of vegetation and topography."[36]

[36] County of Los Angeles Fire Department (2009), "Ready! Set! Go! Your Personal Wildfire Action Plan," p. 4. www.fire.lacounty.gov/safetypreparedness/ReadySetGo/pdf/Ready%20Set%20Go%2009.pdf

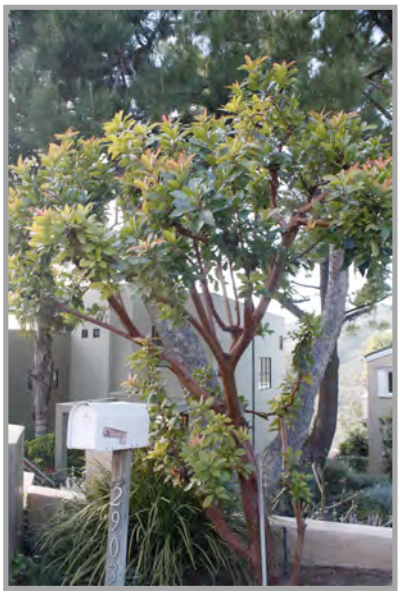
It's the fuels closest to a home—including the home itself—that often make the difference between surviving a wildfire, or not. Chapter 4 details preventative actions that can help residents be an asset during a wildfire.

Reducing Fuels

The creation or augmentation of defensible space mainly involves reducing or eliminating the presence of combustible material near a structure. These "urban fuels" include flammable landscaping, dead leaves and other vegetation, mulch, wood piles, lawn furniture, toys, anything flammable stacked against or near a house, and other items potentially vulnerable to fire in the immediate vicinity of a home. The general principle behind making an area "fire safe" (making it as safe as possible for when a fire does pass through) is to reduce the amount of fuel that a fire could consume and to modify its arrangement. Put simply, you do not want anything near your home that could burn and eventually ignite your home.

As fire moves across the landscape it will go wherever there are continuous fuels. If fuels have "horizontal continuity" (they are closely connected or adjacent; called "surface fuels" when on the ground), then fire will spread readily through them even without a wind to push it. If fuels have "vertical continuity" (connected above and/or below; what firefighters call "ladder fuels"), fire can move up from the ground into higher fuels such as tree canopies and rooftops. Modifying fuels to avoid this type of spread is critical to keep in mind in terms of what is surrounding your home. Create physical space between fuel layers whenever possible. The point is that in the event of a wildfire, there will be limited fuels adjacent to a structure to carry the fire to it.

Start your fuel reduction closest to your house, removing anything flammable that could eventually transmit fire directly to your house. From there, "feather" or spread out your treatments as you get further from your home. In most cases, you will only need to treat urban fuels close to your house, and you can leave the native vegetation to provide habitat and all its other ecosystem functions.



Landscaping should not include flammable vegetation, nor plants that require a lot of water. Too much irrigation encourages weeds, which can increase fire hazard—not to mention the scarcity of water resources in southern California. Learn which plants are drought-tolerant and least flammable.[37] When you put "the right plant in the right place," especially in the first 50–100 feet from a home, you gain the benefits of landscaping without the undue risks. It's often this vegetation that puts a home most at risk, not the outlying native vegetation.

Being "ready" for wildfire means "hardening" your home or other structure (see immediately below) and creating a fire-safe landscape as described in Chapter 4. It also means ensuring that your home is a safe place for firefighters should they need to help protect it in a wildfire event. A fire engine needs to be able to turn around to leave. If they cannot safely get the engine in and out, that makes your home less defensible. This is in addition to fuel-reduction treatments of at least 10 feet on both sides of the road. There should be plenty of places on the road where vehicles can pass each other, i.e., adequate turnouts.

Firefighters use the terms "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

[37] See Appendix J: Fire Resistant Plants of the Santa Monica Mountains

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. 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 attempt to save something that is marginally defensible. If you are ready, then chances are good that your home will be a "winner."

Recent 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 feet of the home. This relatively limited area that determines home ignition potential can be called the **"home ignition zone."** This is a concept introduced by Dr. Jack Cohen[38] of the US Forest Service Rocky Mountain Research Station, a recognized leader in the science of how homes burn. Dr. Cohen's research of fires from the 1960s to the present reveals that more than 80% of homes with at least 30 feet of defensible space and a fire-resistant roof have survived wildfires.[39] Consequently, it's the work done in the home ignition zone to reduce flammability that can make the difference between a structure surviving a fire and being consumed.

Controlled experiments by Dr. Cohen and many field observations corroborate what we know about the physics of radiative heating by wildfire: because radiative heating decreases as a function of distance from the heat source squared, there is very little additional fire safety to be gained by fuel clearance beyond 100 feet from a structure.[40] If a structure is highly resistant to ignition by embers (appropriately constructed), then good fuels management in the first 100 feet should allow it to survive a wildfire under most circumstances.

Not to be forgotten is the fact that **your house is a potential fuel source.** Be conscious of fire in all your actions, from backyard BBQs to weed whacking. Avoid landscaping with flammable plants and regularly remove dead material. Replace wood shake roofs with fire-resistant materials. Don't forget propane tanks and other fuel-storage areas, which should be sited at least 30 feet from a home. Don't let your home be part of the problem. Your actions can make a significant difference!

"Hardening" Homes

Proactive fire-safety steps should first and primarily focus on the "home ignition zone" described above *(see also Chapter 4 for details).* Higher levels of fuel reduction should be concentrated adjacent to structures and along main roads, key ridges, secondary roads, spurs, and other strategic areas. In the Santa Monica Mountains, research and experience have shown that the most effective strategy for residents is to start at their homes, prepare them to sustain a wildfire, and then begin working out from the home in the surrounding vegetation and other fuels (if necessary). This approach is referred to as "from the house out." Chapter 4 explains what treatments are most appropriate in each of these zones as one moves further away from the house.

[38] www.fs.fed.us/rm/publications/titles/journals_cohen.html

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

[40] Robert Taylor, National Park Service, personal communication, February 2010.

Ensuring that homes are constructed (or remodeled) in a fire-safe manner—or "hardened"—is a critical step. This means that it is specifically built or improved to withstand a certain amount of wildfire exposure. It does NOT mean fireproof but rather that the weakest parts of the home's vulnerabilities have been protected with proven building materials or techniques to resist some heat and flame along with the ember storm that accompanies large wildfires. **The law now requires fire-safe construction for all new structures as well as any major remodels of 50% or more square footage in communities in the wildland-urban interface, especially those in Very High Fire Hazard Severity Zones, which includes all of the Santa Monica Mountains**.[41] Fire-resistant building materials and appropriately designed structures offer the best chance for enduring a wildfire event. While it is easier to construct a new home to a "fire hardened" standard, it is also possible to dramatically improve an existing home's resistance to wildfire.

Source: NPS/SMMNRA

It's important to realize that the actual cause for most homes burning is not the fire front or wall of flames but the presence of wind-carried embers or "firebrands" in combination with sufficient fuel to ignite. This is one of the biggest threats (possibly the greatest threat) to a structure during wildfire. When wildfires rage in extreme conditions they send burning embers miles ahead of them; these so-called firebrands ignite new fires. Fire-safety actions and ignition-resistant tactics don't aim to create a fireproof bunker but rather to "harden" a home against the most likely threat: this ember storm that often accompanies wildfire.

"Harden" means to take steps that will reduce ignition possibilities, such as clearing away flammable material and thinking about places where embers might get stuck or gain entry to the home's interior (see list below). Pay attention to small details like gaps between boards, vents with air holes, or places where embers can pile up and become glowing beds of coals. Meanwhile, it's essential also to maintain the surrounding defensible space. Vegetation fuel management must go hand-in-glove with ignition-resistant building construction to maximize the effectiveness of fire loss mitigation measures.

One of the most common misconceptions is that buildings burn randomly during wildfire events—this is not often the case. Homes that are vulnerable have a greater likelihood of burning. Part of learning to live with wildfire is understanding that residents have a lot of control about how to address this vulnerability and prepare and manage fire in individual communities.

What is a "Hardened" Home?[42]

ROOFS. A roof is the most vulnerable surface on any structure for embers to land, lodge, and start a fire; this includes roof valleys, open ends of barrel tiles, and rain gutters.

Once the roof covering ignites, chances are very good that the rest of the home will follow. If you have a shake (wood shingle) 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 a wooden roof and wood gutters.

[41] California Health and Safety Code, section 13108.5.

[42] County of Los Angeles Fire Department (2009), "Ready! Set! Go!" p. 5. www.fire.lacounty.gov/safetypreparedness/ReadySetGo/pdf/Ready%20Set%20Go%2009.pdf

EAVES. Embers gather under open eaves and ignite exposed wood or other combustible material.

VENTS. Embers enter the attic or other concealed space and ignite combustible materials. Vents in eaves and cornices are particularly vulnerable, as are any unscreened vents.

WALLS. Combustible siding or other combustible or overlapping materials provide a surface and crevice for embers to nestle and ignite.

WINDOWS AND DOORS. Embers can enter gaps in doors, including garage doors. Plants or combustible storage near windows can be ignited from embers and generate heat that can break windows and/or melt combustible frames.

BALCONIES AND DECKS. Embers collect in or on combustible surfaces or undersides of decks and balconies, ignite the material, and enter the home through walls or windows.

The top three building features to focus on are roofs, vents, and decks. Replacing those with appropriate materials and having defensible space will *greatly* enhance a home's chance of surviving that wildfire when it comes. To harden your home even further, consider protecting it with a residential fire sprinkler system. In addition to extinguishing a fire started by an ember that enters the house, it also protects you and your family 24/7, year-round, from any fire that may start in your home, not just wildfire.

In California, the most important fire-safe recommendations related to home construction became law in 2003, with updates in 2007. The California WUI Building Standards (and their Los Angeles and Ventura County-specific counterparts) are a new and evolving set of building requirements designed to be used in conjunction with adequate defensible space. These building standards are part of the California Building and Fire Codes that all jurisdictions must use. They are updated every three years so they may change from time to time. One such change is in process right now—the current state codes are being revised effective January 1st, 2011, and will update the WUI Building Standards to keep pace with the latest products, research, and testing.[43] *For the latest information on these Standards, see www.fire.ca.gov/fire_prevention/downloads/2007_CBC_Ch7A.pdf.*

There are a growing number of products on the market designed just for wildfire safety. Be sure all fire-safe building products you use carry the State Fire Marshal's approval. For a copy of the new *Wildland-Urban Interface Products* handbook to see which products have been approved by the State Fire Marshal to harden your home, please visit: *www.osfm.fire.ca.gov/strucfireengineer/pdf/bml/wuiproducts.pdf.*

Other resources are:

Builders Wildfire Mitigation Guide,
http://firecenter.berkeley.edu/bwmg/decks-1.html

FEMA Wildfire Building Mitigation Guide,
http://www.fema.gov/mitigationbp/bestPracticeDetailPDF.do?mitssId=5146

Is Your Home Protected From Wildfire Disaster? A Homeowner's Guide to Wildfire Retrofit is a bit dated but remains a great introductory resource.
www.firewise.org/resources/files/wildfr2.pdf

There are many great online resources for fire-safe construction, several

[43] California Health and Safety Code, section 13108.5.

through the University of California, Berkeley. The **Homeowners Wildfire Mitigation Guide**[44] has an easy-to-use format explaining the different areas of the home and what to do to make each one fire safe. Their **Builders Wildfire Mitigation Guide** (see above) has more information for those building or remodeling a home.

VII. Taking Action in the Santa Monica Mountains to Coexist with Wildfire

Chapter 8 of this CWPP outlines both specific and broad-based actions that can be taken to advance fire safety in the Santa Monica Mountains region. These are focused principally in human communities and around individual homes, where the greatest impact can be made in terms of protecting structures from wildfire. Part II of the CWPP is more specific, considering and recommending locally focused actions for the twenty individual planning units, based on input from the community meetings for this plan. These 17 Community Fire Safety Action Plans contain a background description of each area and its various neighborhoods, including the local fire environment, and identify a set of proposed actions that residents and neighborhood organizations can take to make their homes and neighborhoods fire safe.

See Chapter 2 of the CWPP for more on the planning process, and Part II for the individual Community Fire Safety Action Plans.

This section is a brief overview of major features of the action plan, accompanied by a table, (see page 30) listing specific actions and directives for advancing the aims of this CWPP. The latter is based on data gathered at community meetings, the research and analysis done for this CWPP, and collaboration with local agency personnel. There is some redundancy with previous sections of this Executive Summary in order to illustrate recommendations and reiterate important points.

Educate and Assist Homeowners to Reduce Urban Fuels and Improve Building Resistance to Wildfire

Source: Horizon Hills FSC, NPS/SMMNRA

This Community Wildfire Protection Plan endeavors to show that the most effective wildfire survival strategy in the Santa Monica Mountains is to ensure that homes and the surrounding "home ignition zone" are adequately prepared to survive wildfire.

Chapter 4 details specific actions residents can take around their homes to create a fire-safe landscape while conserving the surrounding environment. **Defensible space** is created by reducing fuel connectivity in the zone within 100 feet of a structure—i.e., removing most flammable materials and reducing fuel connectivity. Hand in hand with reducing urban fuels are efforts to **reduce structural ignitability by hardening homes** to withstand wildfire passage. Reducing the chance that structures will burn is a fundamental component of any fire safety plan.

Fuel treatments along **driveways and road systems** should be considered a high priority. The main objective for ingress-egress corridors is to create a defensible perimeter along and adjacent to all roads and driveways to ensure safe evacuation. These access routes are also where a

[44] http://groups.ucanr.org/HWMG/index.cfm

fire could decrease in intensity and provide safer access for firefighters. When treated, roads serve important functions as natural fuelbreaks, as well as anchor points for tactical fire-suppression activities. Roads can be a potential ignition source for wildfires (from vehicles and people). Fuel-reduction treatments along driveways and road corridors benefit multiple landowners in the event of a wildfire; thus providing an opportunity for community planning and collaboration.

Throughout the Santa Monica Mountains, key ingress and egress routes are made vulnerable by the presence of hazardous trees along roadways, and this was mentioned in many community meetings. Thus a **hazard tree management program** such as that implemented in Horizon Hills and West Hillside would benefit many neighborhoods where large eucalyptus, pine trees, or palms overhang roads and could quickly ignite and block access during a wildfire. Hazardous trees are found scattered throughout neighborhoods, in many instances directly adjacent to homes. In many locations, hazardous trees will need to be removed. In other areas, the trees only need to be thinned, or "limbed up." Hazardous trees were identified at each of the community meetings and their locations pinpointed on the maps for each of the planning nits. Details are included in the Community Fire Safety Action Plans in Part II of this CWPP.

Implementing **community chipping programs** to dispose of slash material is a good way to clean up areas by working together.

Reduce the Risk of Wildfire

Steps can be taken to reduce the possibility of local fires starting and spreading into a wildfire conflagration. To do this will require commitment and coordination from all residents and stakeholders in the Santa Monica Mountains. For example, heavily loaded power lines blowing down in high winds is a known cause of wildfire here. The cost to bury power lines is prohibitive. However, when compared to home values in many neighborhoods, and the ability to share the cost over a long time period, the benefits become clearer.

Arson is a major risk. Community Arson Watch was started in the Santa Monica Mountains in 1982. Currently there are six teams in place throughout the area. Every community—especially those bordering wildlands—should have an active Arson Watch program. For more information, visit www.arsonwatch.com or call 310-455-4244. Several known "party spots" were identified on the community meeting maps throughout the Planning Area. Patrolling these known sites should be a part of any Arson Watch program.

Enhance Fire Protection

Wildfire incidents create the need for emergency-support facilities, such as incident command centers and staging areas. There are many pre-established locations, although circumstances may prevent their use. Therefore, an ongoing search for suitable sites is needed.

Very few wildland Type III fire engines are stationed in the Santa Monica Mountains, yet these would function well in many of the remote and geographically challenging locations found here.

Information gathered at the CWPP community meetings will augment existing data that fire departments now use to locate resources for fire protection. Locations of pools and gates, warnings about known road issues, as well as high-risk and hazard areas can help local and out-of-town firefighters to protect residents. Gates can pose a serious obstacle to safe and effective evacuation. Automatic gates that do not open during power outages are especially dangerous. Homeowners need to be educated about the importance of easily passable gates during emergencies. Organized neighborhoods, through Fire Safe Councils or homeowner's associations, can assist fire protection agencies in these efforts.

Ensuring water supply is critical for successful fire suppression. Ventura County's current minimum fire-fighting water requirement for small homes that are on a private system is 5,000 gallons of accessible water. Larger homes require more storage. As described in Chapter 4, similar standards are in place in Los Angeles County. Rural residents ideally would have up to 10,000 gallons of available water for structural fire protection. Chapter 4 identifies several options for water storage. More water storage and local water conservation measures are critical to ensure that residents and firefighters have adequate water to suppress a fire.

The water systems in the Santa Monica Mountains are designed to provide adequate water for structural fire fighting. During wildland fires, domestic water supplies are used for structure protection (meaning protecting multiple structures) as well as for wildfire suppression. This combination stresses local systems. Additional water resources are needed for wildland fire fighting. Augmenting water storage that is not for domestic use will help wildfire suppression efforts. See the Wildfire Environment section for each Community Fire Safety Action Plan in Part II for more localized information on water resources in the coastal communities of the Santa Monica Mountains.

Roads provide emergency response access to county residents, and it's necessary to **upgrade road access** in some areas in advance of crisis events. Where bridges are narrow or unstable, or landslides result in limited passage, fire trucks and other emergency vehicles are slowed in their response. Several areas were identified in the community meetings as needing bridge or road repair work. These are shown on the meeting maps for each planning unit; see Part II. Some roads need to be designated as community evacuation routes and built/improved/maintained and potentially signed as such.

Throughout the Planning Area, firefighters and other emergency personnel are faced with the challenge of finding homes quickly and safely during an emergency. **Properly signed roads and structure addresses are vital,** especially when firefighters are not local. Existing city and county standards must be enforced that require streets and homes to be visibly addressed. These standards mandate that signs be four inches high, with a contrasting backing, and in accordance with the California Building Code.

Develop Evacuation Plans

Many neighborhoods in the Santa Monica Mountains have limited evacuation options. All evacuation sites and routes are driven by the specific incident. Community members used their local knowledge to identify potential evacuation routes and safe areas on the maps at the 2009–2010 community CWPP meetings. The identified safe areas now need to be reviewed by local law enforcement and fire agencies for potential use.

If residents are trapped because their escape is cut off and the fire is already at their location, there are steps to take to increase the chance of survival. These steps are outlined in "Ready, Set, Go."[45] This differs tremendously from sheltering in place, which is not recommended, and is only feasible on the advice of public safety officials. Residents must understand that the consequences associated with sheltering in place extend beyond the individual and threaten firefighter safety and overall suppression effectiveness.

Several community ideas were generated regarding the most effective ways to **communicate evacuation information to the public**. An example project is to GPS the locations and elevations of safe areas, put them and instructions on "pocket card" to distribute to local residents and post on the Internet. Several areas were identified that have problems with cellular service. Improvements to those areas would facilitate emergency communications.

Effective evacuation planning depends on residents being prepared. This is especially important for families with small children, and elderly and disabled citizens. Residents in remote areas of the Santa Monica Mountains must be especially prepared for evacuation. To this end, all residents should create a Family Disaster and Evacuation Plan. Information is available from the American Red Cross at: *www.redcross.org/preparedness/cdc_english/evac-plan.html* regarding how to do family disaster planning, and *www.redcross.org/preparedness/cdc_english/evac-1.html* for how to create a family evacuation plan. Additional information is available from the Department of Homeland Security at: *www.ready.gov/america/index.html*.

In both Los Angeles and Ventura counties, the "Ready, Set, Go" programs provide basic information on emergency preparedness.[46] See Chapter 4 or the fire safety links in Appendix H for links to those documents.

Many residents in the Santa Monica Mountains have pets, large animals (especially horses), or both. A system of **evacuation plans and sites for pets and large animals** needs to be developed to address this need. Many shelters will not allow animals other than assistance or service dogs. The Red Cross and Humane Society are two good resources on this subject; see *www.humanesociety.org/issues/animal_rescue/tips/disaster_preparedness_pets.html* for more information. The newly released Los Angeles County "Emergency Survival Guide" contains excellent information for taking care of horses in an emergency.[47] In Ventura County, the Animal Regulation Department offers a website[48] with information on animal evacuation, another website specific for horses,[49] and a brochure entitled "Disaster Planning for Livestock Owners."[50]

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[45] Los Angeles County: www.fire.lacounty.gov/safetypreparedness/ReadySetGo/pdf/Ready Set Go 09.pdf, Ventura County: http://fire.countyofventura.org/LinkClick.aspx?fileticket=9hQO1rR_ezw=&tabid=231

[46] Los Angeles County: www.fire.lacounty.gov/safetypreparedness/ReadySetGo/pdf/Ready Set Go 09.pdf, Ventura County: http://fire.countyofventura.org/LinkClick.aspx?fileticket=9hQO1rR_ezw=&tabid=231

[47] Southern California Association of Governments (2010), www.scag.ca.gov.

[48] http://portal.countyofventura.org/portal/page/portal/animalreg/EVAC/

[49] http://fire.countyofventura.org/Prevention/FireLifeSafety/HorseSafety/tabid/190/Default.aspx

[50] County of Ventura, Animal Regulation Department, *"Disaster Planning for Livestock Owners,"* http://portal.countyofventura.org/portal/page/portal/animalreg/Documents/livestock.pdf

The difference between being prepared for emergencies or not can literally be the difference between life and death. Community Emergency Response Teams (CERT) are "an organization of volunteer emergency workers who have received specific training in basic disaster response skills, and who agree to supplement existing emergency responders in the event of a major disaster."[51] CERT trainings **build basic disaster response skills** in fire safety, search and rescue, team organizing, and medical operations pertaining to disasters. Such skills become extremely valuable in situations where professional responders cannot act immediately. All four local governments (Los Angeles and Ventura counties, Malibu, and Calabasas) offer CERT trainings. There are CERT teams in place throughout the Santa Monica Mountains. Every neighborhood or homeowner's association in the Santa Monica Mountains should have at least one certified CERT team.

Law enforcement, fire departments, and related agencies have a well-rehearsed process for communication among first responders. Issues remain regarding how to effectively and rapidly alert residents in the most remote areas. Options need to be explored to improve emergency communication in these areas. Social networking options, such as Facebook and Twitter, while not infallible, are proving their usefulness in rapid and effective communication when normal networks may not be functioning. Using these communication tools should be fully explored.

In remote rural neighborhoods or communities, **phone trees** can be an effective local strategy for disseminating information quickly, as long as they are maintained. Homeowner's associations, road associations, and local schools are all good venues for setting up a phone tree. Simple steps regarding how to establish a phone tree can be found at: www.ehow.com/how_4325_set-emergency-phone.html. Two commercial options for doing this are available through One Call Now[52] and Call-Em-All.[53]

There are mass notification systems available for all residents in the Santa Monica Mountains. This is a service provided by local governments to call residents in the case of an emergency in their community. Residents are encouraged to register both their home and cellular phone numbers at the following websites:

- Unincorporated Los Angeles County—www.alert.lacounty.gov
- Unincorporated Ventura County—http://portal.countyofventura.org/portal/page/portal/cov/emergencies/reverse911/reverse911register
- City of Malibu—www.ci.malibu.ca.us/index.cfm/fuseaction/DetailGroup/navid/471/cid/11670/
- City of Calabasas—www.cityofcalabasas.com/departments/PublicSafety/AEN.html.

Promote General Fire-Safe Education

Many people are enthusiastic to create a fire-safe home once they understand why it is to their advantage. To this end, educational programs targeted at local residents can be very successful. A number of education/information program ideas were proposed by community members through this CWPP process.

[51] http://en.wikipedia.org/wiki/Community_Emergency_Response_Team.

[52] www.onecallnow.com

[53] www.callemall.com

Educational programs in the **local schools** are a great way to get the word out about fire safety and emergency preparedness. The National Park Service has developed a local curriculum, "Studies of Wildland Fire Ecology."[54] Community projects such as fire-safety education signs created by local schoolchildren are very effective. These informative signs can be placed in highly trafficked hazard areas throughout the community to educate residents and visitors regarding the potential fire risks associated with their activities and encourage them to be fire safe.

The Santa Monica Mountains experience large influxes of **tourists** visiting the area each year, especially during fire season. These visitors often do not have experience with fire in the wildland-urban interface. Educational programs are needed targeting the tourism, development, and real estate industries, as well as their clients.

Integrate Fire Safety and Wildlands Conservation Efforts

Malibu Creek is home to one of the last remaining runs of endangered southern steelhead in southern California and possibly lamprey eel. Wildfire and its associated prevention and suppression activities can quickly threaten the viability of these populations. Therefore, these activities need to be done with an awareness of their potential impact on threatened populations. Canopy cover changes associated with riparian vegetation losses can increase water temperatures during already warm, stressful summer conditions, with resulting algal spikes and reduced food availability.

Source: NPS/SMMNRA, LA Times

The Santa Monica Mountains are also home to populations of bobcats and mountain lions who may be limited in their ability to leave a burning area because of fragmented habitat and movement barriers.

Finally, in addition to providing many important benefits to the local ecosystems, native oak trees are a proven heat and ember sink during wildfire, meaning that a large tree's branches are capable of catching and absorbing or neutralizing flying embers without being consumed themselves. Planting of oaks in appropriate places throughout the Santa Monica Mountains would provide multiple benefits.

Assess Risks at the Local Level

This CWPP focuses on wildfire prevention and community fire safety at the scale of the Santa Monica Mountains region. More intensive analysis is needed at the local level for all the communities included in this CWPP. The Community Fire Safety Action Plans found in Part II are a beginning for that local analysis. These documents can be used by local Fire Safe Councils and homeowner's associations to do a more detailed neighborhood or community-level risk assessment. A community mapping process similar to that used in the planning stages for this CWPP could be employed at that level, as has already been undertaken by residents in the PO Tract area of Topanga Canyon. Appendix B has detailed instructions for the mapping exercise, and Appendix L a form to assess individual properties.

[54] National Parks Labs (July 2001), Studies of Wildland Fire Ecology, National Park Service Santa Monica Mountains National Recreation Area. www.nps.gov/samo/forteachers/upload/FireEcologyManualsm.pdf. NOTE: Some sections of this curriculum are out of date, such as Section 11.

Working Together

The existence of the Fire Safe Councils (see Chapter 1) and related community-based organizations in the Santa Monica Mountains is a critical element in collaboratively creating and implementing fire-safe communities here. These FSCs and associated community organizations such as homeowner's associations will ultimately determine the effectiveness and success of this plan. Hence, ongoing **support for and participation in local Fire Safe Councils is fundamental both for their development and for the success of local fire-safety efforts**. The Community Fire Safety Action Plans developed for the CWPP planning units *(see Part II)* can function as the basis for an operating plan for FSCs and related groups.

The Santa Monica Mountains Fire Safe Alliance is a cooperative group of agencies, municipalities, communities, and private citizens who are dedicated to creating fire-safe solutions for the Santa Monica Mountains. As a collaborative group, they are well positioned to provide leadership for many of the efforts outlined in this CWPP, especially those concerning public-private communications and education. *(See Chapter 6, Section 6.5 for details.)*

The SMM Fire Safe Alliance has recently produced *A Road Map to Fire Safety: How to Create Defensible Space in the Santa Monica Mountains.*[55] This document can be used as a basis for a community fire-safety educational program.

Santa Monica Mountains Community Wildfire Action Plan

The table below (from Chapter 8) organizes various ideas and directives for improving fire safety in the Santa Monica Mountains. Actions are grouped under larger work and education categories. Each includes the lead organizations and/or Plan Partners to implement each item. Action items are then ranked in terms of **S**—short (one to two years), **M**—medium (two to five years), **L**—long (five to ten years), and/or **O**—ongoing implementation priority, as well as ease of implementation. Note: Actions that are more specific to a particular neighborhood, are generally listed in the Fire Safety Action Plans in Part II of this CWPP.

In an ideal world, all these action items would be implemented expeditiously. Although it is the intention of CWPP authors and signers that all the action items in this document be implemented as so designated, implementation will need to be carried out subject to the availability of funds and other resources.

FIGURE 1. SANTA MONICA MOUNTAINS ACTION PLAN SUMMARY

CATEGORY	ACTION ITEM
CREATING FIRE SAFE COMMUNITIES: EMPOWERING RESIDENTS TO TAKE RESPONSIBILITY	
	Coordinate regional efforts to focus on a defensible-space "from the house out" strategy, empowering residents to create fire-safe communities in the Santa Monica Mountains. — Plan Partners, Fire Safe Councils, homeowner's associations, and residents. **(S)**

[55] www.fire.lacounty.gov/Forestry/RoadMaptoFireSafety.pdf

CATEGORY	ACTION ITEM
FIRE SAFE COUNCILS	Form Fire Safe Councils to coordinate community wildfire preparedness efforts. — Neighborhood groups and homeowner's associations. **(S, O)**
	Work with local Fire Safe Councils to develop ongoing financial and in-kind support—including organizational development, technical support, fundraising, and training—to ensure their long-term sustainability and autonomy. — Public and private-sector organizations, agencies, and individuals. **(S, O)**
	Lead community efforts to implement projects proposed in the Community Fire Safety Action Plans in Part II of this CWPP, using the Project Implementation Matrix[56] to track efforts from Plan Partners. Seek technical support from Plan Partners. — Fire Safe Councils, homeowner's associations, and other community-based organizations. **(S, O)**
	Work with community members and with local, state, and federal agency partners to evaluate existing and develop new local fire-safety strategic plans, using these Community Fire Safety Action Plans as a basis. More detailed plans should include identification of an appropriate long-term management structure, funding sources, a localized risk assessment,[57] and priority wildfire risk and hazard-reduction projects. — Fire Safe Councils. **(M)**
	Collaborate to foster new and support existing Fire Safe Councils in the Santa Monica Mountains. — California Fire Safe Council, Los Angeles County Fire Department Forestry Division, National Park Service, Ventura County Fire Department, University of California Cooperative Extension, and other interested partners. **(O)**
HARDENING HOMES TO SURVIVE WILDFIRE—REDUCING STRUCTURAL IGNITABILITY	
IMPLEMENTING WUI BUILDING STANDARDS	Educate Santa Monica Mountains residents on current WUI building standards and the products approved by the State Fire Marshal's office. — SMM Fire Safe Alliance, Fire Safe Councils, homeowner's associations, and community development/planning and building departments. **(S, O)**
	Create and implement educational programs on hardening homes in the Santa Monica Mountains, including the possibility of a WUI building products fair. — Fire Safe Councils in coordination with Plan Partners. **(M)**
	Utilize planned "Fire-Safe Demonstration Building" to showcase fire-safe building materials and retrofit products. — Los Angeles County and Resource Conservation District of the Santa Monica Mountains. (**S)**
	Work with State Fire Marshal-approved WUI building product vendors to create discounted wholesale purchases and installation of products to harden homes at the neighborhood scale. — Fire Safe Councils and homeowner's associations. **(S, O)**
	Explore parallel incentive programs that can also finance upgrading homes to current WUI building standards. — SMM Fire Safe Alliance, counties, and cities. **(M)**

[56] See Chapter 9.

[57] See Chapter 7, section 7.3.

CATEGORY	ACTION ITEM
REDUCING URBAN FUELS	
REDUCING FUELS AROUND HOMES AND OTHER STRUCTURES	Implement best management practices to reduce urban fuels within the home ignition zone around all structures, and on all residential parcels. — Santa Monica Mountains residents, resource professionals, landscape architects. **(S, O)**
	Provide information and/or resources to help residents reduce urban fuels around their homes and in their neighborhoods. — SMM Fire Safe Alliance and Fire Safe Councils. **(S, O, ★)**
	Coordinate conservation and fire-safety objectives in educational programs, including promoting options for conserving water, and incentives to replace exotic plants with native species. — Resource Conservation District of the Santa Monica Mountains, University of California Cooperative Extension (UCCE), water districts, and others providing community fire-safety education. **(O)**
	Develop programs to reduce urban fuels for elderly and disabled residents who are not able to do this for themselves. — Fire Safe Councils, homeowner's associations, senior centers, schools, and other community and social service organizations. **(S, O)**
	Conduct workshops to train homeowners, fire department clearance inspectors, vegetation management contractors, land managers, landscape designers and architects, and insurance inspectors in techniques for low-impact, sustainable fire-risk reduction. — UCCE and other Plan Partners. **(S)**
	Identify and maintain public locations within the Santa Monica Mountains to be models for fuel reduction in the home ignition zone, based on the Conservation Principles and best management practices outlined in this CWPP. — Public agencies. **(M, O)**
	Work with the local insurance industry to provide education on appropriate local fuel-reduction practices, and materials for them to share with policyholders. — SMM Fire Safe Alliance, Fire Safe Councils, and homeowner's associations, and community development and planning departments. **(S)**
	Work to create an incentive program for drought-tolerant and fire-resistant landscaping, based on the Long Beach model. — Water districts, Plan Partners. (**M)**
HAZARD TREE MANAGEMENT PROGRAM	Develop and implement community-scale hazardous tree removal and thinning programs for all communities in the Santa Monica Mountains. — Local Fire Safe Councils, homeowner's associations, and residents. **(M)**
	Work with neighbors to pool resources to manage individual hazardous trees in neighborhoods or negotiate discounted rates to manage several in an area at a one time. — Local Fire Safe Councils and homeowner's associations. **(S)**
COMMUNITY CHIPPING PROGRAM	Explore implementing a local chipper program. — Fire Safe Councils, homeowner's associations, and neighborhood organizations. **(M)**

CATEGORY	ACTION ITEM
ASSESSING RISKS AT THE LOCAL LEVEL	
	Perform a basic risk assessment within individual neighborhoods and communities based on the CWPP mapping exercise[58] and/or the hazard assessment form.[59] Local emergency managers, fire agencies, state and federal land management agencies provide technical support. — Fire Safe Councils, homeowner's associations, other neighborhood organizations. **(M)**
	Use the results of these local risk assessments to prioritize fire-safety projects within communities. — Fire Safe Councils, homeowner's associations, other neighborhood organizations. **(O)**
REDUCING THE RISK OF WILDFIRE	
	Ensure there is an active Arson Watch program for all neighborhoods. — Homeowner's associations, Fire Safe Councils, and other community-based organizations. **(S)**
	Coordinate with National Park Service to get copies of CWPP maps identifying local wildfire risk and hazard areas. — Arson Watch. **(S, ★)**
	Enhance public education efforts regarding fire danger on public lands, including closures during Red Flag conditions. — Public land managers. **(M, O)**
	Explore options to prioritize and bury power lines wherever possible, including local assessment fee to share costs with neighboring residents. — Local, county, and state governments and utilities. **(L)**
ENHANCING FIRE PROTECTION	
RESOURCES FOR FIRE PROTECTION	Support National Park Service to analyze procurement of additional Type III wildland fire engines for the Santa Monica Mountains. — Plan Partners. **(M)**
	Maintain or enhance existing staffing levels and stations throughout the Santa Monica Mountains. — Ventura and Los Angeles County Fire Departments. **(S, O)**
	Identify additional incident command centers and staging areas. — Plan Partners. **(M)**
	Coordinate with National Park Service to procure data generated from community meetings. — Fire protection agencies. **(S, ★)**
	Seasonally work with local fire stations to develop detailed pre-fire deployment plans and structure protection plans for use by both local and out-of-area firefighters. — Fire Safe Councils. **(S, O)**
WATER	Educate residents on the needs and benefits of water storage. — Fire Safe Councils, Resource Conservation District, water purveyors, watershed councils, and other interested partners. **(S, O)**
	Educate residents on how to conserve water, especially during wildfire events. — Fire Safe Councils, homeowner's associations, and fire agencies. **(S, O)**

[58] See Appendix B: Community Mapping Exercise.

[59] See Appendix L: Home Ignition Zone Structure Assessment Guide.

CATEGORY	ACTION ITEM
	Equip swimming pools with generators and pumps for emergency use, and put up a pool sign near property address sign.[60] — Santa Monica Mountains residents. **(S)**
	Collaborate with Fire Safe Councils, homeowner's associations, and other community groups to clearly mark fire hydrants throughout the Santa Monica Mountains, and educate residents on keeping them cleared. — Fire departments, water providers, and local government. **(M, O)**
	Educate Fire Safe Councils, homeowner's associations, and neighborhood associations about existing water district back-up power generation at water pump locations throughout the Santa Monica Mountains. Cooperate with water districts to explore augmenting the system where needed through local parcel assessments or other financing options. — Water purveyors, Plan Partners. **(M)**
	Implement educational programs for local residents on water supply issues, capabilities, and history in the Santa Monica Mountains, and how this relates to wildfire protection. — Water purveyors. **(M)**
	Review water supply issues identified in the community meetings.[61] — Water purveyors. **(S)**
ROADS	Cooperate to remove trash cans and other road obstructions from streets in a timely and legal manner. — Santa Monica Mountains residents. **(S, O)**
	Maintain (trim back) vegetation on roads along private properties. Remove all dead and dying vegetation, and mow fuels along driveways and roads to county and city codes. Prune all branches that are hanging over private roads and driveways to a height of at least 16 feet above the ground (13'6" for oaks).[62] — SMM residents. **(S, O)**
	Identify access roads to post as "Fire Lanes" and key areas as "Tow-Away Zones" at the neighborhood level. — Homeowner's associations and neighborhood organizations in cooperation with local fire departments, public works departments, and Caltrans. **(M)**
	Work with fire departments, law enforcement, and California Highway Patrol to identify potential problems with road ingress and egress that increase emergency response times. — Counties' and cities' Public Works departments and/or Caltrans, and Fire safe Councils. **(S)**
	Develop, implement, and enforce strict policies governing maintenance of evacuation routes to ensure that they are free of obstructions. — Local governments. **(M)**
GATES	Initiate informational programs to educate residents about the importance of easily passable gates during emergencies. — Law enforcement, fire departments, Fire Safe Councils, and homeowner's associations. **(S, O)**

[60] See Chapter 4 for details.

[61] See Part II.

[62] See Chapter 4 for specifications.

CATEGORY	ACTION ITEM
SIGNAGE OF ROADS AND STRUCTURES (ADDRESSING)	Collaborate to enforce existing signage requirements for streets and residences. — Law enforcement, fire departments, counties, and cities. **(M, O)**
	Explore incentives for private road and address signage conformance, including public education. — Law enforcement, SMM Fire Safe Alliance, Fire Safe Councils, and homeowner's associations. **(M)**
	Contact Google, MapQuest, and others to correct errors in Internet-based road and address information in the Santa Monica Mountains, for areas identified at community meetings. — Fire Safe Councils, homeowner's associations, neighborhood organizations in conjunction with public safety agencies. **(S, O)**
ENSURING SAFE AND EFFECTIVE EVACUATION	
DEVELOPING EVACUATION ROUTES AND SITES	Collaborate to develop local evacuation plans and update them as needed, with input from local fire departments and law enforcement. — Fire Safe Councils, homeowner's associations, and neighborhood groups. **(S, O)**
	Develop and distribute local safety information in the event that citizens are unable to evacuate. — Fire agencies and law enforcement. **(M)**
	Review the community-identified information generated through this planning process for development as incident-specific evacuation areas and routes. — Fire departments and law enforcement. **(S)**
	Review community-identified alternate evacuation options with local fire departments. — Counties' and cities' Public Works departments, Caltrans, and Fire Safe Councils. **(M)**
	Develop and/or upgrade appropriate sites (including those identified at community meetings) to function as evacuation sites and/or disaster centers during emergency situations. — Fire departments and Red Cross **(M)**
	Develop and distribute "Ready, Set, Go" evacuation-planning materials for all areas within the Santa Monica Mountains to educate residents on evacuation in their community. — Counties and cities, law enforcement, Red Cross, fire departments, and Fire Safe Councils. **(S, O)**
	Identify leadership and resources to develop evacuation procedures and information for vulnerable populations. — Counties and cities, social services agencies, senior centers, law enforcement, fire departments, Red Cross, Fire Safe Councils, and other interested local, state, and federal agencies. **(M)**
	Survey gathering places in each neighborhood and include in local evacuation planning. — Fire Safe Councils and homeowners associations, with fire departments and law enforcement. **(S)**
EVACUATION PLANS FOR PETS AND LARGE ANIMALS	Work with Plan Partners, Red Cross, Humane Society, counties, and local veterinarians to identify existing options for local pet and livestock emergency evacuation. Work through local feed stores, veterinarians, boarding facilities, and animal associations to educate residents on options. — Fire Safe Councils. **(M, O)**

CATEGORY	ACTION ITEM
	Collaborate to develop local horse evacuation plans, in conjunction with LACDACCERT and EVRT. — Horse owners. **(S, O)**
	Trailer-train horses to safely evacuate. — Horse owners. **(S, O)**
COMMUNITY EMERGENCY PREPAREDNESS	
	Work with local fire department and interested communities to develop new or enhance existing CERT programs. — Counties' and cities' emergency planning departments. **(M, O)**
	Contact local emergency planning departments to learn how to participate in local CERT programs. — Homeowner's associations and Fire Safe Councils. **(S)**
	Ensure that each neighborhood has a functioning CERT team. — Homeowner's associations, Fire Safe Councils, and residents. **(S)**
EMERGENCY NOTIFICATION AND COMMUNICATIONS	Collaborate to explore additional measures for alerting residents to pending emergencies. — SMM Fire Safe Alliance, law enforcement, fire agencies, Fire Safe Councils, and homeowner's associations. **(S, O)**
	Register cellular phones and/or email addresses with a local emergency mass-notification system. — Santa Monica Mountains residents. **(S, ★)**
	Contact cellular providers to explore additional cellular tower locations. — Homeowner's associations, Fire Safe Councils, and neighborhood organizations. **(M)**
RESIDENTIAL EMERGENCY PREPAREDNESS	Prepare for wildfire and other emergencies by creating family disaster and evacuation plans. — Santa Monica Mountains residents. **(S, O, ★)**
	Consider storing valuable items in a fire-safe urban area during extreme fire weather conditions. — SMM residents in remote rural areas. **(S, O)**
	Organize emergency phone trees in each neighborhood and keep them up to date. Make sure everyone in the neighborhood is on someone's call list, and that deaf residents get contacted in person. — Fire Safe Councils and homeowner's associations. **(S)**
	Conduct disaster preparedness and emergency response drills, throughout the Santa Monica Mountains. — Counties and cities, law enforcement, fire departments, Fire Safe Councils, Red Cross, and senior centers. **(S, O)**
PROMOTING FIRE-SAFE EDUCATION	
	Review and evaluate community ideas regarding fire safety education and develop a strategic plan for most effectively educating Santa Monica Mountains residents. — SMM Fire Safe Alliance. **(M)**
	Unify the area-wide community fire-safety education message, including public service announcements in all local media. — Fire Safe Councils, SMM Fire Safe Alliance members, local businesses, local media outlets, and other interested participants. **(S, O)**

CATEGORY	ACTION ITEM
FIRE-SAFETY EDUCATION IN SCHOOLS	Implement fire-safety curricula in all grade levels throughout the area, in conjunction with community educational projects. — School districts, land management agencies, and Fire Safe Councils. **(M, O)**
FIRE-SAFETY EDUCATION FOR NEW RESIDENTS AND TOURISTS	Develop fire-safety educational programs for local tourism industries. — Fire Safe Councils, visitor information centers, SMM Fire Safe Alliance, Chamber of Commerce, and local governments. **(M)**
	Develop fire-safety educational programs targeted at educating new residents to be distributed through water districts, other utilities, chambers of commerce, insurance industry, and other interested partners. — Fire Safe Councils, SMM Fire Safe Alliance, and local governments. **(M)**
INTEGRATING COMMUNITY FIRE SAFETY INTO LOCAL POLICIES	
	Work together to ensure integration among planning efforts in the Santa Monica Mountains that could affect the area's long-term fire safety, including at the community planning and public information levels. — SMM Fire Safe Alliance and other relevant partners. **(S, O)**
	Explore stricter enforcement standards for reduction of urban fuels, including dedicated departments for educating residents and implementing defensible space around all structures. — Local governments and agencies. **(L)**
	Discourage planting of non-native hazardous trees and develop incentive programs for removal of existing ones. — Local governments and agencies, local plant nurseries. **(M)**
	Support implementation of mandatory, enforceable disclosure regulations for all local real estate transactions regarding the wildfire risks and hazards identified in this CWPP. — Counties. **(M)**
INTEGRATING FIRE SAFETY AND CONSERVATION EFFORTS	
	Collaborate to remove arundo and other invasive species along riparian corridors to reduce impacts to stream banks during wildfire. — Land managers and residents. **(M)**
	Collaborate with state and federal land managers to keep flame-retardant substances out of critical watersheds as much as possible. — Fire agencies. **(M)**
	Work with fire agencies after fires to minimize erosion potential to local streams. Bulldozed and hand crew-built fuelbreaks should be rehabilitated in watersheds with endangered fish species, as sediment can smother critical spawning areas. — Land managers. **(S, O)**
	Explore options for wildlife corridors, especially in the Malibu Canyon area. — Land managers. **(M)**
	Plant native oak trees where appropriate to serve as heat and ember sinks, while providing their myriad ecosystem functions. — Residents and land managers. **(O)**

CATEGORY	ACTION ITEM
	Manage existing native habitat within the home ignition zone for fire safety and sustainability. — Residents, resource professionals, and land-management agencies. **(O)**
DESIGNATION OF WILDLAND-URBAN INTERFACE AREAS	
	Accept the entire Planning Area as the WUI designation in this CWPP. — Federal agencies. **(S, ★)**
DESIGNATION OF COMMUNITIES AT RISK	
	Add relevant communities to the Communities At Risk list as so desired. — Additional Santa Monica Mountains communities in Los Angeles County. **(S, ★)**
	Add the following Santa Monica Mountains communities to the Communities At Risk list. — Ventura County Fire Department. **(S, ★)** • Hidden Valley/Lake Sherwood/Carlisle Canyon • Yerba Buena Canyon Area (including Pacific View, Cotharin, Yellow Hill)
FACILITATING SANTA MONICA MOUNTAINS FIRE SAFETY IN THE LONG TERM	
	Work with National Park Service, Resource Conservation Districts, Natural Resources Conservation Service, and others to develop a long-term ecological monitoring program to track the effects of project activities on ecological processes and functions. — Fire Safe Councils, community-based organizations, interested residents. **(M)**
	Use the Community Fire Safety Action Plans and the Project Implementation Matrix from this CWPP to prioritize and track existing and future projects at the local level, and update local information in this CWPP. — Fire Safe Councils. **(M)**
	Review the Santa Monica Mountains CWPP at least every five years and update it as needed, using a collaborative public process. — All Plan Partners (signatories). **(M)**

VIII. Long Term Fire Safety in the Santa Monica Mountains

As described in Chapter 9, project and plan monitoring is an integral element to the long-term success of this plan. Monitoring strategies need to be developed early in the process to ensure useful data collection.

Finally, no plan is ever permanent. This plan is based on current conditions in 2010 and best available information. The fields of fire safety and fire science are rapidly changing. It is likely that new developments will occur in coming years. Therefore, it will be important to review this plan at least every five years and update it as needed. This can be done as an Appendix to this document.

IX. Organization of the CWPP

This Community Wildfire Protection Plan is written as a resource guide for Santa Monica Mountains residents. Detailed information is included throughout to provide residents with the background information they will need now or in the future to make informed decisions regarding improving fire safety where they live. It is designed to be printed in a 3-ring binder format.

The CWPP is organized into four parts. Part I contains nine chapters with Santa Monica Mountains fire ecology background and suggested actions to create safer zones around homes and other structures. Part II offers seventeen

Community Fire Safety Action Plans based on 20 planning units within the Santa Monica Mountains. Part III has thirteen appendices with more detailed or background information, and Part IV has two reference sections, including a glossary of terms used throughout this document. The content and purpose of each section are described below.

Area residents reading this plan are likely to be interested in the general information found in Part I, then in the more specific ideas and plans generated for their neighborhood in Part II. To learn in which planning unit they are located, residents are encouraged to see the map in Chapter 2.

Living with Wildfire: Santa Monica Mountains CWPP Executive Summary (this document) is a review of key points of the Community Wildfire Protection Plan, including the results of the risk assessment and action plan efforts.

Source: NPS/SMMNRA

Part I: Chapters: Planning for Wildfire in the Santa Monica Mountains

Chapter 1 –Introduction to the Santa Monica Mountains CWPP is an introduction to the CWPP and to the Santa Monica Mountains. Parts of this chapter are intended for readers who may be new to the area.

Chapter 2 – Santa Monica Mountains Fire Safe Planning Process summarizes this CWPP's public process, outlining the steps taken to meet the collaboration requirements of a CWPP.

Chapter 3 – Wildfire: Current Environment and Behavior introduces and summarizes wildfire concepts and issues in the Santa Monica Mountains. A basic introduction to fire science is provided for residents who want to better understand it.

Chapter 4 – Community Fire Safety Begins at Home describes the home ignition zone and what local residents can do to help ensure that their families, homes, and properties are best prepared to survive wildfire.

Chapter 5 – Fire Ecology and Management of Santa Monica Mountains Vegetation Types summarizes the common types of plant communities found in the Santa Monica Mountains, their fire ecology, and conservation and fuel management considerations.

Source: Ray Miller, NPS/SMMNRA

Chapter 6 – Santa Monica Mountains Community Context describes the social, political, and community-planning context, including a discussion of land ownership and management. This section also summarizes current fire protection resources and issues. This chapter was written to facilitate better integration of wildfire issues into the area's existing planning and land management.

Chapter 7 – Risk Assessment: Identifying and Evaluating Assets at Risk summarizes assets (both human and natural) at risk from potential fire, and the community risk assessment process and results.

Chapter 8 – Santa Monica Mountains CWPP Action Plan identifies activities to reduce risks and hazards from wildfire in the Santa Monica Mountains, allowing residents to more safely coexist with the frequent wildfires in this area and reducing the number of fires that start here.

Chapter 9 – Facilitating Santa Monica Mountains Fire Safety in the Long Term discusses monitoring and long-term steps to maintain and update this CWPP.

Part II: Community Fire Safety Action Plans

The Community Fire Safety Action Plans contain a summary of the data and the maps gathered from community meetings and organized by the 20 planning units. These documents include a short summary of the issues in each unit and a list of priority actions to be taken by local residents. These Fire Safety Action Plans are written for local organizations and residents to use to increase fire safety in their neighborhoods and communities.

Plan 1–4 - Malibu Beaches includes the beach communities of Malibu and Point Dume. The four planning units that make up this area are grouped together in one document.

Plan 5 - Decker Canyon – Encinal Canyon
Plan 6 - West Malibu
Plan 7 - Zumirez Canyon – Puerco Canyon
Plan 8 - Malibu Civic Center
Plan 9 - Cross Creek – Carbon Canyon
Plan 10 - La Costa – Peña Canyon
Plan 11 - Ventura: Rancho Guadalasca – Yerba Buena Canyon
Plan 12 - Sycamore Canyon – Upper Latigo Canyon
Plan 13 - Corral Canyon – Pepperdine University
Plan 14 - Upper Rambla/Las Flores – Tuna Canyon
Plan 15 - Topanga Canyon
Plan 16 - Las Virgenes Canyon Corridor
Plan 17 - Cornell
Plan 18 - Liberty Canyon – Lost Hills
Plan 19 - Calabasas Interface
Plan 20 - Ventura: Hidden Valley – Lake Sherwood

Part III: Appendices

Appendix A – Community Meeting Participants is a list of residents and others who attended the 2009–2010 community meetings.

Appendix B – Mapping Exercise Instructions outlines the directions given to community members to carry out the mapping exercise, both in the meetings as well as for the online exercise.

Appendix C – Outreach Efforts Table summarizes the outreach activities carried out to publicize the CWPP process, including outreach through local newspapers, radio, and Internet.

Source: NPS/SMMNRA

Appendix D – Community Review Committee and Internal Reviewers lists members of the community and agency partners who participated in the Internal Review of draft CWPP documents.

Appendix E – Fire History Data contains the information on which the fire history maps in Chapter 3 are based.

Appendix F - Threatened and Endangered Species Tables summarize the federally threatened and endangered species that inhabit the Planning Area.

Appendix G - Environmental Compliance Information includes information and best management practices on how to comply with environmental and archeological regulations when undertaking fuel-reduction activities.

Appendix H – Fire Safety Information is a set of relevant Internet links and other background documents.

Appendix I – Local Fire Safety Regulations includes Los Angeles and Ventura County's fire safety codes and regulations as they pertain to defensible space and fire-safe building standards.

Appendix J – Fire Resistant Plants of the Santa Monica Mountains contains a list of native and non-native plants to favor or avoid for fire safe landscaping.

Appendix K – Water Tank Requirements consists of diagrams depicting water supply guidelines and requirements for water tanks.

Appendix L – Home Ignition Zone Structure Assessment Guide is a form to help assess the vulnerability of structures during wildfire and to recommend actions for increasing the chances of wildfire survival.

Appendix M – GIS Metadata contains a list of data used to create the maps for the CWPP.

Part IV: References

Reference I – Glossary defines the terms used in this Plan. Upon first appearance within the text, glossary terms are italicized.

Reference II – Reference Documents and Internet Resources provides references for documents, books, and other sources cited throughout this CWPP, as well as online sources for more detail on topics discussed throughout.

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Part I

CHAPTERS

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1. Introduction to the Santa Monica Mountains Community Wildfire Protection Plan

1.1. Plan Purpose

The purpose of this Community Wildfire Protection Plan (CWPP) is to provide a guiding document for future actions of local *Fire Safe Councils*,[1] private landowners, land management agencies, and local emergency service providers to reduce risks and hazards from wildfire in California's Santa Monica Mountains.

In addition, this CWPP will:

- Provide direction to create safer human communities and protect natural areas by involving and educating stakeholders, sharing information, and mapping and prioritizing community wildfire safety needs.
- Identify *Best Management Practices* (BMPs) to minimize wildfire risks in the *wildland-urban interface* (WUI). These BMPs are designed to prevent *structure* loss and create *defensible space* while protecting the environmental integrity of the Santa Monica Mountains *wildlands*.

- Identify priority projects to reduce risks and hazards from wildfire at the neighborhood or community scale, while protecting conservation values in the Santa Monica Mountains. These projects include incorporating *fire safety* into structural improvements and the design of private landscaping and open spaces adjacent to communities in order to provide or increase safety and defensible space for homes, communities, and firefighters.
- Provide community priorities for conservation-based *fuel management* on public lands, as well as community input to public land management within the Santa Monica Mountains National Recreation Area.
- Meet community collaboration requirements under the National Fire Plan and other government funding sources, in order to qualify for public funds allotted to this purpose.

1.2. Organization of This Document

This CWPP is organized into four parts. Part I contains nine chapters addressing regional fire safety and the production and execution of this plan. Part II has 17 Community Fire Safety Action Plans. Part III has 13 appendices with more detailed information, and Part IV has two reference sections. The content and purpose of each document are described below.

Living with Wildfire: Santa Monica Mountains CWPP Overview and Summary is an abridged version of the entire CWPP, including risk assessment results and the action plan.

Part I: Chapters

Chapter 1 –Introduction to the Santa Monica Mountains Community Wildfire Protection Plan is an introduction to the document and to the Santa Monica Mountains. Parts of this chapter are intended for readers unfamiliar with the Santa Monica Mountains.

[1] All italicized terms in the plan are defined in Reference I—Glossary.

Chapter 2 – Santa Monica Mountains Fire-Safe Planning Process summarizes this CWPP's public process, outlining the steps taken to meet the collaboration requirements of a CWPP.

Chapter 3 – Wildfire: Current Environment and Behavior introduces and summarizes wildfire concepts and issues in the Santa Monica Mountains. A basic introduction to fire science is provided for residents who want to better understand it.

Chapter 4 – Community Fire Safety Starts at Home describes the *home ignition zone* and what local residents can do to help ensure that their families, homes, and properties are best prepared to survive wildfire.

Chapter 5 – Fire Ecology and Management of Santa Monica Mountains Vegetation Types summarizes the common types of plant communities found in the Santa Monica Mountains, their *fire ecology,* and conservation and fuel management considerations.

Chapter 6 – Santa Monica Mountains Community Context describes the social, political, and community-planning context in Los Angeles and Ventura counties, including a discussion of land ownership and management. This chapter also introduces fire protection resources and issues. It was written to facilitate better integration of wildfire safety efforts with the area's existing planning and land management.

Chapter 7 – Risk Assessment: Identifying and Evaluating Assets at Risk summarizes human and natural assets at risk from wildfire, and the community risk assessment process and results.

Chapter 8 – Santa Monica Mountains CWPP: Action Plan identifies activities to reduce risks and hazards from wildfire in the Santa Monica Mountains, allowing residents to more safely coexist with the frequent wildfires in this area and reducing the number of fires that start here.

Chapter 9 – Facilitating Santa Monica Mountains Fire Safety in the Long Term discusses monitoring and ongoing steps to maintain and update this CWPP.

Part II: Community Fire Safety Action Plans

The 17 Community Fire Safety Action Plans, which are specific to the neighborhood planning units listed below, contain a summary of the data and the maps gathered from community meetings. These documents include a short description of the issues in each unit and a list of priority actions.

Plan 1–4 - Malibu Beaches includes the beach communities of Malibu and Point Dume. The four planning units that make up this area are grouped together in one document.

Plan 5 - Decker Canyon – Encinal Canyon
Plan 6 - West Malibu
Plan 7 - Zumirez Canyon – Puerco Canyon
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Part III: Appendices

Appendix A – Community Meeting Participants is a list of residents who attended the 2009–2010 community meetings.

Appendix B – Mapping Exercise Instructions outlines the directions given to community members to carry out the mapping exercise, both in the meetings as well as online.

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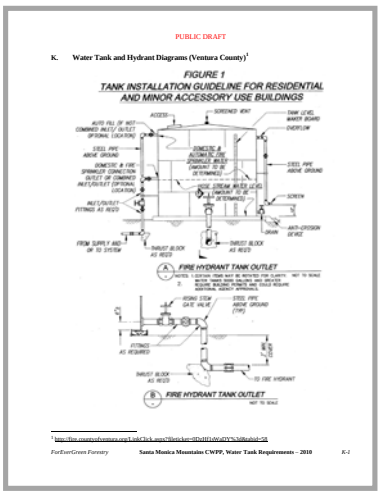
Appendix D – Community Review Committee and Internal Reviewers lists members of the community and agency partners who participated in the Internal Review of draft CWPP documents.

Appendix E – Fire History Data contains the information on which the fire history maps in Chapter 3 are based.

Appendix F – Threatened and Endangered Species Tables summarizes the federally threatened and endangered species that inhabit the CWPP Planning Area.

Appendix G – Environmental Compliance Information includes best management practices and instructions on how to comply with environmental and archeological regulations when undertaking fuel-reduction activities.


PUBLIC DRAFT

K. Water Tank and Hydrant Diagrams (Ventura County)[1]

FIGURE 1
TANK INSTALLATION GUIDELINE FOR RESIDENTIAL AND MINOR ACCESSORY USE BUILDINGS

FIRE HYDRANT TANK OUTLET

FIRE HYDRANT TANK OUTLET

[1] http://ftp.countyofventura.org/LidaCheck.aspx?fileticket=fDuHf1vWzDY%3d&tabid=58

ForEverGreen Forestry Santa Monica Mountains CWPP, Water Tank Requirements – 2010 K-1

Appendix H – Fire Safety Information is a set of relevant Internet links and other background documents.

Appendix I – Local Fire Safety Regulations includes Los Angeles and Ventura counties' fire safety codes and regulations as they pertain to defensible space and fire-safe building standards.

Appendix J – Fire-Resistant Plants of the Santa Monica Mountains lists native and non-native plants to favor or avoid for fire-safe landscaping.

Appendix K – Water Tank and Hydrant Diagrams (Ventura County) consists of diagrams depicting water supply guidelines and requirements for water tanks.

Appendix L – Home Ignition Zone Structure Assessment Guide is a form to assess the vulnerability of structures during wildfire and to recommend actions for increasing the chances of wildfire survival.

Appendix M – GIS Metadata contains a list of data used to create the maps for this CWPP.

Part IV: References

Reference I – Glossary defines the terms used in this Plan. Upon first appearance within the text, glossary terms are italicized (as with the term *"Fire Safe Council"* on page 1).

Reference II – Reference Documents and Internet Resources provides references for documents, books, and other sources cited in these pages, as well as online sources for more detail on topics discussed throughout this Plan.

1.3. Santa Monica Mountains Community Description

This CWPP focuses on approximately 84%[2] of the Santa Monica Mountains National Recreation Area (SMMNRA), in what will be referred to herein as the "Planning Area," the "Santa Monica Mountains" or "SMM." The SMMNRA areas north of Highway 101 and east of the East Topanga Fire Road were not included in the CWPP Planning Area. It was drawn to reflect the distribution of primarily residential communities within the rural areas of the SMMNRA. The Planning Area was loosely based on *watersheds,* property boundaries, and the National Recreation Area boundary. It includes 20 geographical planning units, each containing a grouping of neighborhoods and/or communities *(see Chapter 2 for information on planning units).*

[2] Gregory Elwood, National Park Service Partner – GIS Technician, CWPP Planning Units v4, October 2009.

The Santa Monica Mountains of southern California span two counties (Los Angeles and Ventura). The mountain range encompasses the area from roughly 10 miles east of Oxnard in Ventura County to the eastern end of Griffith Park in the city of Los Angeles. This Community Wildfire Protection Plan (CWPP) covers approximately 129,000 acres of the Santa Monica Mountains (SMM). It focuses largely on the coastal portion of the Santa Monica Mountains, stretching approximately 32 miles from east to west, bordered by Point Mugu Naval Air Station (on the west) and Topanga State Park (on the east). The term "Santa Monica Mountains" is used interchangeably with "Planning Area" for the purposes of this CWPP.

The Planning Area forms an inland corridor defined by mountains, with US Highway 101 running along the north of the SMM, and the coastal State Highway 1 (Pacific Coast Highway, or PCH) and Pacific Ocean hugging the range's southern border. From north to south, the CWPP area spans about 7 miles. The major north-south roads that pass through the area starting at the western end are Kanan Dume Road, Malibu Canyon/Las Virgenes Road, and Highway 27, commonly known as Topanga Canyon Boulevard.

Several smaller roads connect Hwy. 101 to the Pacific Coast Highway. Beginning from the western end they are: Deer Creek Road, Yerba Buena Road, Decker Canyon Road (State Route 23), Encinal Canyon Road, Latigo Canyon Road, Piuma Road, Old Topanga Canyon Road, and Mulholland Highway.

The Santa Monica Mountains region was historically inhabited by the Chumash and Gabrieliño/Tongva Native American groups, evidenced by more than a thousand archeological sites dating back to 5000 BC.[3] In the 1880s, the area started to be recognized by European immigrants for its natural resources, and its peaceful and scenic attributes. Ranching and farming operations, as well as many recreational, sports, nonprofit, and church group activities were launched.[4] During the 1920s, developers and individuals began turning toward the Santa Monica Mountains in search of building alternatives to the increasingly populated downtown areas of Los Angeles and Hollywood.[5] Large estates began to appear, followed by a significant spike in development between 1970 and 1990, as the suburban sector along the border of the SMMNRA grew at four times the rate of development in the rest of Los Angeles County. The two cities contained within the Planning Area, Malibu and Calabasas, have populations of 12,575 and 23,123, respectively. According to 2007 estimates, the median household income in some of the cities and areas in the SMM, such as Calabasas, Malibu, and Topanga, exceeds $102,000 per year. This is among the highest in the

[3] National Park Service (2005), Final Environmental Impact Statement for a Fire Management Plan, Santa Monica Mountains National Recreation Area, Chapter 3, p. 3.

[4] National Park Service (2002), General Management Plan and Final Environmental Impact Statement, Santa Monica Mountains National Recreation Area, Volume 1, p. 27.

[5] Julie D. Clark De Blasio, (2007), "Defensible Space: Environmental Implications of Fire Clearance Regulations in the Santa Monica Mountains National Recreation Area," UCLA, LD791.7 U7 D351 2007: pp. 21–22.

state and the nation; it is much higher than in the rest of Los Angeles and Ventura counties, where average household incomes are $53,494 and $72,762, respectively.[6]

The public lands within the Santa Monica Mountains are managed by multiple state and federal agencies. These include the National Park Service (NPS), the State of California Department of Parks and Recreation (CDPR), the Santa Monica Mountains Conservancy (SMMC), the Mountains Recreation and Conservation Authority (MRCA), Los Angeles and Ventura counties, and the cities of Calabasas and Malibu. The Mountains Restoration Trust (MRT) and several other nonprofit land conservancies also manage land in the Planning Area. A large portion of the Planning Area (54%[7]) is privately owned within this federally designated landscape. This complex pattern of land ownership makes the SMMNRA a challenging landscape to manage. Figure 1-1 below contains a breakdown of land ownership and managers. *For more information regarding public lands, see Chapter 6, section 6.3.*

FIGURE 1-1. LAND OWNERSHIP AND MANAGERS IN THE SANTA MONICA MOUNTAINS[8]

AGENCY / OWNER	NUMBER OF ACRES
Private	70,154
State of California Parkland	27,031
National Park Service	18,172
Mountains Recreation and Conservation Authority	6,264
Santa Monica Mountains Conservancy	1,738
Mountains Restoration Trust	1,651
County of Los Angeles	1,165
Other Federal	846
Las Virgenes Municipal Water District	776
City of Malibu	515
City of Calabasas	275
City of Los Angeles	174
Private Park or Recreational Land	166
University of California Reserve	67
Miscellaneous Public	50
Other State	4.4
Conejo Open Space and Conservation Authority	0.03

Please refer to Maps 1-1 and 1-2 at the end of this chapter for further information on land ownership and communities in the Santa Monica Mountains.

[6] US Census Bureau, *State & County Quickfacts.* http://quickfacts.census.gov.

[7] National Park Service, Current Tract Ownership Data of the Santa Monica Mountains National Recreation Area, 2005. Thousand Oaks, CA. http://nrdata.nps.gov/samo/samodata/nps_tracts.zip (June 17, 2010).

[8] National Park Service, Current Tract Ownership Data.

This mix of public and private land was federally designated in 1978 as the Santa Monica Mountains National Recreation Area, making it one of the largest urban recreation areas in the world.[9] It is characterized by the extensive presence of wildland-urban interface, where developed lands intersect with undeveloped natural wildlands.

The SMM region is a Mediterranean-type ecosystem. This biome has a limited worldwide geographic distribution and extensive biological diversity. The Santa Monica Mountains provide habitat for at least 57 threatened or endangered plants and animals, plus hundreds of vertebrates, birds, amphibians, and reptiles, and about a thousand native plants *(for more information, see Chapters 3 and 5, and Appendix F).*[10,11]

The Santa Monica Mountains comprise part of the Transverse Ranges of southern California. The topography consists of alternating steep canyons and ridges, forming an overall rugged terrain, extending from sea level to a maximum elevation of 3,111 feet, with an average elevation around 1,000 feet.

The climate in the Santa Monica Mountains is coastal Mediterranean, characterized by mild, wet winters and warm, dry summers. The average precipitation is 15 inches, with rainfall ranging from 6 to 43 inches per year. Temperatures range from over 100 degrees in the inland areas in the summer, to low 30s in the winter months.[12]

The 202 square miles of the Planning Area contain parts of more than 20 watersheds. The smaller coastal watersheds drain directly into the ocean. Malibu Creek is the only watershed that cuts through the mountains to drain the inland slopes to the ocean. Streams and *riparian* areas occupy the canyons extending from the main ridgeline of the east-west running mountain range. Most of these canyon streams dry up completely during the warmer months. There are no natural lakes in the Santa Monica Mountains, but springs and *seeps* are prevalent.

1.4. Santa Monica Mountains Communities at Risk

On January 4, 2001, for the purposes of the National Fire Plan, the Department of Interior published in the *Federal Register* a "Notice of Urban-Wildland Interface Communities Within the Vicinity of Federal Lands That Are at High Risk from Wildfire."[13]

After the 2000 fire season, the California Department of Forestry and Fire Protection (CAL FIRE) worked with the California Fire Alliance to develop a list and associated map of Communities at Risk (CAR) from wildfire. Fourteen communities in this CWPP Planning Area are on the CAR list, all of which are in Los Angeles County.[14]

Listed below are the existing communities at risk in the CWPP Planning Area as designated by CAL FIRE in 2001. Additional communities may be proposed for this list by visiting www.cafirealliance.org/communities_at_risk.

FIGURE 1-2. SANTA MONICA MOUNTAINS DESIGNATED COMMUNITIES AT RISK

- Calabasas
- Cornell
- El Nido
- Fernwood
- Malibu Vista
- Monte Nido
- Point Dume
- Seminole Springs

[9] NPS (2002), General Management Plan and Final EIS, Volume 1, p. 3.

[10] NPS (2002), pp. 34 –35.

[11] NPS (2005), Final EIS for a Fire Management Plan, Chapter 3, p. 2.

[12] www.wunderground.com

[13] http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=2001_register&docid=01-52-filed

[14] www.cafirealliance.org/communities_at_risk; Ojai Valley Fire Safe Council (2009), Ventura County Community Wildfire Protection Plan, p. 8.

- Glenview
- Malibu
- Malibu Bowl
- Sylvia Park
- Topanga
- Topanga Park

1.5. Santa Monica Mountains Fire Protection Areas and Agencies

The principal agencies responsible for fire protection in the Planning Area are the Los Angeles County Fire Department, the Ventura County Fire Department, and the National Park Service. Please refer to Chapter 6 for further information on fire protection.

1.6. Introduction to Santa Monica Mountains Fire Safe Councils[15,16]

In Los Angeles County, there currently are seven recognized Fire Safe Councils (FCSs) in the Santa Monica Mountains. There are no FSCs on the Ventura County side of the Planning Area.

The Malibu West Fire Safe and Sustainability Council (MWFSSC), located east of Trancas Canyon in the City of Malibu, covers the residential parcels represented by the Malibu West Homeowners Association. MWFSSC acquired formal 501(c)3 non-profit status in 2010. They have received two California Fire Safe Council (CFSC) Clearinghouse grants, both of which they are currently implementing. One project is hazard tree removal and *thinning;* the other is the sponsorship of this CWPP.

Source: NPS/SMMNRA

The Horizon Hills FSC is located west of Kanan Dume Road in the City of Malibu. It was formed in 2000 and has completed two projects since then. The first project was from 2005 to 2007 and addressed the removal and thinning of approximately 150 hazardous trees and shrubs near dwellings. The second project, from 2008 to 2009, involved the removal and thinning of heavy *fuels* along the steeper slopes of Horizon Hills, over an area of approximately 4 acres. It also included removal and thinning of 50 more trees in landscaped areas. In addition, goats revisited the peripheral land to remove new weed growth. In the spring of 2009, the FSC removed an additional 10 acres of *fuels* in the peripheral shrub area. The group is currently working to reduce the vulnerability of the homes in their community against ember ignition.

Big Rock Mesa FSC is located inland from the Pacific Coast Highway (PCH) on the east side of the City of Malibu. This group used a grant from the Sacramento Regional Foundation for fuel reduction by goats, consisting of a buffer of 25 acres around the community and one CFSC-funded fuel-reduction project of *mastication* (thinning) 20 acres and hand clearing 33 acres of buffer around the community. They have applied for a grant through the CFSC Clearinghouse for hazard-tree removal; they are also raising funds from homeowners to maintain the buffer.

The West Hillside FSC in Topanga Canyon is described below.

The Corral Canyon Fire Safety Alliance (CCFSA) is located on the inland side of PCH in Malibu. It was formed in January 2008, becoming a nonprofit corporation in May 2009. CCFSA has 9 board members and 300 active

[15] Julie D. Clark De Blasio, National Park Service Partner, personal communication, October 2009.

[16] Cathy Brooke, California Fire Safe Council, personal communication, January 2010.

members. The group collaborated with Los Angeles County Fire Department (LACFD) and their County Supervisor to educate residents on *fire prevention,* fire-fighting procedures, and how to maintain their road *access.* Partnering with the Sheriff, they established an Arson Watch and increased law enforcement patrols. They worked with the county to educate residents and visitors regarding access to the top of the canyon during Red Flag[17] conditions. CCFSA created a community website—http://corralcanyon.org/ccfsa.html—and is beginning a volunteer firefighter program with LACFD. The community purchased two pumper trucks and four water trucks. As of the spring of 2010, the FSA had hosted 12 community fire safety meetings, established an annual award event, and distributes a community newsletter. They were awarded a CFSC Clearinghouse grant for Hazardous Fuels Reduction and Fire Safe Education in 2011. The funding was provided by a National Fire Plan grant from the National Park Service.

Topanga Canyon has a history of community preparedness. In 1982, the Community Arson Watch was founded as a modified neighborhood watch group focused on preventing and deterring wildfires.

The Topanga Citizens Fire Safe Committee was formed with the cooperation of County Supervisor Zev Yaroslavsky in 1997 when citizens expressed concerns about the LACFD's proposed fuel reduction requirements for ornamental vegetation. The committee developed best management practices to mitigate hazardous vegetation.[18,19,20] In 2004, the group also offered a popular chipping program in Topanga.[21] This committee has been inactive for several years.

Topanga Coalition for Emergency Preparedness (T-CEP) was formed in 1993. It is a nonprofit volunteer organization that collaborates with fire, law, and local government officials to help the Topanga community prepare for and cope with disasters such as wildfires, floods, and earthquakes. One of the largest undertakings to date by T-CEP is *The Topanga Disaster Survival Guide*,[22] published in 2005 by the Topanga Emergency Management Planning steering committee in cooperation with the Supervisor's office.

Topanga's West Hillside FSC received supplemental funding in 2008 from the National Park Service to work with LACFD on hazardous fuel reduction. The project was similar to the one in Horizon Hills in that the agencies provided wildfire education to help the community design a fire-safety improvement project. Agency partners guided the neighborhood through an evaluation to prioritize removal of vegetation threatening homes and key access routes. The community augmented this project by using its own resources to remove vegetation adjacent to homes. They then took a further step to improve the fire safety of the homes themselves (*hardening*[23] them). An additional CFSC grant was awarded

Source: Katie Ziemann

[17] See Chapter 4 for more information on Red Flag conditions.

[18] E. Slater (June 15, 1997), "Firefighters put heat on residents failing to cut brush and trees," *Los Angeles Times.*

[19] *Los Angeles Times* (July 22, 1997), "Residents form committee on fire safe issues." In *Topanga-Community News File.*

[20] Susan P. Nissman, Senior Field Deputy, Calabasas Office of Los Angeles County Supervisor Zev Yaroslavsky, personal communication, March 11, 2010.

[21] *Topanga Messenger* (December 14, 2000), "A Chipper Christmas."

[22] http://topangasurvival.wordpress.com/survival-guide/

[23] See Chapter 4 for more information on hardening homes.

in 2009 to continue the project.[24,25] The West Hillside FSC has joined with other Topanga neighborhoods to form the North Topanga Canyon FSC.

In the Topanga area, there currently are three FSCs[26] in the process of organizing:

- North Topanga—from Top o' Topanga to Pine Tree Circle.
- West Topanga—from Wagon Wheel Ranch along Old Topanga Canyon Road to Topanga Canyon Boulevard.
- South Topanga—from Fernwood to the ocean.

Various local Fire Safe Councils are in the formative stages in other areas of the Santa Monica Mountains. One is in Monte Nido, located south of Mulholland Highway and east of Malibu Canyon Road in the Las Virgenes Corridor. Another is in Malibu Lake, which includes the homeowners in Malibou Lake Mountain Club and Malibu Lakeside.

There are two existing FSCs in Ventura County, neither of which is in the Santa Monica Mountains Planning Area. However, the Ojai Valley FSC is creating a county-wide CWPP for Ventura County. That CWPP does not include detailed information on the Santa Monica Mountains in Ventura County.

1.7. Fire Safety Objectives

This plan was developed as a result of concerns about community and firefighter health and safety, and the desire to conserve and protect the Santa Monica Mountains' natural resources. The following objectives are addressed in this CWPP:

Minimize Ignitions

Human-caused ignitions are the leading source (98%[27]) of wildfire in the Santa Monica Mountains, accounting for nearly all damages and losses to ecosystems, property, and human lives in the Planning Area. Natural ignitions are extremely rare. While it is difficult or impossible to *control* a wildfire during extreme *fire weather,* it is certainly possible to reduce the chance of starting one. Fire-prevention activities are more cost-effective than fire suppression.

Source: NPS/SMMNRA

Decrease Fire Intensity Around Homes and Structures

The natural *fire regime* of the Santa Monica Mountains is one of infrequent, high-intensity fires that consume most or all of the aboveground *biomass*. The local patterns of summer drought and fall Santa Ana winds occur as a result of large-scale weather patterns that have existed for millennia. Forecasts for expected climate change in southern California predict more extreme climate variation. Substantially reducing *fire intensity* over large portions of the

[24] Kathryn Kirkpatrick, Fire Management Officer, Santa Monica Mountains National Recreation Area, personal communication, March 2010.

[25] Joyce Wisdom, North Topanga Fire Safe Council, personal communication, March 2010.

[26] For more information on FSCs and community wildfire preparedness in Topanga Canyon, please see Community Fire Safety Action Plan 15, in Part II.

[27] National Park Service, Santa Monica Mountains National Recreation Area, Fire History Data, June 2010.

landscape is not possible. However, reducing fire intensity and frequency in the immediate vicinity of homes and other potentially *flammable* assets is a very practical approach to protecting them during wildfires.

Decrease Damage to Natural and Human Assets

Although infrequent high-intensity wildfire is part of the natural ecology of the Santa Monica Mountains, the area currently experiences many more human-caused fires than ever before. Property loss from southern California wildfires has increased steadily over time as more and more valuable homes are built in harm's way. This trend needs to be reversed. Taking steps to reduce structural ignitability as described in Chapter 4 can decrease this damage.

There are limits to the resilience of native plant communities, which are well adapted to surviving fires as long as they do not occur too frequently (i.e., more than every 25 years or so). Too much fire damages natural resources as well as destroys property and threatens lives. In many areas of the Santa Monica Mountains, short *fire-return intervals* are causing an ongoing process of conversion from one vegetation type (native shrublands) to another (weedy exotic grasslands). *Type conversion* is a significant problem for several reasons. The weedy grasslands are more prone to fire than the native shrublands, more dangerous for fighting fire, more likely to experience landslides and slope failures and to degrade water quality, and are less valuable than native ecosystems as wildlife and threatened and endangered species habitat, as well as a recreational or scenic resource.

Increase Permeability

Wildfires will continue to shape the landscape of the Santa Monica Mountains. They are likely to become more frequent and costly in terms of property and natural resource losses until humans can be more careful and/or adopt *fire-safe practices* that will improve the chances of structures surviving a passing fire. The concept of *permeability* means that a fire can spread through a human community with minimal negative impact. The ideal situation would be one where all structures can withstand a wildfire—i.e., hardened homes and effective defensible space—and all people living there could safely evacuate when necessary.

Increase Resiliency

An important objective is a rapid rebound after a wildfire burns through a human community or wildland area. Communities with greater preparation for wildfires (hardened homes, rehearsed evacuations, established communication protocols, effective collaboration among agencies, etc.) have greater resiliency against fire and other disasters. Less frequent fire is not only desirable for people but is vital for native ecosystems to survive.

1.8. Conservation Principles for Community Wildfire Protection in the Santa Monica Mountains[28]

This Community Wildfire Protection Plan is based on the following conservation principles. These principles were originally developed in 2007 by a Steering Committee of California agency, conservation, and scientific fire experts for the Sierra Nevada Region. The principles were modified here to apply to the Santa Monica Mountains. They are

[28] This document is based on the work of ForEverGreen Forestry's *Conservation Principles for Community Wildfire Protection in California's Sierra Nevada*, www.forevergreenforestry.com/SierraConservationCWPP.html.

intended to be a guide for residents desiring to create a fire-safe home environment that protects and conserves local native ecosystems. See Chapters 4 and 5 for recommended best management practices for reducing hazardous fuels in and around homes that are consistent with these general principles.

Most residents choose to live in the Santa Monica Mountains because of the scenic beauty, clean air, inspiring and enjoyable natural environment, and multiple recreational opportunities. To conserve this attractive way of life, people need to be good stewards of the land, learning to live in balance with the natural world, of which wildfire is a part. The conservation principles on the following pages discuss how residents can coexist with wildfire in the Santa Monica Mountains in ways that maximize fire safety, minimize damage to the environment, and maximize conservation and wildlife protection. If you've chosen to live here, with your choice comes a stewardship responsibility.

For more information on fire safety in general, please visit
www.fire.ca.gov/education_homeowner.php
www.firesafecouncil.org/homeowner/index.cfm
www.firewise.org/resources/homeowner.htm
www.forevergreenforestry.com/SMM_FireSafe.html.

Some Basic Concepts to Remember for Living with Wildfire in the Santa Monica Mountains

- **Wildfire is a dynamic element of the Santa Monica Mountains.** If you live here, your property has been threatened by a wildfire or has burned in the past. Chances are this threat will occur again. It is your responsibility as a resident to learn how to coexist with wildfire. *For more information, see: www.californiachaparral.org/chaparralmyths.html.*

- **One size does not fit all, and this applies to homeowner fire safety.** Every place is unique. Work with your local Fire Safe Council, fire department, National and State Parks, Cooperative *Extension Agent,* Resource Conservation District, *Registered Professional Forester,* and/or contractors to design the appropriate fire-safe practices and defensible space for your property. *For more information, see www.fire.ca.gov/education_100foot.php, and www.firesafecouncil.org/homeowner/index.cfm.*

- **Fire can behave both predictably and unpredictably.** We can generally predict fire direction and behavior; it will usually go upslope, or the way the wind is blowing, and burn any available fuel. Local fire history is a good guide for what to expect from future fires. We can deduce that areas that have burned frequently in the past will probably burn in the future. The terrain, fuel, and weather in the Santa Monicas create conditions that will produce extreme *fire behavior* during fire season. Communities are exposed to this hazard throughout the mountains, but many places are at greater risk due to their position in the terrain, wind exposure, and lack of accessibility. Homes can be situated in locations that cannot be protected from wildfire.

  As fire moves across the landscape it will go wherever there are continuous fuels or receptive fuels for *embers* and *spot fires*. If fuels have horizontal continuity (i.e., they are closely connected or adjacent), then fire will spread readily through them even without a wind to push it. If fuels have vertical continuity (connected above and/or below; what firefighters call *"ladder fuels"*), fire can move up from the ground into higher fuels. A key fire-safety objective is to modify fuels enough to prevent such spread. This is critical to keep in mind when assessing what is surrounding your home. Flammable materials on the ground *(surface fuels)* act as a *wick* to move fire horizontally across the land. Shrubs, small trees, branches, or your patio furniture (ladder fuels) can carry fire vertically into taller vegetation or to your home. One of the main principles in creating defensible space and reducing hazardous fuel conditions is

to create physical space between fuel layers (both vertically and horizontally) so a fire cannot climb easily from the ground into vegetation and into your home. *For more information, see www.bcwildfire.ca/FightingWildfire/behaviour.htm.*

Ladder fuels: firewood to wicker fence to vegetation.

Your house is a potential fuel source. The better 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 *fire risk* is to build or remodel your house to resist the millions of tiny embers created by *ember-attack* from large wildfires. When wildfires burn in extreme conditions they send burning *firebrands* (embers) miles ahead of them; these firebrands ignite new fires. *Fire-resistant building materials* and appropriately designed structures offer the best chance for withstanding a wildfire. Replace wood shake roofs with approved fire-resistant materials. Don't let your home be part of the problem.

An interactive source of information to reduce homeowner risk in the wildland-urban interface is the University of California (UC) Center for Fire Research and Outreach's Fire Information Engine Toolkit. See *http://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" at *http://groups.ucanr.org/HWMG/index.cfm*. Consult your local fire marshal or see *www.firewise.org/resources/files/wildfr2.pdf* for more information.

If you are building a new home, you must consider *slope*, *aspect* or direction, surrounding fuels, access, your neighbors, and potential environmental impacts before deciding where to site the house. This may be more important than the view in the long term. Talk to your local planning department to learn about mandatory fire-safe building regulations, or see *www.fire.ca.gov/fire_prevention/fire_prevention_wildland_codes.php* for more information about state regulations.

➥ **Make your mark where it matters.** Wildland fire experts[29] tell us that the most effective place to focus hazardous fuel-reduction efforts is within 100 feet of homes and other structures in the Santa Monica Mountains. Beyond that distance, the effectiveness of *fuel treatments* is reduced drastically. Start your fuel management closest to your house, removing anything flammable that could potentially transmit fire to the structure. From there, *feather* or spread out your treatments as you get further from the home. In most cases, you will only need to treat *urban fuels* close to your house, and you can leave the native vegetation to provide habitat and all its other *ecosystem functions*. Remember, properly maintained and thinned vegetation reduces fire risk more than a cleared, naked landscape. Well-maintained native trees and shrubs can actually help you by providing barriers to embers and wind, and acting as a heat sink.

[29] Dr. Jack Cohen, Dr. Klaus Radtke, Dr. Jon Keeley, Dr. Robert Taylor, Dr. Marti Witter, and Dr. C.J. Fotheringham, among others.

- **Your home exists within a larger watershed.** It is located in the midst of a much larger *landscape*. In what watershed are you located? Think about where your property is within the watershed. From which direction is fire most likely to come? Is the property on a slope? 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 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," does your property face? Generally, south- and west-facing properties are hotter and drier and hence more susceptible to fire. Are there any natural *fuelbreaks* around you such as rocky outcrops where a fire might tend to naturally slow its behavior? Do any types of wildlife use or move through your property to get to food, shelter, or water? Do the roads in and out of your property follow ridges or rivers? Look beyond your property lines to understand the ecological perspective of where you live. *For more information, see www.audubon.org/bird/at_home/Explore.html.*

- **Timing is everything.** There are appropriate times for different activities on one's property, much as there are different seasons of work in the garden. Perform your defensible space and fuel-reduction work during the cool and moist season to avoid having sparks from equipment ignite fires in dry vegetation. Avoid *ground-disturbing activities* in native landscapes when the ground is too wet or when birds and animals are nesting (such as early spring). Wait until after native species have flowered and cast seeds to manage them.

  Don't try to do everything at once—think about your fire safety seasonally: plan your activities in the fall when fire is on your mind; start hand-weeding non-native invasive plants in the winter when the ground is wet and soft (but not *saturated*), facilitating root removal; finish treatments by early spring before the vegetation is too dry and the non-native vegetation has gone to seed; do your maintenance around and inside your home in the summer. If you need advice about defensible space and fuel-reduction planning for your property, contact the LACFD Forestry Division, Ventura County Fire Department, or your local Fire Safe Council. *For more information, see http://groups.ucanr.org/SAFE/.*

- **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 improve firefighters' ability to protect your home. *For more information, see principle 4c below, and www.livingwithfire.info/beforethefire/accesszone/index.php*

Conservation Principles

Consider the Conservation Principles below in how you approach your fire safety and defensible space. These principles are especially important if you are required to do any fuel management in native vegetation. It's 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 enjoyment.

1. Remember the Vegetation

a. Observe and monitor your vegetation's dynamic changes.

Plan for the future of your native landscape. Because you are the conservation steward of your land, your work will be ongoing. Watch the wild areas on your property and learn from them as they grow and change. Think both for the short term (what will happen this year) and for the long term (what will happen over time). Document changes as the years go by; keep notes and take photos. Learn how to *monitor* the changes on your property and use that information for *adaptive management*. To live with wildfire we need to take responsibility to monitor the vegetation around our homes and adapt our actions appropriately. *For more information, see www.californiachaparral.com/cplantsanimals.html.*

b. Act conservatively.

To reduce the risk of fire over the long term, you can proactively redesign your surroundings, turning any area into a more *fire-resistant* landscape. In doing this, it's necessary to apply the general concepts of the *precautionary principle* while implementing fuel treatments: you can always remove more 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*. *For more information, see www.mindfully.org/Precaution/Precautionary-Principle-Common-Sense.htm.*

c. Protect native species that share your home.

Look at the native vegetation around your property—or ask a local plant specialist for help—to see what different plants share your home. There may be plants that are threatened, endangered, or locally rare. 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*, which can be some of the worst offenders in spreading wildfire. Follow vegetation treatments with invasive weed removal. For example, when you remove native chaparral plants, invasive weeds and grasses will move in to the openings. Minimize the introduction of exotic plant species near your home, especially those that can spread into adjacent wildland areas. One of the best ways to do this is by not disturbing the soil and allowing the natural *soil crust* to remain. Use the native *mulch* you create to deprive weeds of sunlight to prevent germination. Invasive species can add to the *fire hazard* and be difficult to manage, especially when populations explode.

Avoid unnecessarily introducing water into your landscape, as water will generally help non-native plants out-compete native plants. Native species take much less water to hydrate than do regular common bedding plants. Hence, they stay fire-resistant longer. *For more information, see www.cnps.org/cnps/nativeplants, www.cal-ipc.org and www.ipm.ucdavis.edu/PMG/weeds_common.html.*

d. Keep the oldest and biggest native trees.

Oak trees are protected by law in every jurisdiction throughout the Santa Monica Mountains. Oaks and other native trees provide many conservation benefits. Native oak trees also act as *ember interceptors* during wildfire, preventing embers from reaching your home and potentially decreasing the spread of fire. If you have old or very large native trees, create defensible space around and under them (without disturbing their roots) so they will survive wildfire. Notice that most native oaks have thick bark to be more fire-resistant.

Think about native tree protection in terms of building a fire in your woodstove: A big log won't start burning without a lot of smaller kindling. On your property, make sure that the smaller kindling (e.g. small trees, shrubs, branches, etc.) isn't around the base of your large trees, and generally the trees will make it through a wildfire on their own. In some cases you'll need to remove smaller plants that touch the *crown* of the older trees, keeping in mind the precautionary principle to start slowly. Oaks have many roots close to the soil surface, so do not disturb the soil under them or you could inadvertently kill them. Cultivate new or young oaks and reduce vegetation around them that would carry fire. An additional benefit of keeping your biggest trees is that they can break up the wind as it moves through, which can slow down fire spread. *For more information, see www.fire.lacounty.gov/forestry/environmentalreview_oaktreeordiance.asp.*

2. Remember the Wildlife

a. Provide local wildlife a place to live.

Become familiar with the animals that share 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* for the birds and wildlife using them. Protect these areas as you would your home by creating defensible space while still considering the animals' needs for *cover*. If you watch quietly you may see animals using those areas. *For more information, see www.californiachaparral.com/cplantsanimals.html and http://cetuolumne.ucdavis.edu/newsletterfiles/Master_Gardener_Articles_20044858.doc.*

b. 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 scattered areas of dense vegetation in native landscapes to provide adequate cover. Leave some plants that have berries or other fruit or *mast* used by wildlife. Act especially carefully and leave cover around streams, seeps, or other wet areas to keep those places 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* away from areas that drain into fresh water. Consider using organic or non-toxic materials for fertilizer and weed/pest control. *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. A general rule of thumb: November to February is a good time for vegetation management in the Santa Monicas. Learn what kind of habitat local species might use for nesting and breeding, and be sure to protect those areas during your fuel reduction and other management activities, while keeping in mind the above-mentioned dangers of connected surface and ladder fuels. In the immediate home ignition zone, removal of fuels may have to take priority. *For more information, see www.paws.org/about/emailnetwork/archive/wildagain/wild_2004_06_02.html and www.audubon.org/bird/at_home/SafeMisc.html.*

d. Value the standing dead trees.

Standing dead trees—or *snags*—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 to block an evacuation route during a fire—this is in addition to the dead wood's flammability. Balance the needs of wildlife with your need for fire safety. Remove snags near homes and roads, but leave them in more remote areas where they don't threaten your home and can provide important habitat. *For more information, see www.nwf.org/backyard/snags.cfm.*

e. Conserve threatened and endangered species.

One of the bonuses (which is accompanied by a responsibility) of living in a rural area is sharing habitat with *threatened and endangered species*. Find out if these rare or endangered species are in your area by talking to your local Cooperative Extension Agent or federal or state wildlife biologist. In the Santa Monica Mountains, these agencies can be contacted by calling the University of California Cooperative Extension (323-260-2267) or National Park Service, Santa Monica Mountains National Recreation Area (805-370-2300). Strict state and federal laws protect these species. Plan your fuel-reduction actions around their habitat needs. Often a fairly minor refinement of activity, such as timing, technique, or extent, can protect species while realizing fuel-reduction goals. Going through the formal environmental compliance process is legally required for any large fuel-management project. *For more information, see www.dfg.ca.gov/wildlife/nongame/t_e_spp/ and http://www.fs.fed.us/r5/projects/ecoregions/261bf.htm.*

Source: http://zev.lacounty.gov

3. Remember the Soil

a. Maintain the life in your soil.

There is as much or more activity below the ground as there is above the ground. Keep this in mind in terms of what you do on your property. Talk to your Cooperative Extension Agent, Natural Resource Conservation Service, or County Agricultural Commissioner's Office to find out what *soil types* are on your property. Some soil types can tolerate much more *disturbance* than others. Minimize activities that could *compact*, flood, or poison 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. *For more information, see http://managingwholes.com/new-topsoil.htm.*

b. Ensure that soil cover is fire safe.

Replace cover around your home that burns easily (such as dry or dead vegetation) with cover that is less flammable (e.g. gravel, fleshy green plants, etc.). For example, a very light layer of oak leaves can help with soil erosion *(see below)*, but too much can be a fuel problem. *For more information, see www.laspilitas.com/classes/fire_burn_times.html.*

c. Minimize erosion.

Protect your soil by keeping it covered, ideally with native vegetation, lichens, and mosses. Cover helps to prevent *erosion*, especially on ground that is not flat; it keeps the soil in place. One reason why *shaded fuelbreaks* are preferable to completely cleared fuelbreaks is that retaining some vegetative cover significantly helps reduce soil erosion and catastrophic slope failure. Don't allow soil erosion channels to develop either across your property or off your property, especially not into streams or other natural water sources. Minimize ground-disturbing activities, and never allow them in *unstable* areas and riparian (streamside) 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. *For more information, see www.uri.edu/ce/healthylandscapes/tips/6.html and https://fp.auburn.edu/fire/topos_effect.htm.*

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, be sure to not do anything to disturb the soil surface, which could increase erosion. In extreme conditions, contact government agency partners to help you put in external treatments such as netting or *check dams*. In native chaparral systems, post-fire native vegetation may make these actions unnecessary. *For more information, see www.dpw.lacounty.gov/wmd/HomeOwners/enter.cfm and www.cnr.uidaho.edu/extforest/AftertheBurnFINAL.pdf.*

4. Remember the People

a. Plan your actions with your neighbors.

Talk to your neighbors. Learn what they are doing on their land. Find ways to cooperate in your land-management actions. If one house in a neighborhood burns, it could ignite adjacent structures. Therefore, it's in everybody's best interest to cooperate with neighbors. 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 most safely evacuate. Get involved in your local Fire Safe Council, or help form one. Help make your community a Firewise community. Coordinated work among neighbors will have a greater positive impact on your individual fire safety. *For more information, see www.firesafecouncil.org, www.fire.ca.gov/communications/downloads/fact_sheets/Evacuation.pdf, and www.firewise.org.*

b. Find experienced workers and treat them well.

Fuel-reduction workers with equipment in hand are the actual decision-makers as to what stays or goes—what lives or dies. If your objective is to reduce fuels while maintaining ecological integrity and diversity on a site, your workers should have the knowledge and experience to help you achieve this goal. Involve the workforce in the design, planning, and maintenance of projects. Talk to your local FSC or neighbors and check references to find reputable contractors. Stay on site and observe fuel-reduction activities while they are happening to make sure you are getting the treatments you expect. Pay workers well and treat them respectfully; this will often lead to better ecological outcomes on the ground. *For more information, see http://ewp.uoregon.edu.*

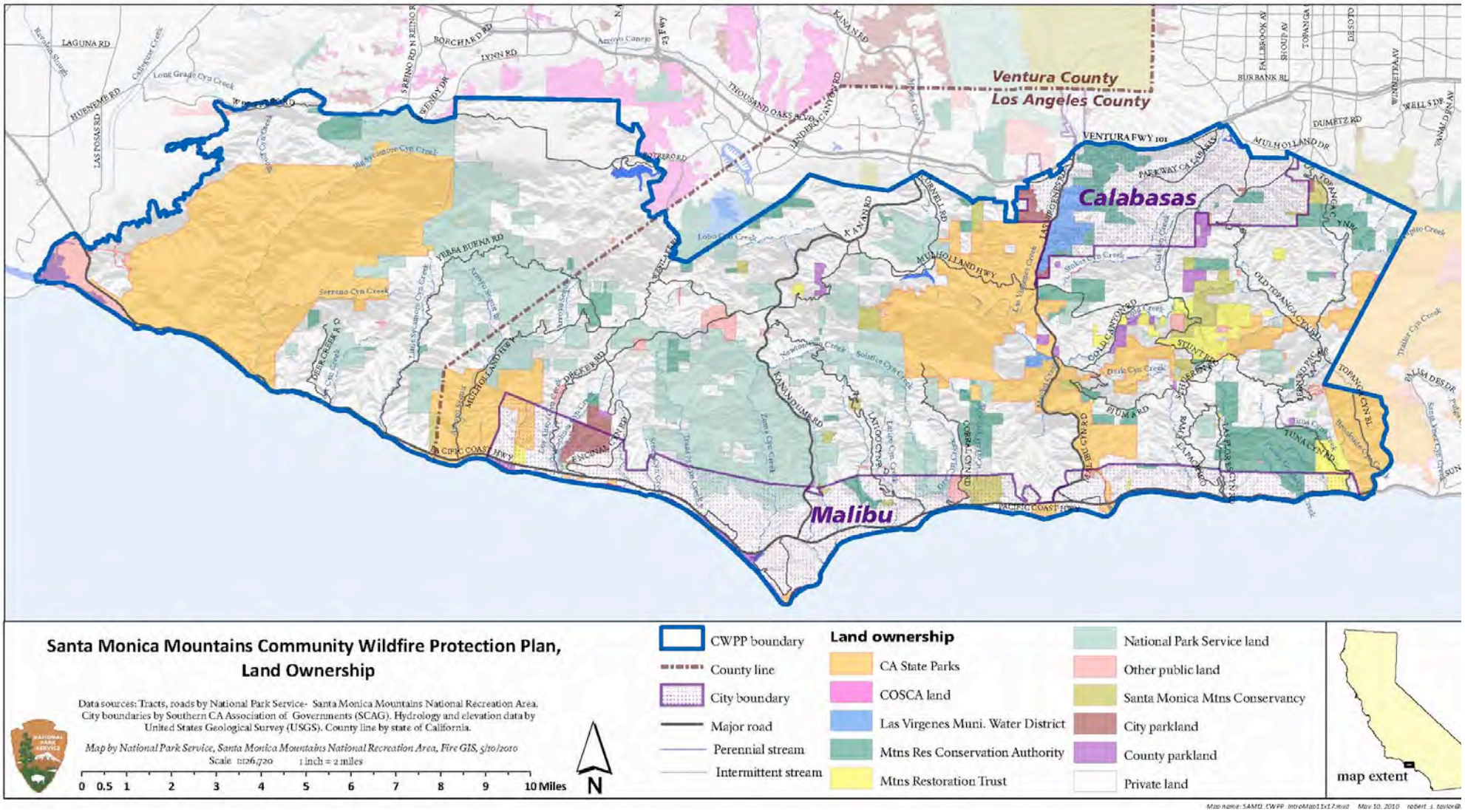
c. Work with your local fire department.

Talk to your local firefighters.[30] Find out what they need to safely get to your house and back out. Make sure that your access roads 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's on your property; invite them out to see it. Talk to them when they come out to do your annual inspection. Have street and address signs visible so emergency responders can find you. Make sure you have a water supply they can locate and use. Know where and how to turn off any fuel sources such as natural gas or propane. *For more information, see www.projecttahs.org/pdf/firedepartment.doc.*

This CWPP has been developed with these Conservation Principles in an attempt to balance fire safety with other important considerations in the Santa Monica Mountains. Residents are encouraged to remember these general principles in all fuel reduction and fire safety activities they undertake. More detailed best management practices can be found in Chapters 4 and 5.

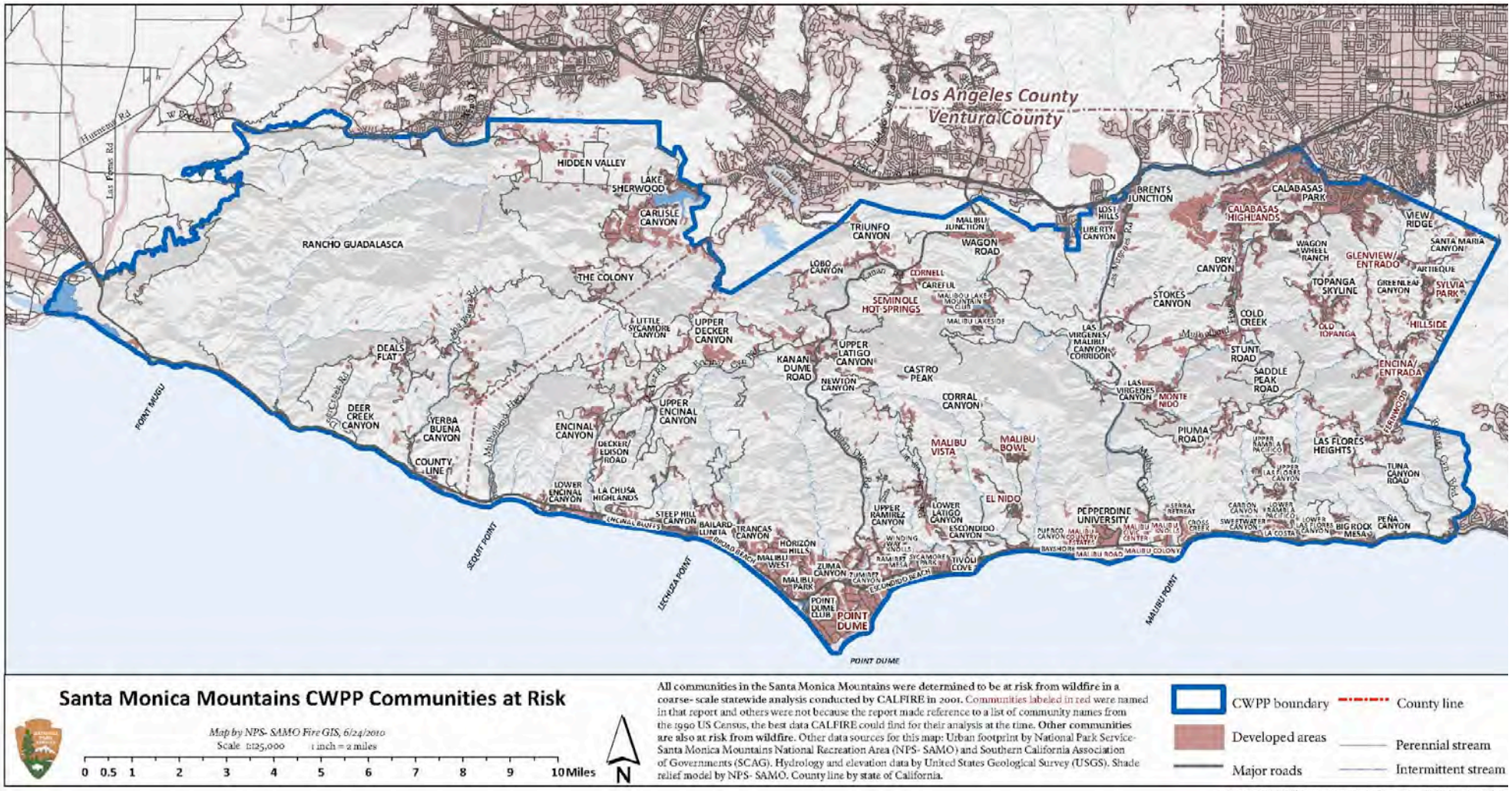
[30] See Chapter 6 for contact information for all fire-fighting agencies in the Santa Monica Mountains region.

MAP 1-1 SANTA MONICA MOUNTAINS LAND OWNERSHIP [31]



[31] This map prints best at 11x17. Please see www.forevergreenforestry.com/smmcwpp_pub.html to download the print version.

MAP 1-2 SANTA MONICA MOUNTAINS COMMUNITIES[32]



[32] This map prints best at 11x17. Please see www.forevergreenforestry.com/smmcwpp_pub.html to download the print version.

Santa Monica Mountains Fire-Safe Planning Process

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2. Santa Monica Mountains CWPP Planning Process

2.1. Planning Area Boundaries

This Community Wildfire Protection Plan (CWPP) covers the principal wildland-urban interface areas of the Santa Monica Mountains, in Los Angeles and Ventura counties of southern California *(see Chapter 1 for more detailed information on the overall Planning Area)*. The Planning Area was divided into 20 planning units to maximize community input. Planning units were created around existing population centers, governance jurisdictions, access routes, watersheds, and fire history. They are listed below in Figure 2-1 and illustrated in Map 2-1 at the end of this chapter. A detailed description of each planning unit is provided in the Community Fire Safety Action Plans, in Part II of this CWPP.

FIGURE 2-1. PLANNING UNITS

PU #	PLANNING UNIT NAME	BUILT ENVIRONMENT PLACE NAMES INCLUDED
1	Malibu West Beaches	Broad Beach, Encinal Beach, and Encinal Bluffs
2	Point Dume	Paradise Cove, Point Dume, and Point Dume Club
3	Malibu Central Beaches	Bayshore, Malibu Road, Escondido Beach, Latigo Shores, Lower Ramirez Canyon, Malibu Beach, Malibu Bluffs, Malibu Colony, Malibu Cove Colony, and Tivoli Cove
4	Malibu East Beaches	Big Rock Beach, Carbon Beach, La Costa Beach, Las Flores Beach, Las Tunas Beach, and Topanga Beach
5	Decker Canyon – Encinal Canyon	Bailard-Lunita, Decker-Edison Road, La Chusa Highlands, Lower Decker Canyon, Lower Encinal Canyon, and Steep Hill Canyon
6	West Malibu	Bonsall Canyon, Horizon Hills, Malibu Park, Malibu West, Trancas Canyon, and Zuma Canyon
7	Zumírez Canyon – Puerco Canyon	Escondido Canyon, Lower Latigo Canyon, Malibu Colony Ranch Estates, Paradise View, Puerco Canyon, Ramírez Mesa, Upper Ramírez Canyon, Sycamore Park, Winding Way Knolls, and Zumírez
8	Malibu Civic Center	Civic Center, Malibu Country Estates, and Malibu Knolls
9	Cross Creek – Carbon Canyon	Carbon Canyon, Cross Creek, Serra Retreat, Sweetwater Canyon, and Sweetwater Mesa
10	La Costa – Peña Canyon	Big Rock Mesa, La Costa, Las Flores Mesa, Lower Las Flores, Lower Rambla Pacifico, and Peña Canyon
11	Ventura: Rancho Guadalasca – Yerba Buena Canyon	The Colony, County Line, Deals Flat, Deer Creek Canyon, Laguna Peak, Naval Base Ventura County–Point Mugu, Rancho Guadalasca, West Carlisle, and Yerba Buena Canyon
12	Sycamore Canyon – Upper Latigo Canyon	Little Sycamore Canyon, Kanan Dume Road, Malibu Vista, Newton Canyon, Upper Decker Canyon, Upper Encinal Canyon, and Upper Latigo Canyon
13	Corral Canyon – Pepperdine University	Barrymore Road, Corral Canyon, El Nido, Malibu Bowl, Malibu Hills, and Pepperdine University
14	Rambla Vista – Tuna Canyon	Las Flores Canyon, Las Flores Heights, Piuma Road, Tuna Canyon Road, Sea View Estates, Upper Rambla Pacifico, and West Saddlepeak

PU #	PLANNING UNIT NAME	BUILT ENVIRONMENT PLACE NAMES INCLUDED
15	Topanga Canyon	Arteique, East Saddle Peak, Entrado, Fernwood, Glenview, Greenleaf Canyon, Henry Ridge, Hillside, Old Topanga, Post Office Tract, Red Rock Canyon, Santa Maria Road, Sylvia Park, Top o'Topanga, Topanga Skyline, and Viewridge Estates
16	Las Virgenes Canyon Corridor	Cold Creek, Dry Canyon, Las Virgenes Canyon, Lower Saddle Peak Road, Monte Nido, Stokes Canyon, and Stunt Road
17	Cornell	Careful, Cornell, Lobo Canyon, Malibou Lake Mountain Club, Malibu Junction, Malibu Lakeside, Seminole Hot Springs, Triunfo Canyon, and Wagon Road
18	Liberty Canyon – Lost Hills	Brents Junction, Liberty Canyon, and Lost Hills
19	Calabasas Interface	Calabasas Highlands; City of Calabasas south of US 101 from The Oaks housing development, east to the intersection of Mulholland Highway and West Mulholland Drive; includes south Greater Mulwood
20	Ventura: Hidden Valley – Lake Sherwood	East Carlisle Canyon, Hidden Valley, and Lake Sherwood

2.2. Process and Plan Development

A community-intensive process was used in development of this Community Wildfire Protection Plan (CWPP) to ensure maximum resident and stakeholder input. The core of this process was a series of public meetings, with at least one in each of the planning units.

2.2.1. Community Meetings

One of the goals in developing the Santa Monica Mountains CWPP is to educate residents regarding fire safety and defensible space. Therefore, the planning process was designed to maximize opportunities for public education and participation. More than 20 community meetings were held throughout the Planning Area between October 2009 and January 2010. Approximately 250 people attended one or more of these meetings. Please see Appendix A for a list of meeting attendees.

FIGURE 2-2. CWPP COMMUNITY MEETING SCHEDULE

PU#	PLANNING UNIT NAME	MEETING DATE	MEETING VENUE
1	Malibu West Beaches	1/7/10	Malibu City Council Chambers
2	Point Dume	1/8/10	Malibu City Council Chambers
3	Malibu Central Beaches	1/10/10	Malibu City Council Chambers
4	Malibu East Beaches	1/10/10	Malibu City Council Chambers
5	Decker Canyon – Encinal Canyon	11/10/09	Malibu City Council Chambers
6	West Malibu	10/25/09	Malibu City Council Chambers
7	Zumírez Canyon – Puerco Canyon	11/6/09	Malibu City Council Chambers
8	Malibu Civic Center	11/2/09	Malibu City Council Chambers
9	Cross Creek – Carbon Canyon	10/27/09	Malibu City Council Chambers
10	La Costa – Peña Canyon	10/22/09	Malibu City Council Chambers
11	Ventura: Rancho Guadalasca – Yerba Buena Canyon	11/3/09	Camp Hess Kramer, Gildred Hall

PU#	PLANNING UNIT NAME	MEETING DATE	MEETING VENUE
12	Sycamore Canyon – Upper Latigo Canyon	11/9/09	Calamigos Ranch
13	Corral Canyon – Pepperdine University	1/12/10	Los Angeles County Waterworks
14	Rambla Vista – Tuna Canyon	10/20/09	Los Angeles County Fire Dept., Camp 8
15	Topanga Canyon	10/23/09	Topanga Christian Fellowship Church
16	Las Virgenes Canyon Corridor	10/26/09	Diamond X Ranch
17	Cornell	11/8/09	Paramount Ranch – Western Town Pavilion
18	Liberty Canyon – Lost Hills	1/13/10	District Offices of County Supervisor Zev Yaroslavsky
19	Calabasas Interface	1/14/10	Diamond X Ranch
20	Ventura: Hidden Valley – Lake Sherwood	1/6/10	Santa Monica National Recreation Area Headquarters

The average community meeting lasted approximately three hours (6–9 pm on weekdays or 2–5 pm on weekends). Registered Professional Forester and CWPP principal author Tracy Katelman provided the introduction to the meeting and explained the CWPP process, including some background information on CWPPs in general. J. Lopez of Los Angeles County Fire Department and the California Fire Safe Council gave a brief introduction to Fire Safe Councils. Kathryn Kirkpatrick and Mike Wilson of the National Park Service, together with J. Lopez, and Ron Oatman of Ventura County Fire Department, gave an introduction to the wildfire environment of the Santa Monica Mountains and the "house out" strategy for community fire safety and defensible space *(see Chapter 4 for more information on the house-out strategy).* These presentations were followed by Q&A, and then the community mapping exercise.

Community Mapping Exercise

The community mapping exercise offered residents a hands-on opportunity to identify the following information on maps of the local area:

- Community values and assets at risk,
- High fire risk and high wildfire hazard areas,
- Existing community or neighborhood-scale fuel-reduction projects,
- Local fire-fighting resources, with a focus on water sources,
- Potential evacuation routes and community safe zones (places to safely wait out a fire if evacuation is not possible), and
- Potential projects to reduce identified risks and hazards.

Residents were asked to think big for the identification of potential projects. They were told, "If you could do anything you wanted to prepare your community for wildfire, no matter the cost or who owns the property, what would it be?" A "sticky dot" voting exercise then took place where residents were instructed to look at the list of identified projects and put on their "reality filter." They were then asked, "Which projects are the most important and realistic to implement for your community?" Each participant was given dots to cast votes for potential projects using "N/3" methodology (i.e., total number of projects divided by 3 equals total number of votes), with only one vote per identified project. Votes were tallied to identify this informal community opinion regarding priority projects. Part II of this CWPP contains the results of the mapping exercise for each community meeting. See Appendix B for the mapping exercise instructions.

Comments were received that the public notice for the Fall 2009 meetings was too short. Therefore, two additional community-mapping processes were offered to residents unable to attend the earlier meetings. The first was a meeting that was held on January 9, 2010, at Juan Cabrillo Elementary School in Malibu. Maps generated at the October and November meetings were made available for residents to provide additional input. A follow-up meeting did not occur for the January 2010 community meetings, as public notice for these was posted more than one month prior. The second, to fully accommodate all interested parties, was a website was developed with copies of all maps from the Fall 2009 meetings, enabling residents to download their respective map and submit the same information gathered at the meetings.

2.2.2. Community Outreach

Extensive outreach publicized the community meetings and the CWPP in general. A website was developed for the CWPP, www.forevergreenforestry.com/SantaMonicaMountainsCWPP.html. A Facebook page was also created for the CWPP: Santa Monica Mountains CWPP.

A series of articles appeared in the local newspapers: *Malibu Surfside News*, *Malibu Times*, *Topanga Messenger*, and *Ventura County Star*. All papers also included the scheduled community meetings in their calendar listings. The City of Malibu posted the meeting schedule on its Community Calendar.

For a detailed list of outreach efforts, see Appendix C, "Outreach Efforts."

2.2.3. Public Review and Input

There were several subsequent opportunities for public input to this document, in addition to the meetings that generated local data.

CWPP Community Review Committee and Internal Reviewers

A Community Review Committee (CRC) was created for any Santa Monica Mountains resident who wanted to participate in the process beyond the community meetings and public review. All meeting attendees were invited to volunteer for the CRC. An invitation was also posted on the project website. At least one participant was identified from each planning unit.

A parallel group of Internal Reviewers was chosen to represent the various stakeholder groups in the Planning Area, including government, fire agencies, Fire Safe Councils, homeowner's associations, state and federal land management agencies, local businesses, and nonprofit organizations. *For a list of CRC and Internal Reviewers, see Appendix D: Community Review Committee and Internal Reviewers.*

The CRC and Internal Reviewers were provided opportunity to comment on draft CWPP documents between January and May 2010. It was a virtual, Web-based review process whereby documents were uploaded onto a private website for participants to download and comment. In late April and early May, six working sessions were held with the CRC and Internal Reviewers, as well as with the Planning Committee, to achieve maximum resolution of outstanding issues in the CWPP before publishing the Public Draft.

Public Draft

Comments were incorporated from the CRC/Internal Review, and a Public Draft was published in July 2010. CWPP partners distributed the Public Draft for review. The final CWPP is anticipated to be signed and published in late 2010 or early 2011.

2.3. CWPP Planning Committee and Working Group

Several key individuals and organizations contributed to the creation of this CWPP, in addition to the many community members who participated in the process.

A Planning Committee was established to oversee development of this plan and to ensure its compliance as a Community Wildfire Protection Plan. The purposes of the committee were to:

- provide oversight to the Santa Monica Mountains CWPP process,
- meet the requirements of Community Wildfire Protection Plans (CWPPs) of the National Fire Plan, and
- ensure that the plan meets the needs of all sectors of the Santa Monica Mountains in terms of fire safety and prevention.

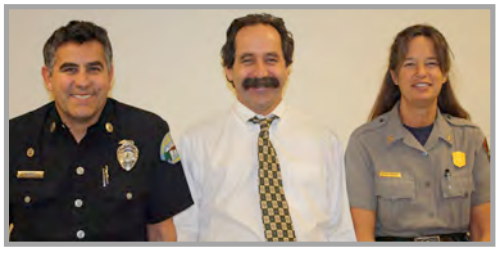


FIGURE 2-3. SANTA MONICA MOUNTAINS CWPP PLANNING COMMITTEE MEMBERS

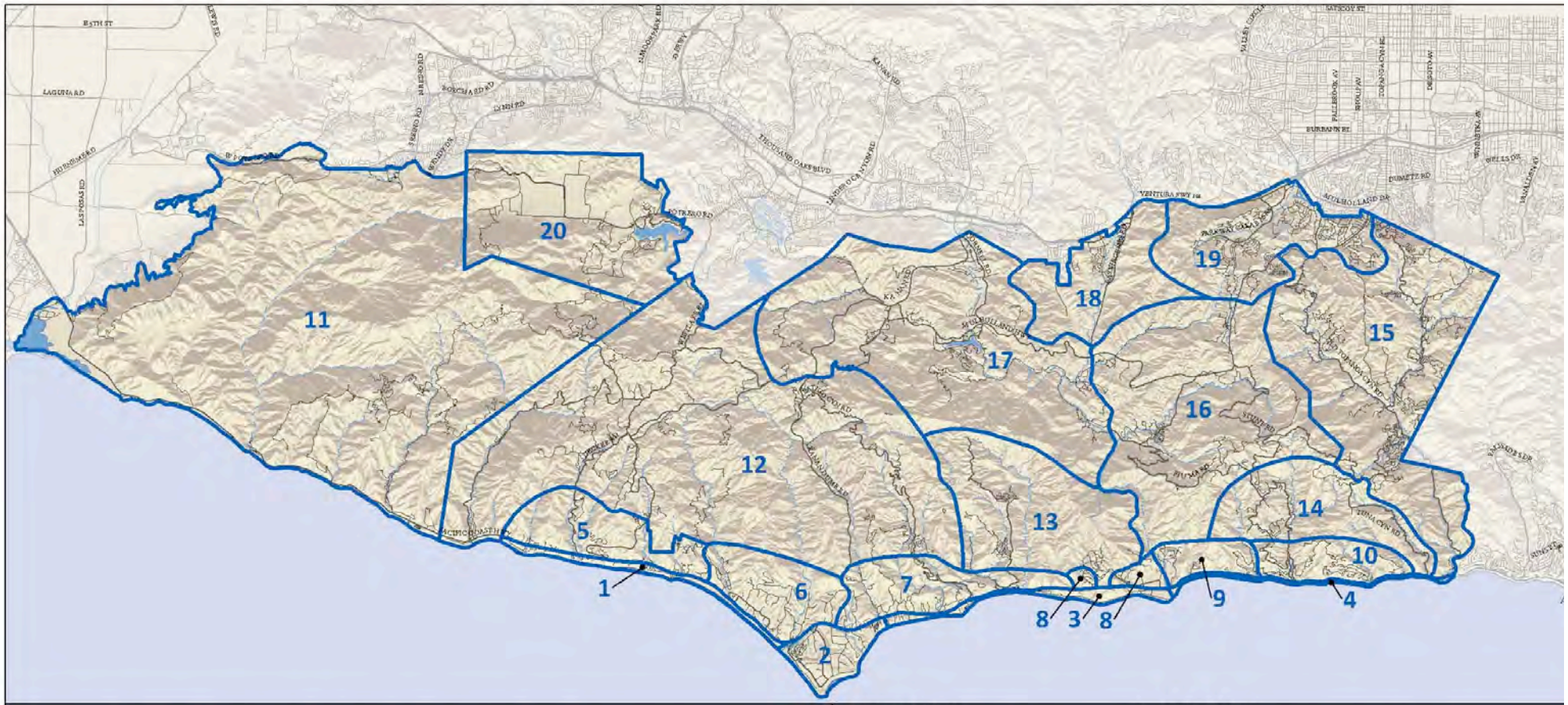
NAME	AFFILIATION	TITLE
Kate Dargan	Fire Planners	
Brad Davis	City of Malibu	Emergency Services Coordinator
Mark Goss, Leslie Moss	Malibu West Fire Safe and Sustainability Council / HOA	Chair
Steve Hess	Las Virgenes Homeowners Federation	President
Tracy Katelman	ForEverGreen Forestry	Principal Author, Project Lead
Kathryn Kirkpatrick	National Park Service (NPS)	Fire Management Officer
J. Lopez	Los Angeles County Fire Department	Deputy Forester
Timothy Pershing	Office of Los Angeles County Supervisor Yaroslavsky	Field Deputy
Darrell Ralston	Ventura County Fire Department	Assistant Chief
Ron Shafer	CA Department of Parks & Recreation	Park Superintendent
Rorie Skei	Santa Monica Mountains Conservancy	Deputy Director

FIGURE 2-4. SANTA MONICA MOUNTAINS CWPP WORKING GROUP MEMBERS

NAME	AFFILIATION	TITLE
Brad Weisshaupt	Los Angeles County Fire Department	Forestry Assistant
Cameron Naficy		Ecologist, Author
Craig Morgan	Ventura County Fire Department	Fire Prevention Officer
Deanna Sverdlov	ForEverGreen Forestry	Projects Coordinator
Elizabeth Keys		Project Assistant
four waters	four waters media	Designer & Messaging Consultant
Gregory Elwood	National Park Service Partner	GIS Technician
Julie Clark De Blasio	Mountains Restoration Trust, National Park Service Partner Sweetgrass Environmental Consulting	Project Liaison Author
Karen Pickett		Media Consultant
Kathy Glass		Senior Editor
Katie Ziemann	California Fire Safe Council	Affiliate Manager
Keith Gurrola	Ventura County Fire Department	Battalion Chief
Kim Marks		Community Outreach Consultant
Kristina Prosser		Technical Assistant
Larry Williams	Ventura County Fire Department	Fire Prevention Officer
Marti Witter	National Park Service	Fire Ecologist
Mike Wilson	National Park Service	Fire Information & Education
Robert Taylor	National Park Service	Biogeographer, Fire GIS Specialist
Stephen Umbertis		Planner, Author

NAME	AFFILIATION	TITLE
Terri Anderson	ForEverGreen Forestry	
Tracy Katelman	ForEverGreen Forestry	Principal Author, Project Lead
Zandra Zavalza	National Park Service	Project Assistant

MAP 2-1. SANTA MONICA MOUNTAINS CWPP PLANNING UNITS[1]



[1] This map prints best at 11x17. Visit www.forevergreenforestry.com/smmcwpp_pub.html to download the print version.

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3. Wildfire: Current Environment and Behavior[1]

This chapter provides a broad introduction to wildfire in the Santa Monica Mountains (SMM). Understanding fire sources, behavior, and its role in the ecosystem can help residents to better coexist with it. Throughout the wildland-urban interface (WUI) of the SMM, fire poses a perpetual threat to human property and safety. Meanwhile, increasing incidents of human-caused fire simultaneously threaten the integrity of local wildlands.

Both human and natural factors affect *fire behavior* and its consequences. Human factors include home design and landscaping, community wildfire preparedness, land-use planning, and regulation of accidental *fire ignitions*. Natural features include topography, weather, and the condition and type of vegetation and other fuels. Understanding environmental conditions in the SMM helps us to formulate practices or actions that can best support individual and community decision making, as well as guide local changes to the environment that are intended to reduce the negative impacts of wildfire.

This chapter explains fire behavior characteristics, fire's relationship with fuels, fire history, and the fire science used as a basis for planning, preparation, and predicting fire effects on both human and natural communities. It is intended to be a primer for residents who want to learn about and improve the design of home and community fire-safety projects.

3.1. Fire History

The fire history of an area is a description of fire occurrence and characteristics in a given place. Fire history information includes the frequency of fire and time between fires (also known as fire return interval), the size and seasonal patterns of past fires, a description of whether fires were historically ground fires, crown fires, or some proportion thereof, and a fire's ignition source (where known). Fire history illustrates the potential for future fires. It also reveals ignition patterns that can be targeted by prevention programs. For example, if there is a history of frequent fires along a well-traveled route, roadside vegetation management may be in order. Databases of fire occurrence, such as those maintained by the National Park Service and the California Department of Forestry and Fire Protection (CAL FIRE), indicate the way fires have changed over time, both in frequency and intensity. This helps point to appropriate goals for future fuel management.

3.1.1. Lightning Fires

Lightning-caused wildfires are infrequent in coastal areas such as the Santa Monica Mountains. The number of lightning strikes in the SMM is low, and they coincide with wet winter and spring conditions, hence there is little chance for ignitions. It is estimated that, on average, only 3–5% of lightning strikes in a year result in wildfires in

[1] Cameron Naficy and the NPS Santa Monica Mountains National Recreation Area staff contributed significantly to this chapter, based on previous work of ForEverGreen Forestry. Elements of this chapter were previously written by Carol Rice, Wildland Resource Management, and David Jaramillo, Whole Earth Forestry.

southern California Mediterranean-climate systems.[2] Since 1981, lightning-ignited wildfires have been recorded in the Santa Monica Mountains on only two dates, leading to six small fires (see

Figure 3-1).[3] These six fires comprised less than 4% of the 190 fires ignited during this period and less than 1% of the total area burned. With the exception of one of these fires, which burned 600 acres, all were between 0.1 and 0.2 acres in size.[4]

3.1.2. Pre-Historic Fire History

Evidence from Miocene deposits in the Santa Monica Mountains suggests that fires have been an influence in California's south coast mountain ranges for at least 5–15 million years.[5] The frequency and behavior of such fires have fluctuated over time with shifting climate, vegetation *composition,* and CO_2 concentrations. It appears that large wildfires were relatively infrequent (one to two fires per century) before the arrival of Native Americans in the region. Those fires were dependent on the rare overlap of natural lightning ignitions and Santa Ana winds, or very large fires blowing down from higher mountains to the east where lightning is more common.

3.1.3. Indigenous Use of Fire

Indigenous populations became established in the Santa Monica Mountains more than 10,000 years ago. By at least 5,000 years ago, and probably earlier, Native Americans began using fire to increase the productivity of economically useful plants and animals—for example, increasing big-game forage and enhancing hunting conditions.[6] Indigenous fire use likely had the greatest impact on lower-elevation areas, such as grasslands and oak savannahs. Early residents had little or no economic incentive to convert chaparral, which they also relied upon for fuel, food, medicine, and game. Large brush fires likely prevailed in the fall, but the social and economic consequences were probably lessened by the fact that settlements and nearby resource procurement areas were found in lowlands rather than steep, brush-covered slopes where fires generally occurred.

3.1.4. European Settlement Fire History

European settlement of the southern California coast began in the late 18th century and brought with it a number of changes to the area's fire ecology. Primary among these were changes induced directly and indirectly by intensive stock grazing (cattle, horses, mules, sheep, goats). Chaparral and sage scrub vegetation was cleared in order to increase grass forage and to facilitate livestock movement and forage, primarily by setting uncontrolled wildfires. Livestock helped spread many species of Eurasian exotic grasses and herbs that were already adapted to grazing disturbances. Spread of these exotic species was generally successful in the heavily disturbed post-fire soils associated with increased human-caused wildfires. These exotic grasslands are very persistent once established. Beginning in the late 1800s, these practices contributed to some of the region's largest mega-fires, ranging from tens

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[2] J.E. Keeley (2006), "South Coast Bioregion." In: N.G. Sugihara, J.W. van Wagtendonk, K.E. Shaffer, J. Fites-Kaufman, and A.E. Thoede (eds.), *Fire in California's Ecosystems* (Los Angeles: University of California Press), 350–390: p. 352.

[3] National Park Service (2005), *Final Environmental Impact Statement for a Fire Management Plan,* Santa Monica Mountains National Recreation Area, Chapter 3, p. 13; www.researchlearningcenter.org/samo/planning/FireEIS/.

[4] NPS (2005), Final EIS for a Fire Management Plan, SMMNRA, Chapter 3, p. 13.

[5] Keeley (2006), "South Coast Bioregion."

[6] M.K. Anderson (2007), *Tending the Wild: Native American Knowledge and the Management of California's Natural Resources* (Berkeley: University of California Press), p. 148.

to hundreds of thousands of acres in size.[7] Invasion of native shrublands by exotic annual grasses over the last 150 years has become a serious resource management problem affecting millions of acres of the western US. It is an ongoing problem in the Santa Monica Mountains.

3.1.5. Recent Fire History

Despite lightning strikes being a minor factor in the SMM, current patterns of wildfire activity here show a trend of increasing annual area burned, resulting from dramatic increases in the number of human-caused ignitions, particularly those coinciding with the Santa Ana winds. In some areas of the western US, increased wildfire activity can be attributed to past fire-suppression efforts and/or abnormal amounts or arrangements of fuel, but this is not the case in the SMM. Rather, fire suppression has helped to temper this increase in wildfire due to human activity.[8,9] There is no current evidence that changing climate drives fire occurrence.[10]

Expanding wildfire activity in southern California is most closely related to increasing population and expanding suburban development. It is estimated that southern California's population has grown from 250,000 inhabitants in 1900 to more than 16.5 million today. Between the period from 2003 to 2007 alone, 200,000 homes were built in southern California's wildland-urban interface (WUI). Most of this *growth* is occurring in 1+-acre subdivisions outside urban areas, thus expanding the WUI significantly.[11]

Source: NPS / SMMNRA

In addition to exposing more human life and property to danger when large wildfires occur, the combination of a rising population and expanding *exurban* development in high fire-hazard areas has been the major cause of the increased wildfire activity itself. As is evident in Figure 3-1 below, an overwhelming majority of wildfire activity in the SMM is human-caused, with 95% of known fire starts and 99% of the annual area burned in

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[7] Keeley (2006), "South Coast Bioregion."

[8] Keeley (2006), "South Coast Bioregion," p. 359.

[9] J.E. Keeley, C.J. Fotheringham, and M. Moris (1999), "Re-examining fire suppression impacts on brushland fire regimes," *Science* 284: 1829–1832, p. 1831.

[10] R.C. Balling, Jr., D.A. Periconi, and R.S. Cerveny (1999), "Large asymmetrical temperature trends at Mount Wilson, California," *Geophysical Research Letters* 26: pp. 2753–2756.

S.A. Mensing, J. Michaelsen, and R. Byrne (1999), "A 560-Year Record of Santa Ana Fires Reconstructed from Charcoal Deposited in the Santa Barbara Basin, California," *Quaternary Research* 51: pp. 295–305.

F.W. Davis and J. Michaelsen (1995), "Sensitivity of fire regime in chaparral ecosystems to climate change." In: J.M. Moreno and W. O. Oechel (eds.), *Global Change and Mediterranean-type Ecosystems* (New York: Springer Verlag), pp. 435–456.

J.E. Keeley and C.J. Fotheringham (2003), "Impact of Past, Present, and Future Fire Regimes on North American Mediterranean Shrublands." In: T. T. Veblen, W. L. Baker, G. Montenegro, and T. W. Swetnam (eds.), *Fire and Climatic Change in Temperate Ecosystems of the Western Americas* (New York: Springer), pp. 218–262.

[11] Pincetl et al. (2008), "Is the Land Use, Not the Fuels: Fires and Land Development in Southern California," *Real Estate Review* 37(1): pp. 25–42. Statistics in this and the previous two sentences are drawn from this source.

the Santa Monica Mountains linked directly to human activity. Of the acres burned by known ignition sources, 72% are due to arson and 19% due to arcing power lines.[12] Most unintentionally started fires other than those caused by power lines—such as those due to vehicles, campfires, mechanical equipment use, and *slash* burning—are small in size and contribute little to the annual area burned. Prescribed burning accounts for less than 4% of the annual area burned today.[13] A specific cause is not known for those classified below as ~~"un~~known," yet there is no doubt that they are human-caused.

FIGURE 3-1. AREA BURNED IN THE SANTA MONICA MOUNTAINS FROM 1982 TO 2008 BY IGNITION SOURCE[14]

CAUSE	NUMBER OF FIRES	TOTAL ACRES
Arson	14	78,118.6
Power Line	16	20,467.7
Other/Unknown	69	6,377.9
Warming Fire	1	4,707.0
Prescribed Burning	23	4,122.7
Smoking	6	809.6
Lightning	6	602.5
Fireworks	4	281.1
Playing With Matches	7	148.1
Cooking Fire	9	69.6
Land Clearing	4	54.4
Trash Burning	2	54.3
Burning Building	2	51.2
Burning Vehicle	15	40.4
Aircraft	2	31.1
Exhaust – Power Saw	5	19.0
Burning Dump	3	0.4
Exhaust – Other	1	0.2
Burning Brush Pile	1	0.1
Grand Total	**190**	**115,956.0**

From 1925 to 2000, twelve wildfires larger than 15,000 acres occurred in the Santa Monica Mountains. Maps 3-1 and 3-2 at the end of this chapter show fire history in the SMM together with the decade in which the fire occurred. The fire history in the Santa Monica Mountains is not as extreme as the rest of southern California. During the eight-year period between 2000 and 2008 in the greater southern California area, 2.2 million acres burned. Approximately

[12] NPS (2005), *Final EIS for a Fire Management Plan,* Chapter 3, p. 13.

[13] NPS (2005), *Final EIS for a Fire Management Plan,* Chapter 3, p. 13.

[14] Robert S. Taylor, Biogeographer/Fire GIS Specialist, National Park Service, Santa Monica Mountains National Recreation Area, personal communication, February 2010.

95% was chaparral and sage scrub vegetation and 5% coniferous forests. The largest fire years in this period were 2003 (742,000 acres) and 2007 (510,000 acres). These two fire years alone caused billions of dollars' worth of damages, destroyed nearly 4,000 homes, and took at least two dozen lives.

FIGURE 3-2. TOTAL ACREAGE BURNED BY DECADE IN THE SMM, 1925–PRESENT[15]

DECADE	TOTAL AREA (ACRES)	NUMBER OF FIRES
1920s	3,878	5
1930s	66,128	6
1940s	10,496	10
1950s	30,288	20
1960s	11,559	9
1970s	190,435	30
1980s	76,447	34
1990s	67,267	59
2000s	5,430	52
Grand Total	**461,928**	**225**

Increased wildfire has also brought significant negative ecological impacts to the flora and fauna of the SMM. Among these impacts has been a reduction in the area of mature chaparral vegetation and the conversion of large areas of chaparral and sage scrub habitat to fire-prone grasslands dominated by exotic annual grass species. Although many plant species in the SMM are adapted to high-severity fires, increased fire frequency has led to a reduction in long-lived species that require fire-free periods of several decades. It also has depleted soil *seed banks* in some cases, reducing the diversity or rapidity of post-fire recolonization. Alternatively, repeated fires in short succession that do not allow for sufficient fuel accumulation to produce an intense fire can fail to scarify seeds in soil banks and therefore result in low post-fire seed germination.[16] In this manner, significant portions of the SMM have been converted from native vegetation to heavily disturbed weed-infested vegetation as a result of multiple wildfires in short succession.[17] *See Chapter 5, Fire Ecology and Management for more information.*

3.2. Fire Behavior Characteristics

Understanding fire behavior attributes is important for communicating fire threats and mitigation benefits. *Flame lengths*, *fire intensity, heat output, rate of spread, residence time,* and whether the fire burns on the surface or crown are all ways to describe fire behavior and its possible resistance to control. These attributes also determine potential damage or positive impacts from fire. The following paragraphs introduce common fire behavior terms so residents and Fire Safe Councils can better understand fire behavior and how it relates to their fire-safety efforts.

Surface Fires

Surface fires consume ground-level fuels primarily, including herb and shrub vegetation, organic litter, and the soil duff layer. Surface fires may advance quickly with short or long residence time and a range of heat output. During

[15] In all recorded fires that entered the Planning Area. Source: Robert Taylor, NPS. April 2010.

[16] Richard Halsey, Chaparral Institute, personal communication, January 2010.

[17] R. Halsey, personal communication, January 2010.

milder conditions, surface fires in shrub systems do not always remove all the vegetation, only that which is very dry or exposed to high fire intensity. Surface fires respond to fire-suppression efforts except in extreme fire weather like fall Santa Ana wind events. Within the SMM, surface fires typically occur in grasslands and oak savannah ecosystems.

Crown Fire

Crown fires consume the crowns (or *canopy*) of the uppermost vegetation layer. The fire does not remain on the surface but climbs into the tops of the vegetation, with large flame lengths and high fire intensity. The term is often used to refer to fires in forests. Mature chaparral stands are tall enough to be described as having crown fires. During the dry and windy conditions of the southern California fire season, chaparral and coastal sage scrub vegetation burn in stand-replacing crown fires.

Crown fires are of high intensity, with high heat output and long flame lengths, which challenge suppression efforts. Crown fire initiation (or *torching*) occurs when ladder fuels are present (so-called because of their location and position, enabling them to conduct fire from the surface into the canopy), providing a connection between the surface fuels and the crown fuels. The higher the base of the canopy (i.e., the further away from surface fuels), the more difficult it is for crown fires to ignite. Once fire reaches the vegetation canopy, whether in sage scrub, chaparral, or forest, its spread is more likely in dense canopies and with high wind speeds and/or steep slopes. When a crown fire occurs, countless embers (or sparks) are produced and distributed, sometimes over long distances, especially during high wind events. These embers can start new fires (spot fires), which can each grow and confound any fire-suppression forces. In ornamental landscaping near homes, in tall chaparral, or in woodlands, fire behavior may be reduced by selectively removing ground-layer vegetation and ladder fuels. It is harder for surface fires to reach into the canopy and become crown fires if the vertical arrangement of fuels is separated by ladder-fuel removal. This is the main goal of many fuel-reduction treatments.

Fire Intensity

"Fire intensity" describes the amount of heat that is released by flaming combustion in a specific area and unit of time (BTU/ft/sec).[18] This measurement captures the energy of a fire in the flaming front; it is often confused with "fire severity," a term describing fire effects on vegetation or soils (see below). Fire intensity is used in fire prediction and modeling to determine the most effective control strategy. Firefighters can only work adjacent to flame lengths with an intensity low enough not to burn the shin. Fire intensity increases with heavy fuel loading, continuous fuel arrangement, and low *fuel moisture*.

[18] BTU: British Thermal Units

Heat Per Unit Area

"Heat per unit area" is the measurement used to define the total heat produced by flaming combustion in any one location, quantifying the amount of heat energy released (BTUs) from fuel covering a square foot of ground during the passage of the flaming front. This does not include long *burn-out times* and smoldering. This factor is especially important in determining soil heating and is a predictor of potential root damage and *cambium* heating, all indicators of fire severity for tree species such as oaks.

Fire Severity

"Fire severity" describes the effects from a fire, as measured by the amount of organic matter combustion caused by the fire. It is determined by soil damage, extent of tree canopy mortality, or in shrub vegetation, amount of residual aboveground vegetation. Fire severity is assessed by observing vegetation and soil conditions after a fire, often in comparison with pre-fire vegetation or soil conditions. The relationship between predicted fire behavior characteristics (flame length, heat per unit area, *fireline intensity,* etc.) and fire severity is being explored but is not yet well established. Long flame lengths, large amounts of torching, crown fire presence, high fireline intensity, and high heat per unit area are all indicators of potentially severe fires.

Large fires in the SMM are almost all of high severity, resulting in mortality of most aboveground vegetation. Higher or lower severity can be distinguished based on the amount or size of aboveground organic material (e.g. charred branches, organic soil layers) remaining following fire. This distinction can be important in estimating post-fire vegetation recovery, as many ecosystem components (e.g. seed banks, resprouter survival, invasion by exotic grasses) have been associated with different fire severity levels. Notions of fire severity developed in other ecosystems generally do not apply well to southern California shrublands. Here high-severity fires (that consume most or all aboveground biomass) are normal and natural. Chaparral and coastal sage scrub vegetation are well adapted to high-intensity, high-severity fires. The vegetation historically recovers well after high-severity fires, unless the fire return interval is too short, meaning more frequent than every 25 years.[19]

Flame Length

"Flame length" measures the span of the flame from the tip to the base, irrespective of its tilt. This factor is the greatest influence on the probability of structure damage and ease of fire suppression. Flame length is highly correlated with fire intensity, which can help predict fire severity in some ecosystems. In general, hand crews can safely and effectively make direct attacks on fires where flame lengths are less than 4 feet. When flame lengths exceed 4 feet, hand crews usually must resort to indirect attack methods. Bulldozers can generally make safe and effective direct attacks on fires with

Source: NPS / SMMNRA

[19] J.E. Keeley (2009), "Fire intensity, fire severity and burn severity: a brief review and suggested usage," *International Journal of Wildland Fire* 18: pp. 116–126.

flame lengths up to 12 feet. Flame lengths longer than 12 feet cannot be safely or effectively controlled by any direct attack for most situations. Fuel-management projects are intended not to stop fire but to reduce flame lengths, creating new opportunities for firefighters to safely and effectively use direct attack methods to limit fire spread. Fuel-management goals aim for production of flame lengths less than 4 feet, especially near homes and structures.

Rate of Spread

The ~~"r~~ate of spread" is a measurement of how rapidly the *leading edge* of a fire advances. A rate of spread faster than fireline-building capacity challenges fire-suppression efforts. High spread rates also indicate the potential for quick changes in fire spread direction, which could endanger firefighters and increase damage. High rates of spread in grass can exceed 300 feet per minute. In crown fires, rates of spread can exceed 100 feet per minute. When wildfires occur in extreme fire weather, embers commonly cause many spot fires ahead of the main flaming front. Spot fires can greatly increase the overall rate of fire spread. High rate of spread is a common feature of large chaparral fires and a major reason why fire-suppression efforts have often been ineffective in controlling such fires. The 1978 Kanan Fire, for example, spread over 13 miles in 2 hours, driven by Santa Ana winds. When weather becomes more moderate, fire spread slows and firefighters are able to begin effectively containing it.

Residence Time

The ~~"r~~esidence time" of a fire defines how long 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 deep duff layers, which can burn for hours. Foliage and *suspended dead material* are usually consumed in less than 90 seconds. Residence time is useful in predicting tree mortality, seed bank mortality, and the potential to damage structures.

3.3. General Wildfire Environment Descriptions

Fire ecology is the study of fire and its relationship to the physical, chemical, and biological components of an ecosystem. An extensive fire ecology literature exists for the Mediterranean-type ecosystem of California, including the Santa Monica Mountains. This section briefly describes the area's natural features that contribute to fire behavior and influence its fire ecology. *Fire ecology descriptions of each of the dominant vegetation types in the SMM are found in Chapter 5.*

3.3.1. Weather

Climate and local weather patterns largely determine the fire ecology of the Santa Monica Mountains. The SMM region has a Mediterranean climate, defined by mild, wet winters and warm, dry summers. Average annual precipitation in the SMM is approximately 15 inches, with wide rainfall variation from 6 to 43 inches between 1948 and 2001.[20] Rainfall occurs sporadically, with the majority of precipitation delivered in numerous multi-day deluges November through April. *See Figure 3-3 below for average annual rainfall patterns.* Compared to inland areas, coastal Mediterranean systems have a more moderate climate that rarely freezes in winter or sustains very high summer temperatures. Coastal areas also have more frequent morning fog than inland areas.[21] As a result, coastal areas tend to have denser vegetation cover and heavier fuel loads than their inland counterparts. Average monthly temperatures in the SMM range from 60 to 70ºF, with maximum average temperatures during the hottest months (July–October) approaching 80ºF.[22] The SMM area receives enough rain to support substantial vegetation growth,

[20] National Park Service (2007), Fire Management Plan, Santa Monica Mountains National Recreation Area, pp. 31–32.

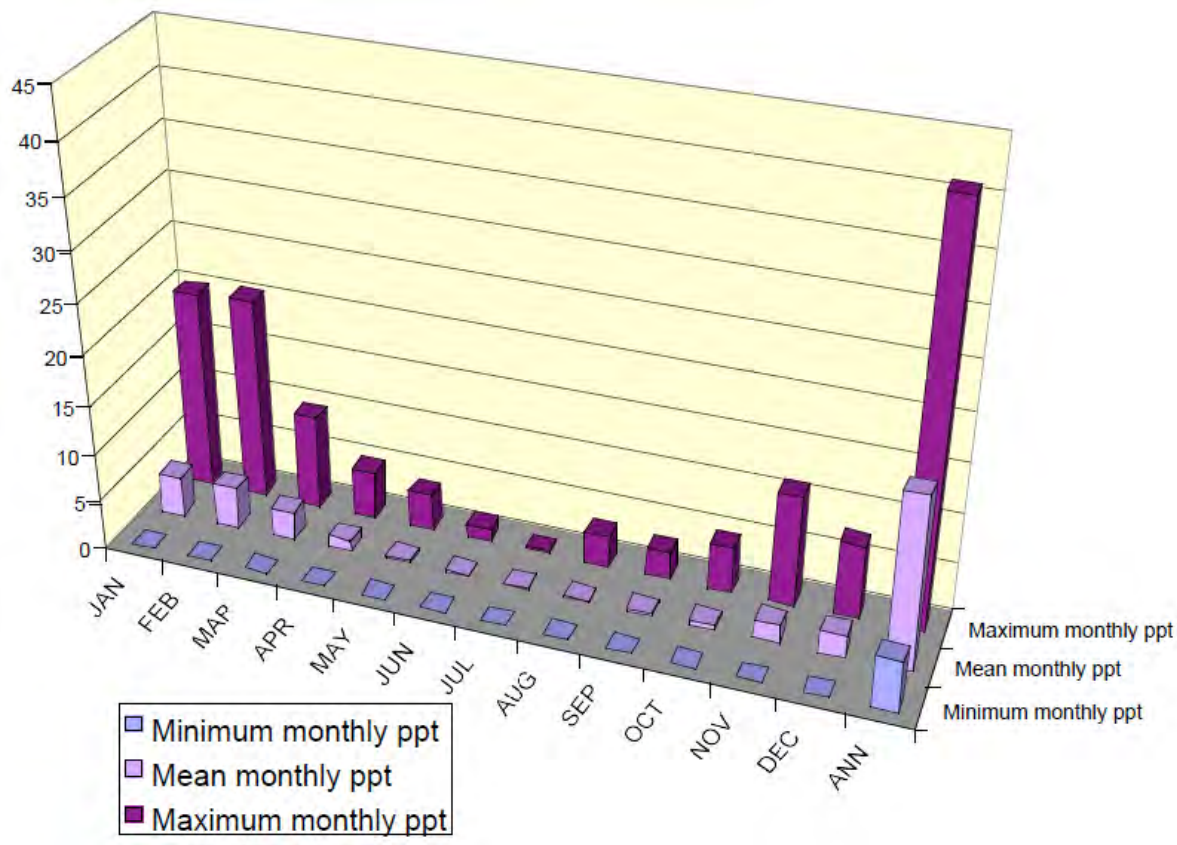
[21] NPS (2005), Final EIS for a Fire Management Plan, Chapter 3, p. 10.

[22] NPS (2005), Final EIS for a Fire Management Plan, Chapter 3, p. 8.

and it also experiences an annual six- to eight-month dry season that allows vegetation (i.e., wildland fuels) to become very dry every fall.

FIGURE 3-3. ANNUAL RAINFALL PATTERNS IN THE SANTA MONICA MOUNTAINS[23]

PPT = PRECIPITATION



Weather conditions significantly impact the potential for fire ignition, as well as rates of spread, intensity, and the direction that fire burns. Wind, temperature, and *relative humidity* are the weather variables that influence fuel moisture. They are used to predict fire behavior, because fire responds predictably to fuel moisture.[24] *Fire weather* refers to weather elements that influence *fire ignition,* behavior, and suppression, as well as the fuel moisture mentioned above. Fire weather elements include temperature, relative humidity, and wind speed and direction (including *winds aloft,* precipitation, and atmospheric stability).

Source: City of Malibu

Santa Ana winds coming at the end of the dry season create some of the most extreme fire weather in the world.

[23] NPS (2005), Final EIS for a Fire Management Plan, Chapter 3, p. 7.

[24] S. Husari, T. Nichols, N.G. Sugihara, and S.L. Stephens (2006), ―FueManagement.‖ In: N.G. Sugihara, J. van Wagtendonk, K.E. Shaffer, J. Fites-Kaufman, and A.E. Thode (eds.), *Fire in California's Ecosystems* (Los Angeles: University of California Press), pp. 444–465.

These winds are exceptionally dry, warm, and fast-moving, originating from a high-pressure system in the Great Basin desert and flowing westward toward a low-pressure zone off the coast of southern California.[25] Santa Ana winds can occur nearly year round but take place with the greatest frequency from September to December. When Santa Ana winds coincide with ignition sources (e.g arson), extreme wildfires routinely occur. Because they are very fast-moving and highly resistant to suppression efforts, these weather-driven wildfires tend to get large before a break in the weather allows effective suppression. Large Santa Ana wind-driven fires can occur in both drought and non-drought years. Wildfire ignitions occur in approximately equal number in summer and fall, but almost 90% of the total area burned in all recorded wildfires happens in late fall when Santa Ana winds are blowing.[26]

3.3.2. Topography

Topographic features such as slope, aspect, and overall landform have a profound effect on fire behavior. Topography affects the intensity, direction, and rate of spread of wildfire. Fires burning in flat or gently sloping areas tend to burn slower and to spread in a wider ellipse than fires on steep slopes. Streams, rivers, and canyons tend to channel local *diurnal* and general winds, which can accelerate the fire's speed and affect its direction, especially during *föehn* wind events, such as Santa Ana winds. Local winds are greatly affected by topography, which "bends the wind" as it flows around or over landforms. Topography also causes daily upslope and downslope winds. Through their influence on ambient temperature and exposure to solar radiation, topographic features such as aspect and elevation influence vegetation composition and fuel moisture content.

Source: NPS / SMMNRA

The Santa Monica Mountains are one of five mountain systems that comprise the Transverse Ranges of southern California.[27] They extend from sea level to 3,111 feet, with an average elevation around 1,000 feet, making them the lowest-lying mountain system of the Transverse Ranges. Steep canyons lead north and south from the crest of the east-west running mountain range, forming a generally rugged landscape of alternating ridges and canyons. This uneven topography interacts with the east-west moving Santa Ana winds to promote high rates of lateral fire spread and long-distance spotting, as observed in the area's large fires.

Certain kinds of terrain are notoriously dangerous during wildfires and are recognized by wildland firefighters as "Watch Out" situations. Steep slopes, saddles and passes, box canyons, narrow canyons, and *chimneys* are all examples of fire-hazardous terrain. Fire spreads fastest where strong winds blow (e.g. saddles, passes, and ridge tops) and where slopes are steep. Steep terrain also tends to limit movement by people trying to fight or escape fire. Fleeing a rapidly spreading fire across steep terrain is common in firefighter fatalities. Canyons and chimneys often channel winds and create situations where slopes and winds are in alignment. This can result in long flame lengths and very rapid fire spread. When fire burns up steep slopes, flames and *convection columns* often lie closer to the ground. This tends to pre-heat fuels ahead of the flaming front, which increases fire intensity and rate of spread.

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[25] NPS (2005), Final EIS for a Fire Management Plan, Chapter 3, p. 9.

[26] NPS (2005), Final EIS for a Fire Management Plan, Chapter 3, p. 13.

[27] Keeley (2006), "South Coast Bioregion," p. 350.

3.3.3. Vegetation and Fuels

The Santa Monica Mountains are predominantly non-forested, even at higher elevations. The most widespread vegetation type is chaparral, with grasslands, sage scrub, riparian woodlands, coastal oak woodlands, and oak savannahs contributing to the local vegetation diversity. The following table shows the general vegetation types found in the Santa Monica Mountains.

FIGURE 3-4. VEGETATION TYPES IN THE SANTA MONICA MOUNTAINS

GENERALIZED VEGETATION/ LAND COVER TYPES[28]	SUM OF ACRES
Chaparral Types	54,782
Coastal Sage Scrub Types	32,050
Urban/Disturbed, Built Up, Cleared	12,654
Upland Tree Types	10,217
Prairie/Meadows Types	5,906
Disturbed Vegetation Types[29]	5,893
Riparian Woodland Types	2,973
Agriculture	1,531
Rock Outcrop Types	1,086
Exotic and/or Invasive Vegetation	707
Sandy, Rocky, Mud Types	447
Wetland Types	401
Water	319
Grand Total	**128,965**

Many of the prominent plant species found mixed across these vegetation types display physical or life history traits that allow them to survive high-severity wildfire. Fire-tolerant traits include specialized storage roots (called *lignotubers*) that aid in resprouting following fire, long-lived seeds that can be stored in soil seed banks, vegetative dormancy during high fire season, and thick protective bark (such as that of some oak species).

In this regard, most of the vegetation types of the SMM can be considered *fire-adapted systems*. However, although many local species are fire-adapted, they are not necessarily *fire-dependent*. This is to say that although many species have traits that help them to survive or otherwise reduce negative impacts of wildfires (fire-adapted), most species in the SMM are able to exist without the influence of fire (i.e., are not fire-dependent). In fact, some species are unable to coexist with high-frequency wildfire, either because repeated fires in short succession cause cumulative damage and subsequent mortality of many individuals, or because multiple and frequent fires can render seeds in the soil bank nonviable and can prevent successful recolonization (either by seeding or resprouting) of a site by native vegetation. In this manner, high fire frequency has led to conversion of much native chaparral and sage scrub vegetation to species-poor exotic grasslands, a phenomenon known as ~~"t~~type conversion."

Fire occurs when oxygen is combined with organic material (fuel), and an ignition source in the process of combustion. From the functional standpoint of fire behavior, vegetation can be considered mainly as a source of fuel

[28] National Park Service (2007), Fire Management Plan, SMMNRA.

[29] This ~~"d~~isturbed" vegetation typing includes landslides, cleared areas such as firebreaks, roadside cut banks, and vegetated urban areas.

for wildfires. Vegetation varies by size, height, density, combustibility, and its vertical and horizontal distribution. In addition, vegetation constantly sheds dead organic material, forming a combustible litter and duff layer on the ground.

The volume and distribution of fuels, their moisture content, and the arrangement of these fuels are all factors that can influence fire behavior. These vegetative or fuel attributes can be described either as *fuel models* or in terms of their size, volume, and arrangement: light fuels (consisting of grass, dry leaves, and kindling-size twigs), medium fuels (shrubs and small trees), or heavy fuels (downed logs, trees). It is important to recognize that from this same functional point of view, many human-made sources of fuels also exist and contribute to fire behavior. These include homes, fences, decks, landscaped vegetation and planted trees, gardens, and wood piles.

There are several fuel models used to predict fire danger or fire behavior in wildfire and prescribed fire. The standard is the 13 Fire Behavior Fuel Models as described in Hal E. Anderson's ―Aids for Determining Fuel Models for Estimating Fire Behavior."[30] The following table from Anderson summarizes fire characteristics that paint a picture of a fire's behavior. Fuels are arranged vertically and horizontally. Fire moves faster in *vertical fuels* that stand tall and circulate air freely; compact *horizontal fuels* that lie close to the ground with poor air circulation are not conducive to rapid fire spread.

FIGURE 3-5. GENERAL FIRE BEHAVIOR CHARACTERISTICS FOR 13 FIRE BEHAVIOR FUEL MODELS

	FUEL MODELS	FUEL LOADING	FIRE INTENSITY	RATE OF SPREAD CHAINS*/HOUR	FLAME LENGTH
Vertically Arranged	**Grass**				
	Short grass	Low	Low	75	4 feet
	Understory grass	Low	Moderate	35	6 feet
	Tall grass	Medium	High	104	12 feet
	Shrubs				
	Chaparral	High	High	75	19 feet
	Short brush	Medium	Low	18	4 feet
	Dormant Brush	High	Moderate	32	6 feet
	Southern Rough	High	Moderate	20	5 feet
Horizontally Arranged	**Understory**				
	Closed canopy litter	Low	Low	2	1 foot
	Hardwood litter	Low	Low	7	3 feet
	Timber litter	Low	Moderate	8	5 feet
	Slash				
	Light	High	Moderate	6	4 feet
	Medium	High	Moderate	13	8 feet
	Heavy	High	High	13	11 feet
*Chains are measured as 66 feet					

[30] Hal E. Anderson (1982), ―Aids for Determining Fuel Models for Estimating Fire Behavior," General Technical Report INT-122. Published by the USDA Forest Service Intermountain Forest and Range Experiment Station.

Every fire exhibits different behavior based on local conditions. In general the table shows that vertically arranged fuels moves fire through faster, and higher fuel loads increase both fire intensity and flame length. These are characteristics of hazardous fires, such as found in chaparral. Fires in tall grass are also extremely fast-moving with large flame lengths.

An important overarching point must be made about the role of vegetation in relation to fire behavior and patterns of wildfire in the SMM. Given that large fires in the area are so strongly associated with Santa Ana winds, they are not as closely correlated with vegetation conditions here as in other parts of the western US. In other areas, factors such as fuel composition, vegetation (fuel) age, elapsed time since the last fire, and the nature of the vegetation *mosaic* of an area play a significant role in fire behavior. Therefore, landscape-level fuel reduction is not an effective solution to reducing wildfire risk in the Santa Monica Mountains. Rather, fuel treatments must occur immediately adjacent to homes and within communities, as explained in Chapter 4. Chapter 5 details information on local vegetation types, their fire ecology, and best management practices for increasing fire safety around homes and communities.

3.3.4. Hydrology

Source: NPS SMMNRA

Hydrology is the study of the flow of water across and through land. Lakes, ponds, streams, wetlands, and springs are a few examples of local *hydrology* features. Water features increase the humidity of a 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 fire suppression is also significant.

The CWPP Planning Area contains portions of over thirty watersheds. Some are fairly isolated and short, draining directly into the ocean; others merge to form larger rivers before reaching the ocean *(for a complete list, see Chapter 1)*. Streams and associated riparian areas occupy the north-south running canyons that extend from the main ridgeline of the east-west running mountain range. With the exception of a small number of perennial creeks (e.g. Solstice, Arroyo Sequit, Malibu, and Topanga), most of these canyon streams are intermittent seasonal streams that dry up completely during warmer months. *Perennial streams*, seeps, and springs are critical habitat areas for a variety of aquatic species including amphibians, fish, and insects, and for terrestrial species including reptiles, birds, and some small mammals. There are no natural lakes in the Santa Monica Mountains, but springs and seeps are common and widespread. A few human-made lakes exist, including Sherwood, Malibou, Nichols Flat, and Eleanor. *See Map 3-3. Santa Monica Mountains Hydrology, at the end of this chapter.*

FIGURE 3-6. WATERSHEDS IN THE SANTA MONICA MOUNTAINS

- Arroyo Conejo
- Arroyo Sequit
- Arroyo Sequit West
- Big Sycamore Canyon Creek
- Cold Creek
- Corral Canyon Creek
- Dark Canyon Creek
- Deer Canyon Creek
- Hondo Canyon Creek
- Las Flores Canyon Creek
- Las Virgenes Creek
- Lobo Canyon Creek
- Long Grande Canyon Creek
- Los Alisos Canyon
- Malibu Creek
- McCoy Canyon Creek
- Ramirez Canyon Creek
- San Nicholas Canyon
- Serrano Canyon Creek
- Steep Canyon Creek
- Stokes Canyon Creek
- Suttphur Canyon Creek
- Topanga Canyon Creek
- Tuna Canyon Creek

- Dry Canyon Creek
- Encinal Canyon Creek
- Garapito Creek
- Medea Creek
- Newton Canyon Creek
- Pena Canyon Creek
- Willow Creek
- Zuma Canyon Creek

In terms of fire management, riparian corridors and their associated vegetation can be more humid and shaded than surrounding vegetation, which (all other things being equal) could produce more moderate fire behavior. Therefore, riparian corridors can sometimes be used as natural *fuelbreaks*. However, many riparian zones in the Santa Monica Mountains are densely vegetated, sometimes with highly flammable fuels such as thick stands of giant reed grass *(Arundo donax)* that can burn intensely once ignited. Many streams flow in narrow canyons where fire has greater potential to leap across the watercourse by a combination of radiative heating and embers.

3.3.5. Wildlife

Source: NPS SMMNRA/ LA Times

The Santa Monica Mountains region is a small part of what was once a more extensive Mediterranean ecosystem. It provides relatively intact and crucial *habitat* for many wildlife species, despite it being adjacent to one of the largest urban areas in the world and its ever-expanding suburban sprawl. Not surprisingly, many species are in decline or have been locally *extirpated*.[31] Yet it still hosts approximately 450 vertebrate species, including 50 mammals, 384 bird species, 36 reptiles and amphibians, and a plethora of insect species.[32] Mule deer, several species of lagomorphs (rabbit family), and a number of rodent species constitute the primary mammalian herbivores (non-carnivores). A number of predator species remain, including bobcats, coyotes, gray foxes, badgers, ringtails, skunks, raccoons, and weasels. A remnant population of mountain lions also exists, but its continued existence is tenuous given the ongoing conversion of habitat to homes. Many raptors depend on the SMM, including 13 species that use it as breeding territory. There are a number of rare reptile and amphibian species, many of which are in decline. Of particular significance among the area's fish species are the endangered steelhead trout, found only in Malibu, Topanga, and Arroyo Sequit creeks, and the Pacific lamprey, found in the recent past in Malibu Creek.

Wildfires and fire management affect wildlife in many ways. Wildfires directly impact less mobile species. Most wildlife species are able to evade severe direct impacts of wildfire.[33] Yet the indirect impacts are probably the most important. Fire-management decisions such as use of prescribed fire, fuel treatments, or fire-suppression activities can affect wildlife habitat. The effects of any given fire or fire-related management action are species-specific and will depend on the fire's effects on habitat availability and quality, including potential habitat *fragmentation,* food availability and type, denning habitat, security of habitat areas, and movement ability. For these reasons, consideration of species habitat needs is an important part of fire planning.

Sensitive Species

Like many Mediterranean ecosystems worldwide, California's contains very high plant biodiversity. In fact, the CalFlora database shows 24% of the state's 4,904 native *vascular* species occurring in chaparral communities, with

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[31] NPS (2005), Final EIS for a Fire Management Plan, Chapter 3, pp. 59–62.

[32] NPS (2005), Final EIS for a Fire Management Plan, Chapter 3, p. 59.

[33] www.sciencedaily.com/releases/2009/12/091222105312.htm.

110 of those species found only in chaparral; 62 of these 110 are considered rare.[34] Yet little is known about these species' relationship to varying fire intensities and frequencies, as well as seasonal timing of fire. Less is known about the effects of various hazard-reduction treatments on rare species. However, it is well documented that increased fire frequency, along with prescribed burning used in the recent past as a form of fuel reduction, have caused significant negative impacts to many chaparral plants and other sensitive species. This is especially true of *obligate seeders* that require minimum fire intervals of multiple decades in order to reach the reproductive age necessary to produce seeds for successful recolonization following fire.[35]

In order to reduce potential adverse effects to flora and fauna—especially to state and federally listed *threatened* and *endangered species*—fuel-reduction planners must use the best available information regarding each species' critical habitat attributes within a project area. Information such as breeding period, migration patterns, blooming period, critical habitat, and more can help planners reduce fire threat while minimizing habitat degradation within the SMM Planning Area.

Within the SMM, there are 23 species of plants and animals listed as federally sensitive, threatened, or endangered. Dozens more flora and fauna species are considered by state and federal governments to be of special concern or to be rare. Among these are 17 mammal species (11 bat and 6 terrestrial species), more than 60 bird species, 22 reptile and amphibian species, and 2 fish species.[36] In addition to habitat fragmentation from suburban development, many of these species are threatened by increased fire frequencies from human-induced fire ignitions *(see section 3.1, "Fire History," for more information).* Appendix F lists the federally threatened and endangered species and their habitat associations that must be considered in planning fire prevention and suppression actions. In planning fuel treatments, it is important to consult local experts familiar with the area's wildlife (e.g. national or state park staff). A complete list including species of concern, sensitive, and rare species can be found in the National Park Service's SMMNRA "Final Environmental Impact Statement for a Fire Management Plan."[37]

3.4. Fire Hazard

The term "hazard" is mainly used in the fire community in relation to topography and *fuel complex* (the volume, type, condition, arrangement, and location of fuels).[38] "Fire hazard" is a description of the fuels available to burn in a given area and how they would burn. It can be influenced by past disturbances or management activities that alter the hazard for better or worse by changing the overall site moisture, as well as being affected by the volume and spatial arrangement of fuels. Fire hazard is distinguished from *fire risk,* which incorporates the probability of wildfire occurrence—or ignitions—with fire hazard.

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[34] J.E. Keeley and F.W. Davis (2007), "Chaparral." In: M.G. Barbour, T. Keeler-Wolf, and A.A. Schoenherr (eds.), *Terrestrial Vegetation of California,* 3rd edition (Los Angeles: University of California Press), pp. 339–366.

[35] P. H. Zedler (1995) "Fire Frequency in Southern California Shrublands: Biological Effects and Management Options." In: J.E. Keeley & T. Scott (eds.). *Brushfires in California: Ecology and Resource Management* (International Association of Wildland Fire), pp. 101–112.

[36] NPS (2005), Final EIS for a Fire Management Plan, Chapter 3, pp. 82–93.

[37] NPS (2005), Final EIS for a Fire Management Plan, Chapter 3, pp. 80–83.

[38] Husari et al. (2006), "Fuel Management," pp. 444–465.

3.4.1. Hazard Assessment

A site's fuel hazard ranking tells us the expected behavior of fire in severe weather (when wind speed, humidity, and temperature make conditions favorable for a catastrophic fire). Fire Hazard Severity Zones are how the state of California now assesses and defines fuel hazards. The FHSZs range from Medium to High to Very High.

> —Fire Hazard Severity Zones represent areas of variable size ranging from 20 acres in urbanized areas to at least 200 acres in wildland areas, with relatively homogeneous characteristics regarding expected burn probability and potential fire behavior attributes based on climax fuel conditions over a 30-50 year time horizon."[39]

FHSZs were originally mapped for State Responsibility Lands (SRAs)[40] in 1985, and for Local Responsibility Areas (LRAs) in 1996. CAL FIRE began updating these maps in 2006 in order to implement the new WUI building codes that have since been adopted by the California Building Standards Commission.[41] This mapping also considers *firebrands* as a source of fire spread and ignition.

Due to the high density and flammability of the SMM vegetation, the steep slopes, and the likelihood of ignitions, the Santa Monica Mountains are a high fire hazard area. **The entire CWPP Planning Area is designated as a Very High Fire Hazard Severity Zone.**

For more information on Fire Hazard Severity Zone mapping, please see: http://frap.fire.ca.gov/projects/hazard/fhz.html. For information on hazard mapping and associated building codes, please see: www.fire.ca.gov/fire_protection/fire_protection_prevention_planning_wildland.php.

3.5. Fire Regime

Fire regime is a description of fire's historic natural occurrence, variability, and influence on vegetation dynamics in the landscape. Fire regimes can provide information for fire planning, as they describe the frequency of fire and fire's expected effects on a particular area's vegetation. Generally based on fire history reconstructions, fire regime descriptions include the season, frequency, severity, size, and spatial distribution of fires. There is quite a wide variability of "natural" intervals, severities, and seasons, but some generalities have been made. Over the years, foresters and plant ecologists have come to use a small number of standardized fire regime classes to make general comparisons about the fire ecology of different ecosystems and geographic regions. The regimes listed below show fire regime classes commonly used by the US Forest Service and other land management agencies.[42]

The five historical fire regimes are classified based on the average number of years between fires (fire frequency) combined with the fire severity (amount of consumption of the dominant *overstory* vegetation). The five regimes are:

> I: 0 to 35-year frequency and low (surface fires most common) to mixed severity (less than 75% of the dominant overstory vegetation replaced);
>
> II: 0 to 35-year frequency and high (stand replacement) severity (greater than 75% of the dominant overstory vegetation replaced);
>
> III: 35- to 100+-year frequency and mixed severity;

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[39] Dave Sapsis, CAL FIRE, Fire Hazard Severity Zoning (FHSZ) Draft Map Review And Validation, http://frap.fire.ca.gov/projects/hazard/Fire_Hazard_Zoning_workshop_1_8.ppt.

[40] For more on SRA and LRA, see Chapter 6.

[41] For more information on WUI building codes, see Chapter 4, section 4.1.1, "Hardened Homes."

[42] Kirsten M. Schmidt, James P. Menakis, Colin C. Hardy, Wendall J. Hann, and David L. Bunnell (2002), "Development of coarse-scale spatial data for wildland fire and fuel management." Gen. Tech. Rep. RMRS-GTR-87. Fort Collins, CO.

IV: 35- to 100+-year frequency and high severity;

V: 200+-year frequency and high severity.

The vegetation of the Santa Monica Mountains was historically long lived. Lightning ignitions along the coast are rare, and there was an extended interval between fires. The fires are stand-replacing under coastal conditions conducive to wildfire during the late summer and fall—when the föehn winds (Santa Anas) coincide with severe fire weather, i.e. high temperatures and low humidity.

The above classification system was used to make one of the first nationwide, coarse-scale maps of fire regimes. CAL FIRE used it to produce the somewhat more detailed (but still very coarse scale) statewide fire regime maps.[43] The LANDFIRE program has since revised the fire regime class definitions and conducted a national analysis for the National Interagency Fire Coordinating Group. They have produced an elaborate methodology for conducting regional scale analyses that could be undertaken to produce more local-scale map products for the Santa Monica Mountains.[44]

The CAL FIRE fire regime data for the Santa Monica Mountains is shown in Map 3-4. According to information collected and analyzed by CAL FIRE, some of the riparian forests and upland tree types of the Santa Monica Mountains have a natural fire-return interval between 35 and 100 years of mixed-severity fires (Fire Regime III). There is a 35- to 100-year return interval of high-severity fire (Fire Regime IV) for the chaparral and coastal sage scrub vegetation.[45]

3.5.1. Condition Class

Condition class refers to the general deviation of ecosystems from their prehistoric (pre-settlement) natural fire regime. It can be viewed as a measure of sensitivity to fire damage of key species and related ecosystem processes. Condition class is based on a relative measure describing the degree of departure from the historical natural fire regime. This results in changes to one or more of the following ecological components: vegetation characteristics (*species composition*, structural stages, stand age, canopy closure, and mosaic pattern); fuel composition; fire frequency, severity, and pattern; and other associated disturbances (e.g. insect and disease mortality, grazing, and drought).

The three classes are based on low (FRCC46 1), moderate (FRCC 2), and high (FRCC 3) departure from the central tendency of the natural (historical) regime. ―Low departure is considered to be within the natural (historical) range of variability, while moderate and high departures are outside."47 Areas estimated to have missed one or two, or more, fire cycles are considered to be at a moderate or high departure, respectively, from the natural regime. Fire planning based on Fire Regime and Condition Class models is often used to identify where fire-dependant forested ecosystems have been altered by fire-suppression activities, and where a buildup of fuels may pose the threat of more severe fires.

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[43] California Department of Forestry (2003), Fire Regime and Condition Class. Geographic Information System data file (ArcInfo grid file). Cafrcc_03v2. Metadata. http://frap.cdf.ca.gov/data/frapgisdata/download.asp?rec=cafrcc.

[44] LANDFIRE (2008) Interagency Fire Regime Condition Class (FRCC) Guidebook, version 1.3.0, June 2008, 119 pages. http://frames.nbii.gov/portal/server.pt?open=512&objID=309&&PageID=2727&mode=2&in_hi_userid=2&cached=true

[45] Fire Planning and Mapping Tools, http://wildfire.cr.usgs.gov/fireplanning.

[46] *Fire Regime Condition Class* website. *Definition.* Hann et al. (2008), Interagency and The Nature Conservancy, USDA Forest Service, US Department of Interior, The Nature Conservancy, and Systems for Environmental Management. www.frcc.gov.

[47] National Wildfire Coordinating Group (June 2003), Fire Regime Condition Class Definition. www.nwcg.gov/teams/wfewt/message/FrccDefinitions.pdf.

It is problematic to apply these kinds of assumptions and this system of classification to southern California shrublands. Historically in the SMM only a few large, destructive wildfires occurred every century, whereas now these fires are occurring several times per decade. One result of this has been the local extirpation of native species that are unable to cope with high fire frequency and the type conversion of native vegetation to species-poor annual grasslands dominated by exotic species.

It was eventually recognized that some ecosystems currently experience more frequent fires than they did in prehistoric times. Condition class definitions were given a cursory update to include passing reference to fire return intervals being too long or too short. However, management recommendations for condition class remained the same. Therefore, noncritical application of published condition class definitions yields the paradoxical finding that a site is condition class 2 or 3 because it burns more frequently now than it did in the past, and the recommended management action to correct this problem is to burn it more. This management decision would, obviously, be detrimental to southern California shrublands.

Based on a natural fire regime of III and IV, and a fire history interval of 35 to 100 years, all three condition classes (1, 2, and 3) exist in the SMM. According to FRAP,[48] many areas in the Santa Monica Mountains are either moderately or significantly altered from their historical fire regime range *as a result of too many fires too often*. Despite these difficulties in interpreting the meaning of condition classes in the SMM, they are included here to provide condition class data for those who may require the information for grants or other sources.

3.6. Wildfire and the Wildland-Urban Interface

The above information and assessments provide a context for and description of the historical and contemporary fire ecology, i.e., the wildfire environment, of the Santa Monica Mountains. Population growth in the SMM is increasing the area of contact between human communities and a landscape that is naturally subject to destructive wildfires. Human sources of ignition have increased in tandem with population expansion in the wildland-urban interface and have led to a substantially increased occurrence of large wildfires in the SMM, with negative impacts to both human and natural communities.[49]

Indefensible homes in the SMM. Source: LA Times

Central questions for this CWPP are how human communities can learn to live safely in an area with severe wildfire, what actionable measures can help to bring communities closer to this reality, and what precautions must be taken to ensure that these measures preserve the ecological integrity and natural and social values that are associated with the remaining natural areas of the Santa Monica Mountains.

Since large, destructive wildfires will continue to occur in the SMM, this Community Wildfire Protection Plan aims to provide local communities with tools to reduce the negative impacts of these fires. These tools include proactive planning for fire, preparation of homes to reduce the probability of home ignition, and focused fuel reduction around homes and other structures.

See the following pages for the maps associated with this chapter.

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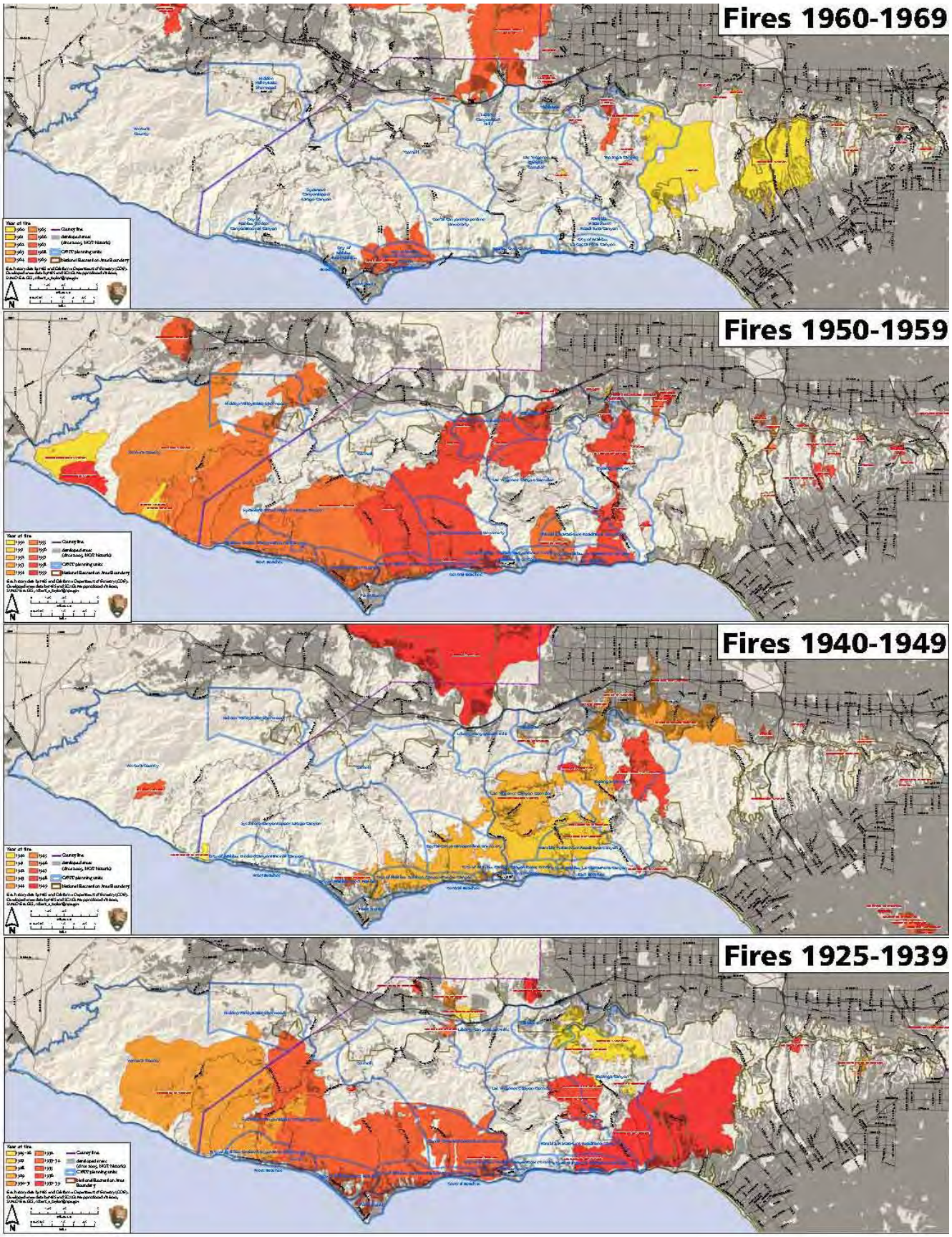
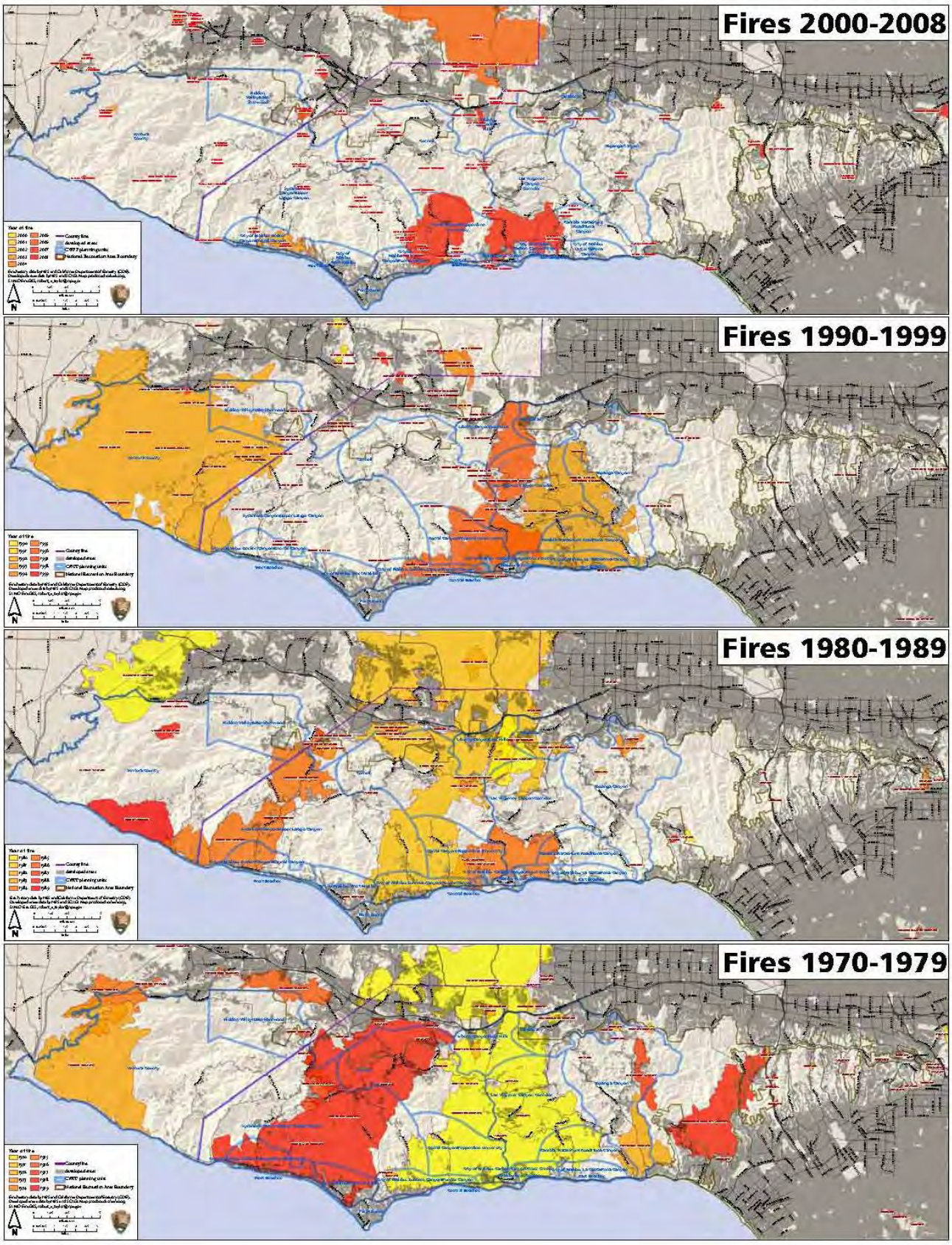
[48] http://frap.fire.ca.gov/data/frapgisdata/download.asp?rec=cafrcc

[49] NPS (2005), Final EIS for a Fire Management Plan, Chapter 3, p. 13.

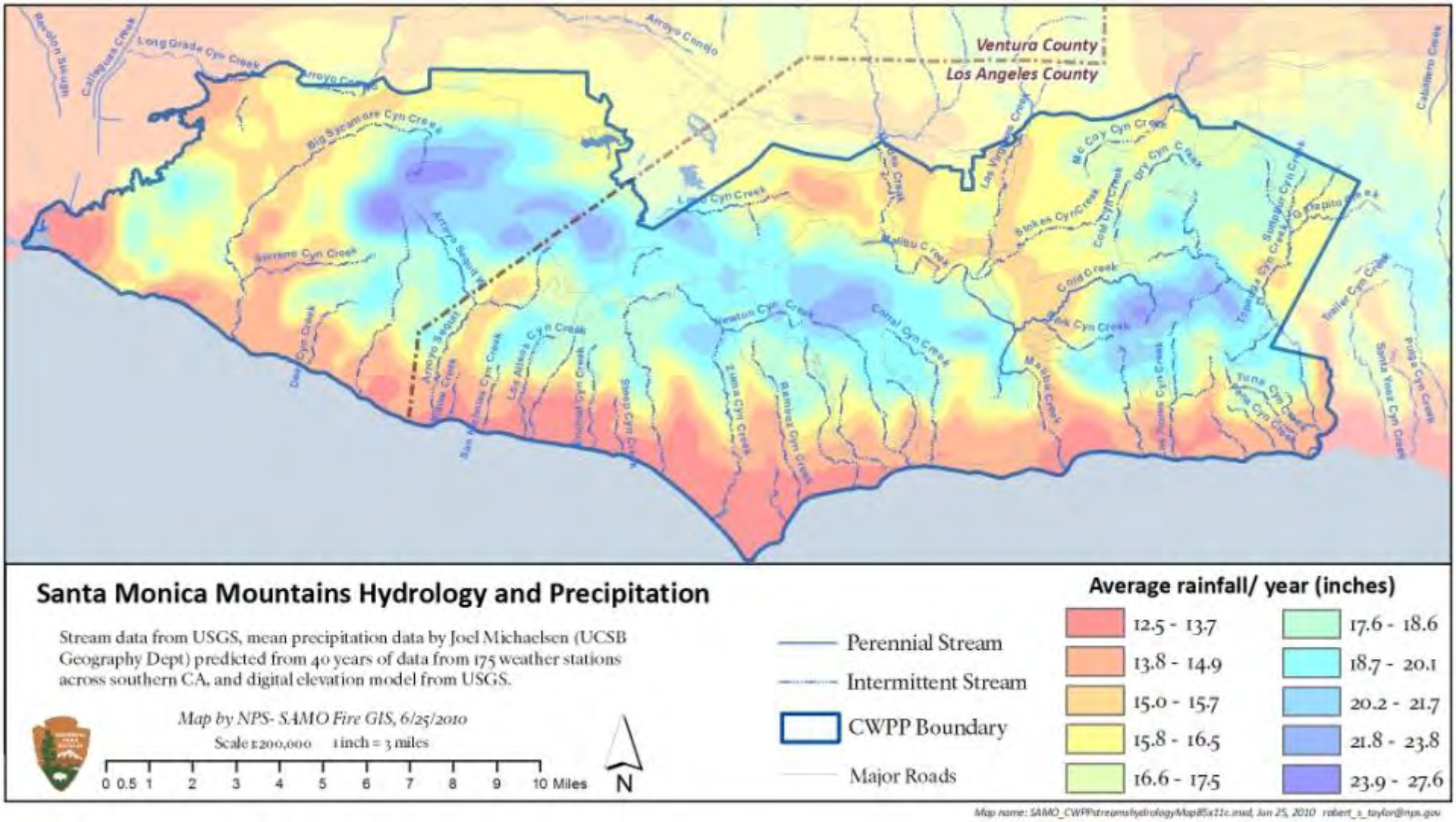
MAP 3-1. SANTA MONICA MOUNTAINS FIRE HISTORY BY DECADE (1925–1969)



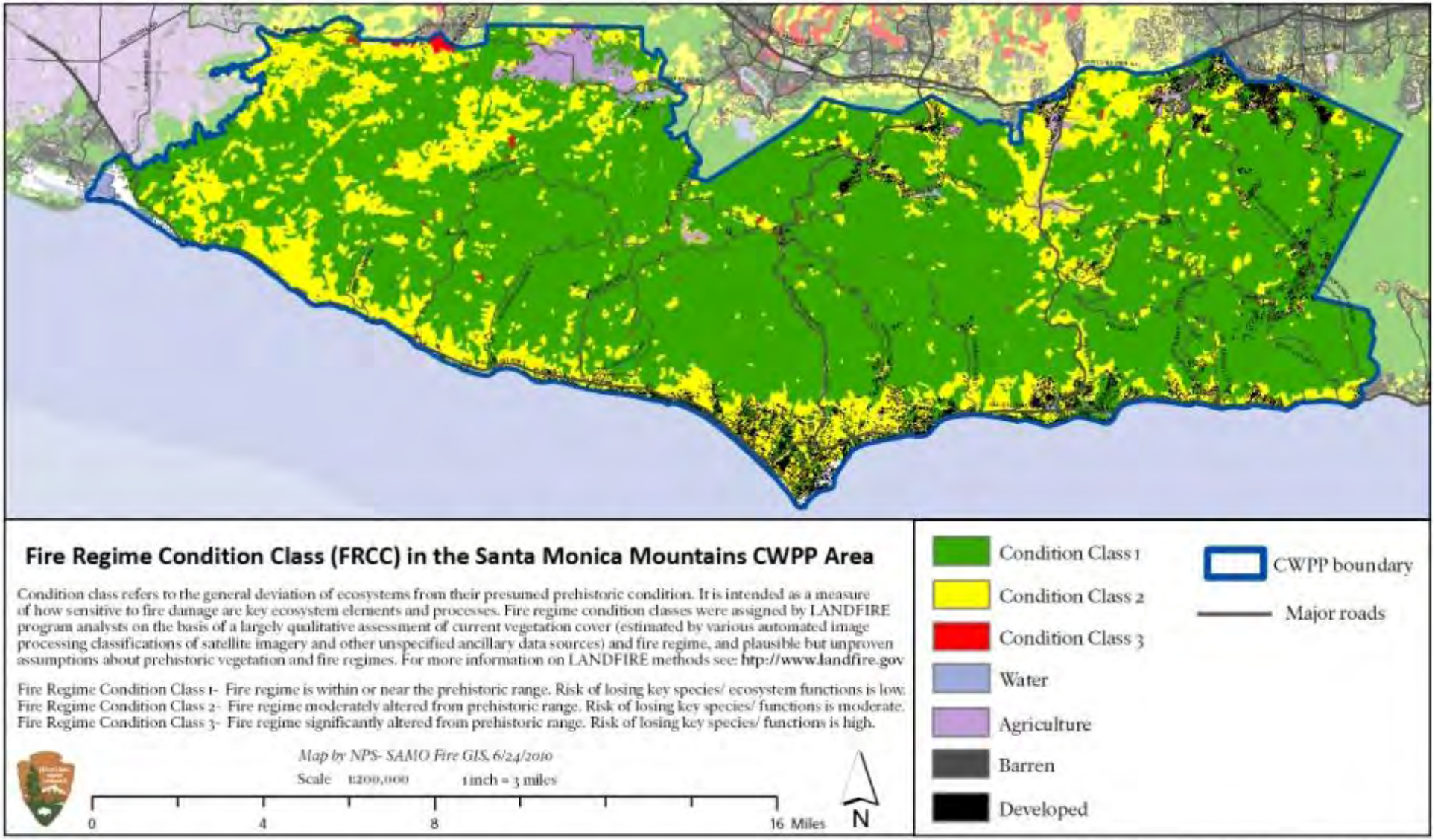
MAP 3-2. SANTA MONICA MOUNTAINS FIRE HISTORY BY DECADE (1970-2008)



MAP 3-3. SANTA MONICA MOUNTAINS HYDROLOGY



MAP 3-4. SANTA MONICA MOUNTAINS FIRE REGIME



IS YOUR COMMUNITY PREPARED FOR WILDFIRE?

Is your neighborhood ready?

Help identify priority projects in your community to survive the next fire.

Santa Monica Mountains Community Wildfire Protection Plan

Projects will only be identified for the communities listed for each meeting. Be sure to attend the meeting where you live.

ALL LOCAL RESIDENTS INVITED — PLEASE ATTEND THE MEETING FOR YOUR PARTICULAR COMMUNITY

Wednesday, Jan. 6, 6-9 pm
HIDDEN VALLEY/LAKE SHERWOOD
Santa Monica National Recreation Area Headquarters
401 West Hillcrest Drive, Thousand Oaks

Thursday, Jan. 7, 6-9 pm
WEST BEACHES
Including Broad Beach and Encinal Beach
Malibu City Council Chambers
23815 Stuart Ranch Road, Malibu

Friday, Jan. 8, 6-9 pm
POINT DUME
Including Pt. Dume, Pt. Dume Club, and Paradise Cove
Malibu City Council Chambers,
23815 Stuart Ranch Road

Sunday, Jan. 10, 2-5 pm
CENTRAL BEACHES
Including Tivoli Cove, Malibu Cove Colony, Escondido Beach, Puerco Beach, Latigo Beach, Malibu Beach, Malibu Colony, Bayshore, and Malibu Road
Malibu City Council Chambers,
23815 Stuart Ranch Road

Sunday, Jan. 10, 6-9 pm
EAST BEACHES
Including Big Rock Beach, Carbon, La Costa, Las Flores, and Las Tunas Beaches
Malibu City Council Chambers,
23815 Stuart Ranch Road

Tuesday, Jan. 12, 6-9 pm
CORRAL CANYON - PEPPERDINE
Including El Nido, Malibu Bowl, Pepperdine, and Corral Canyon
LA County Waterworks
23533 W. Civic Center Way, Malibu

Wednesday, Jan. 13, 6-9 pm
LIBERTY CANYON AND LOST HILLS
Including Liberty Canyon, Lost Hills, and Brents Junction
District Offices of County Supervisor Zev Yaroslavsky
26500 Agoura Rd., Suite 206, Calabasas

Thursday, Jan. 14, 6-9 pm
CALABASAS INTERFACE
Including all incorporated city south of US 101 from Valley Circle Dr. to Las Virgenes Rd.
Diamond X Ranch, 26412 Mulholland Highway

For more information, please
email SantaMonicaMountainsCWPP@gmail.com or
call 818-890-5783, or
visit http://tinyurl.com/SMMCWPP

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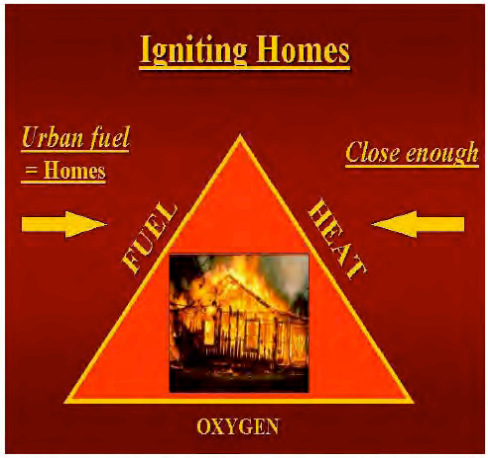
4. Community Fire Safety Starts at Home

Santa Monica Mountains residents can improve their chances to survive wildfire. The general principle behind making an area "fire safe"—making it as safe as possible for when a fire does pass through—is to reduce the amount of fuel that a fire could consume and to alter its arrangement. In other words, you do not want anything near your home that could ignite, burn, or spread fire. This is especially important in the Santa Monica Mountains, where it's the fuels closest to a home—including the home itself—that often make the difference between surviving a wildfire, or not. **This chapter will show you how your preventative actions can help make your home an asset during a wildfire, instead of a liability.**



"In the context of wildland-urban fires, the homes are the fuel. The heat comes from burning materials adjacent to the home (e.g. vegetation, wood piles, and buildings) and firebrands (lofted burning embers) on the home. How close flames are to the home and whether or not firebrands contact the home determines how much heat the home receives." Source: Jack Cohen (2000), "Wildland-Urban Fire, A Different Approach,"

Three factors are required for fire; together they comprise what we call the fire triangle: fuel, oxygen, and heat. If any one of these elements is missing, a fire won't start; or should it start, it won't spread. Fuel is the one element of the fire triangle we can modify. Where fuels are abundant (including ignitable homes), a fire can burn very hot and move very quickly. When little fuel is present, fires tend to slow down and burn cooler. Cooler fires are easier to control (fight). Reducing the amount, type, and arrangement of fuel in and around your home is your best defense against wildfire.

Wildfire ignites homes through transferring heat in three ways:

FIGURE 4-1. THREE WAYS YOUR HOME CAN BE EXPOSED TO FIRE[1]

Embers

These are glowing or burning pieces of vegetation or construction *debris* that are lofted during the wildfire. Embers can move up to a mile ahead of a firestorm. These small embers or sparks may fall on the vegetation near your home; on dry leaves, needles, or twigs on your roof; on the roof and then subsequently concentrate within 5 feet of the house; or under your deck with subsequent ignition of vegetation or debris that could then ignite and burn down your house. If ignited from embers that come from outlying areas, a continuous sequence of vegetation can carry flames from your landscaping to your house. The concentration of embers that land on the roof and roll off of it makes the removal of all flammable material within 5 feet of the house critical.

Radiant Heat

This is the heat given off by burning materials that is transferred through the air to other materials or objects. Radiant heat from a fire near your house can heat the surface of combustible building materials to a point where combustion occurs.

Flame Impingement

This refers to the transfer of heat by direct flame exposure. Direct contact with fire flames will heat the combustible building materials of your home. Depending on the exposure (i.e., time and intensity) of the flame, materials can ignite or break. For example, in a high-intensity fire, your siding material could ignite or the glass in your windows could break.

[1] University of California Division of Agriculture and Natural Resources (July 2007), "Home Landscaping for Fire," *Publication 8228* (The Regents of the University of California), p. 3. http://anrcatalog.ucdavis.edu. Used by permission.

Research shows that the cause for most homes igniting is usually not the fire front or wall of flames but the presence of wind-carried embers or *firebrands* in combination with sufficient fuel to be ignited.

> "Understanding how homes ignite during wildland-urban fires provides the basis for appropriately assessing the potential for home ignition and thereby effectively mitigating wildland-urban fire ignitions. Fires do not spread by flowing over the landscape, and high-intensity fires do not engulf objects, as do avalanches and tsunamis. All fires spread by meeting the requirements for combustion—that is, a sufficiency of fuel, heat, and oxygen. In the context of severe wildland-urban fires, oxygen is not a limiting factor so this type of fire spreads according to a sufficiency of fuel and heat. Homes are the fuel and the heat comes from the flames and/or firebrands of the surrounding fires…. Recent 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 100-200 feet adjacent to a home (Cohen 1995; Cohen 2000; Cohen and Butler 1998). This relatively limited area that determines home ignition potential can be called the **home ignition zone.**

Source: NPS SMMNRA

> "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.[2] **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."[3]

The most effective strategy to limit home ignition potential is to create *"defensible space."* According to the Los Angeles County Fire Department:

> "Defensible space is the area around a structure free of flammable plants and objects that creates a zone in which firefighters can operate safely in order to help protect a home during a wildfire. This space is wide enough to prevent direct flame impingement and reduce the amount of radiant heat reaching the structure. The defensible space for each structure varies depending on the type of vegetation and topography."[4]

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[2] 200 feet applies to land within coniferous forests. Throughout the Santa Monica Mountains, 100 feet is almost always the extent of the home ignition zone.

[3] J. Cohen (2000), "Wildland-Urban Fire, A Different Approach," www.nps.gov/fire/download/pub_pub_wildlandurbanfire.pdf.

[4] County of Los Angeles Fire Department (2009), "Ready! Set! Go! Your Personal Wildfire Action Plan," p. 4. www.fire.lacounty.gov/safetypreparedness/ReadySetGo/pdf/Ready%20Set%20Go%2009.pdf.

Firefighters use the terms "defendable" and "not defendable" to distinguish between those houses with defensible space versus those that do not have it. The safety of firefighters is critical in structure protection (homes and buildings). 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 attempt to save something that may not survive.

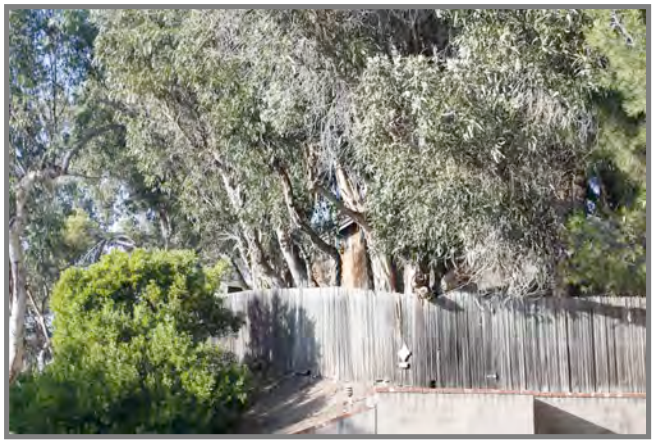
However, it's not just about "defending" your home or property; fire safety efforts are designed to ensure a home's survivability from fire under various conditions. This is the ultimate goal for conservation-based fuel reduction and fire-safety efforts: living *with* wildfire, and always being prepared for this possibility.[5]

4.1. From the House Out

In the Santa Monica Mountains, research and experience show that what you do to your house itself and the area directly adjacent to it will have the biggest impact on your home's ability to withstand a wildfire. Therefore, **this Community Wildfire Protection Plan promotes a strategy of preparation "from the house out."**

The Home Ignition Zone

As seen in the quote above, the home ignition zone is a concept introduced by Dr. Jack Cohen[6] of the US Forest Service Rocky Mountain Research Station, a recognized leader in the science of how homes burn. Dr. Cohen's research of fires from the 1960s to the present reveals that more than 80% of homes with at least 30 feet of defensible space and a fire-resistant roof have survived wildfires.[7] Dr. Cohen states:



Excessive fuels in the home ignition zone.

> "The results … generally concur and indicate that the large flames of high-intensity fires do not ignite a home's wood exterior at distances greater than 100 feet. This is consistent with our understanding that local wildland fuel reduction can result in significant local fire intensity reduction. The research suggests that if the big flames are not igniting the destroyed homes then relatively low-intensity fires contacting or in near contact with a home's flammable materials and/or direct firebrand ignitions must be the ignition sources. Thus, a home's characteristics, its exterior materials and design, in relation to the immediate area around a home within 100 feet principally determine the home ignition potential. I call the home and its immediate surroundings the home ignition zone."[8]

Dr. Cohen again, from a separate document:

> "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

[5] For more information and links related to fire safety in the Santa Monica Mountains, please visit: www.forevergreenforestry.com/SMM_FireSafe.html.

[6] www.fs.fed.us/rm/publications/titles/journals_cohen.html

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

[8] Jack Cohen (June 2003), "Thoughts on the Wildland-Urban Interface Fire Problem," *International Journal of Wildland Fire Science,* www.firewise.org/resources/files/WUI_HIR/ThoughtsOnWUI.pdf.

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."[9]

Consequently, it's the work done in the home ignition zone (HIZ) to reduce flammability that can make the difference between a wildfire disaster and successfully coexisting with wildfire.

> **"If homes are sufficiently resistant to ignition and do not ignite during the extreme wildfire exposure, then the homes survive without firefighter protection: we have an extreme wildfire but not a WUI fire disaster. Thus, WUI fire disasters principally depend on home ignition potential."[10]**

The concepts put forth by Dr. Cohen about the home ignition zone are crucial for designing actions in and around your home to survive wildfire. Hence, as a result of the 1993 Old Topanga Fire, the Los Angeles County Fire Code Title 32, Section 317, "Clearance of Brush and Vegetative Growth,"[11] was enacted to require residents to maintain the home ignition zone in a fire-safe manner.

The Malibu Bluffs fire is an example of house-to-house combustion. Note there is still green vegetation surrounding the burnt houses. Source: Los Angeles Times

In an analysis of the homes that burned in the Grass Valley fire at California's Lake Arrowhead in 2007, it was learned that the homes themselves, and the surrounding *urban fuels*, were the cause of most home destruction.

"Our post-burn examination revealed that the residential destruction did not result from a high-intensity wildfire engulfing homes. With minor exception (6 homes), the wildfire primarily initiated residential burning from firebrands igniting homes directly and/or producing spot fires that spread through surface fuels to homes. Once initiated, home destruction largely resulted from local residential fire conditions. The ignition-vulnerable homes (e.g., flammable wood roofing, surface fuels in contact with wood siding, heavy pine litter in roof gutters) burning in close proximity to one another continued the fire spread through the residential area without the wildfire as a factor….

"Our post-burn examination revealed that most of the destroyed homes had green or unconsumed vegetation bordering the area of destruction. Often the area of home destruction involved more than one house. This indicates that home ignitions did not result from high-intensity fire spread through vegetation that engulfed homes. The home ignitions

[9] J. Cohen (2000), "Wildland-Urban Fire—A Different Approach."

[10] J. Cohen (2008), "The Wildland-Urban Interface Problem–A Consequence of the Fire Exclusion Paradigm," *Forest History Today*, pp. 22–23; www.foresthistory.org/Publications/FHT/FHTFall2008/Cohen.pdf.

[11] http://search.municode.com/html/16274/index.htm.

primarily occurred within the HIZ due to surface fire contacting the home, firebrands accumulating on the home, or an adjacent burning structure."[12]

4.1.1. Hardened Homes[13]

Studies done after many large fires consistently conclude that homes built to "ignition-resistant" standards have a much higher fire survival rate than those that aren't. Combining these ignition-resistant features with 100 feet of defensible space will dramatically improve the likelihood that your home will still be standing after a wildfire passes by—even if firefighters are unable to stay and actively protect it.

> "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.) ….
>
> This is strong evidence that vegetation management alone will not be able to fully explain, nor mitigate, building loss on wildfires.… 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 … 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.'"[14]

Building materials and features like roofs, vents, decks, and other vulnerable spots must first be protected by removing the urban fuels around the home. Preparations in the home ignition zone need to include both the 100-foot vegetative landscaping guidelines and the removal of any flammable furniture, firewood, mulch, or materials stacked against the house. See sections 4.1.2 – 4.1.5 below for information on how to prepare your home and property.

Building Standards

The Los Angeles and Ventura County Fire Codes require fire-safe construction for all new building, rebuilding, and additions for structures in Very High Fire Hazard Severity Zones,[15] which includes all of the Santa Monica Mountains. These building standards are required by state law and are part of the California Building and Fire Codes to which all jurisdictions must adhere. They are updated every three years and may change from time to time. One such change is in process right now, with the current state codes being revised effective January 1, 2011, which will update the WUI Building Standards to keep pace with the latest products, research, and testing.[16] To keep this CWPP

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[12] J.D. Cohen and R.D. Stratton (2008), "Home destruction examination: Grass Valley Fire, Lake Arrowhead, California." Tech. Paper R5-TP-026b. Vallejo, CA: US Department of Agriculture, Forest Service, Pacific Southwest Region (Region 5): pp. 1 and 24.

[13] This section was written by Kate Dargan, former California State Fire Marshal.

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

[15] See Chapter 3 of this document for more information on Fire Hazard Severity Zoning.

[16] California Health and Safety Code, section 13108.5.

current, updates can be added to this section of future versions. The following information is current as of summer 2010. For information on local building standards, please see:

- Los Angeles County: http://fire.lacounty.gov/FirePrevention/wildfire_Rebuild_Guid.asp
- Ventura County: pages 30–31, in www.ventura.org/RMA/build_safe/pdf/building_code/2007_Ventura_County_Building_Code.pdf,

Retrofitting Your Home

While it is easier to construct a new home to a "fire-hardened" standard, it is also possible to dramatically improve an existing home's resistance to wildfire. Hardened-home features are mandatory for new construction, yet these same suggestions apply whenever you are remodeling or improving your home's fire safety. Three very effective locations to target are your roof, vents, and decks. Retrofitting your home with ignition-resistant materials in these three areas and rigorously maintaining your defensible space will give you significant built-in protection.

What is a "Fire-Hardened" Home?

This term means that a home is more secure from threats. In this context, "secure" doesn't mean having safety from intruders but rather enjoying the benefits of living in a home that has been specifically built to withstand a certain amount of wildfire exposure. **It does NOT mean fireproof, but rather that you have protected the weakest parts of your home's vulnerabilities with proven building materials and/or techniques to resist some heat and flame along with the ember storm that accompanies large wildfires.** One of the most common misconceptions is that buildings burn randomly during wildfire events—this is not the quite the case. Homes that are vulnerable have a greater likelihood of burning. Part of learning to live with wildfire is understanding that we have much control regarding how we address this vulnerability and prepare and manage for fire in our individual communities.

The ember storm that comes with wildfire is one of the biggest threats to your home. Source: Cal Chiefs Fire Prevention Officers WUI Workshop, Cliff Hunter/Rolland Crawford

Building Features and Ignition-Resistant Construction

The concept behind "ignition-resistant" is not that you are creating a fireproof bunker, but that you are hardening your home against the most likely threat—embers. This means that you can still build with many of the same materials you have used in the past. Now, however, you (or your contractor) will need to pay attention to small details like gaps between boards, vents with air holes where embers can enter, and places where embers can pile up and become glowing beds of coals. This is a detail issue as much as it is a big-picture issue. Remember, it also means you must maintain your defensible space. Without defensible space, hardening your home can be a waste of time and money.

To harden your home even further, consider protecting it with a residential fire sprinkler system. In addition to extinguishing a fire started by outside embers, it also protects you and your family 24/7, year-round, from any fire that may start in your home, not only wildfire.

Roofs

The roof is the most vulnerable part of any home to wildfire since embers can land, lodge, and start fires in a roof's nooks and crannies. Once a roof covering ignites, chances are probable that the rest of the home will follow.[17] If you have a shake roof, your house is more likely to burn down and ignite your neighbors' homes. One of your first actions should be to replace a shake or wood-shingle roof. Los Angeles and Ventura counties prohibit all wood roofs in Very High Fire Hazard Severity Zones. All new roofs need to be Class A, which means non-combustible coverings like tile, metal, or concrete with proper underlayment and sealing below. All roof tiles must be completely sealed at their edges.

An example of fire-hardened home features.

Eaves

Embers can gather under open eaves and ignite exposed wood or other combustible material. If eaves cannot be enclosed, then residents should be extra vigilant about keeping all flammable materials at least 10 feet away from the home. Absolutely minimize any heat or flame that can work its way up a wall and get trapped under the eaves. Changes to the code in 2010 allow for some flexibility in homes where attics have sprinklers installed, and where the vents are more than 12 feet off the ground.

Vents

Embers can enter an attic or other concealed space and ignite combustible materials. Unscreened vents are very hazardous and should be retrofitted immediately. The code requires that vents prevent flames and embers from entering a building. There are several products coming onto the market that address this need and are very good candidates for retrofitting your home. They combine a back-up system (such as baffles or honeycombs) in addition to the required screening. *See the WUI Building Products section below.*

Vents are vulnerable openings that must be protected in order to harden your home. This is a great retrofit opportunity. Source: Cal Chiefs Fire Prevention Officers WUI Workshop, Cliff Hunter/Rolland Crawford

The WUI Building Standards state that vents must resist the intrusion of embers and flames, or that they shall be protected by corrosion-resistant noncombustible (no plastic components) wire mesh screen with 1/4-inch openings. 1/8-inch mesh is also allowed. Vents cannot be used in an eave application unless that vent has been shown to resist the intrusion of embers and flame. Although there are a now a few vents that have been accepted for use by the California OSFM, a design that incorporates two sets of through-roof vents, one set for inlet air located near the roof edge and another for outlet air located near the ridge (as shown above), has been

Two examples of new vent designs that are now available.

[17] Firewise (2001), "Is Your Home Protected From Wildfire Disaster? A Homeowner's Guide to Wildfire Retrofit," p. 9. www.firewise.org/resources/files/wildfr2.pdf.

used. Modifications to the code that would provide for more prescriptive measures for complying are currently being considered by the California Building Standards Commission.

Walls and Siding

Walls need to resist heat and flames as well as embers. Non-combustible material like stucco, concrete, and tile obviously resist flames but may not always resist heat and embers. Ensure that there is a sheet rock barrier underneath the finishing material and that any gaps along the bottom or top edges have been sealed or caulked. Seriously consider replacing your charming wood-shingle siding with look-alike concrete products that will help save your home when wildfire rages.

Urban fuels (flammable and dead vegetation, and a wooden fence) against wood-shingle siding, a dangerous combination.

Windows and Doors

Windows are vulnerable to heat because they will break. Many homes are lost when radiant heat or flames from burning vegetation shatter the window glass. Embers then fly into the home through the broken window and ignite the home from within—even when no other ignition has occurred. All windows should be double-paned and have an outside panel of tempered glass. The tempering allows just enough extra heat resistivity to protect against moderate heat exposure. (Remember, you still have that defensible space outside the window.) Embers can enter gaps in doors, including garage doors, so have solid-closing doors made of non-combustible material or heavy, solid wood. If you have a pet door, be sure to have a way to completely close it to keep it from opening during a wildfire and allowing embers a pathway into your home.

Balconies and Decks

Embers can collect in or on surfaces or undersides of decks and balconies, ignite the material, and then enter the home through walls or windows. In addition, many of us store materials underneath decks and balconies that create a ready nest of flammable stuff for embers to land. To harden a home's deck and balconies (or any cantilevered addition), enclose the projection all the way to the ground and keep it ember-resistant by sealing cracks and joints.

There are many appropriate products for the high fire risk area of the Santa Monica Mountains. Heavy wood decking, if protected by excellent defensible space, may be allowed, but a better choice might be fire-retardant treated wood (FRX) if you want a wood deck. Other naturally fire-resistant choices (not non-combustible) are available; consult the *WUI Products Handbook*[18] to see the latest products.

Composite decking[19] manufacturers are developing fire-resistant products as well; ask your local building supplier if they carry products that are especially formulated for wildfire hazards. There are a growing number of products on the market designed for wildfire safety. Examples are included in the *WUI Products Handbook.* The key to remember is that **building or retrofitting with the right decking is one of your top three most-effective fire-safe building actions**.

[18] www.osfm.fire.ca.gov/strucfireengineer/pdf/bml/wuiproducts.pdf

[19] Deck boards manufactured from wood fiber and plastic to form a profile which requires less maintenance and generally has a longer lifespan than natural wood.

The California WUI Building Standards (and their Los Angeles and Ventura County-specific counterparts) are a new and evolving set of building requirements; they are designed to be used in conjunction with adequate defensible space. Without both, your home is not hardened. Both require maintenance throughout the life of your home. **Focus your fire-safe building retrofits on these top three building features: roofs, vents, and decks. Replacing these with appropriate materials and having defensible space will greatly enhance your home's chance of surviving the next wildfire.**

Finally, be sure all fire-safe building products you use carry the State Fire Marshal's approval. Unfortunately, there are people trying to take advantage of your fears of wildfire to sell inferior products that claim to meet these standards but do not. These products may not protect your home from wildfire.

Resources:

The recommendations forming the basis of the Wildland-Urban Interface Building Standards became law in 2003. Related work on the standards was completed and adopted by the California Building Standards Commission in 2007. *For the latest information on these Standards, see www.fire.ca.gov/fire_prevention/downloads/2007_CBC_Ch7A.pdf.*

For a copy of the new *Wildland-Urban Interface Products* handbook detailing which products have been approved by the State Fire Marshal to harden your home, please visit: *www.osfm.fire.ca.gov/strucfireengineer/pdf/bml/wuiproducts.pdf.*

Other helpful sources:

Builders Wildfire Mitigation Guide,
http://firecenter.berkeley.edu/bwmg/decks-1.html

FEMA Wildfire Building Mitigation Guide,
www.fema.gov/mitigationbp/bestPracticeDetailPDF.do?mitssId=5146

Is Your Home Protected From Wildfire Disaster? A Homeowner's Guide to Wildfire Retrofit is a bit dated but remains a great introductory resource: www.firewise.org/resources/files/wildfr2.pdf.

There are many great online resources for fire-safe construction, several through the University of California, Berkeley. The University of California's **Homeowners Wildfire Mitigation Guide**[20] has an easy-to-use format explaining the different areas of your home and what you can do to make each one fire safe. Their **Builders Wildfire Mitigation Guide**[21] has more information for those building or remodeling a home.

The following page summarizes the WUI building standards in Ventura and Los Angeles Counties.

[20] http://groups.ucanr.org/HWMG/index.cfm.

[21] http://firecenter.berkeley.edu/bwmg/default.html

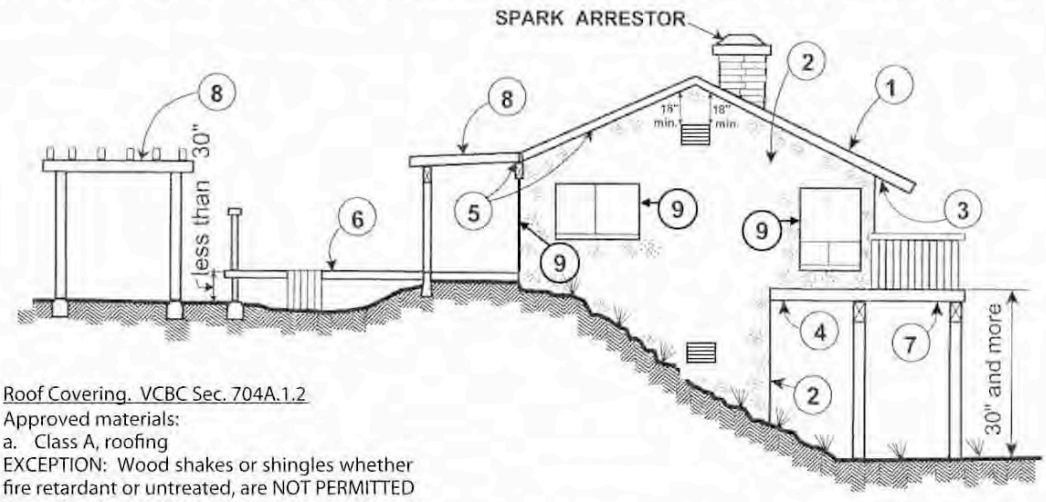
FIGURE 4-2. LOS ANGELES AND VENTURA COUNTIES HIGH FIRE HAZARD BUILDING REQUIREMENTS

Building and Safety Division • Public Information

County of Ventura • Resource Management Agency • http://www.ventura.org/rma/build_safe
Main Office • 800 S. Victoria Ave, Ventura, CA. 93009 • 805 654-2771
East County Office • 3855-F Alamo St., 2nd Fl. #2091A, Simi Valley, CA. 93065 • 805 582-8064

HIGH FIRE HAZARD /FIRE HAZARD SEVERITY ZONE REQUIREMENTS

Based on 2007 Ventura County Building Code, VBCB Chapter 7A and 2007 California Building Code, CBC Chapter 7A



1. Roof Covering. VCBC Sec. 704A.1.2
   Approved materials:
   a. Class A, roofing
   EXCEPTION: Wood shakes or shingles whether fire retardant or untreated, are NOT PERMITTED for roof covering.

2. Exterior Wall Covering. VCBC Sec. 704A.3
   Approved fire protective materials:
   a. 7/8" cement plaster
   b. 1" nominal thickness wood siding.
   c. 1/2" exterior plywood siding. If textured, max. groove depth, 1/8"
   d. 7/16" hardboard siding
   e. 5/8" particleboard, Exterior Type 2-M
   f. 5/8" exterior plywood, Texture 1-11. Max. groove depth 1/4"
   NOTE: Wood shakes or shingles, whether fire retardant or untreated, are NOT PERMITTED for external wall covering.

3. Roof Overhangs. VCBC Sec. 704A2.3
   Approved fire protection material having a flame spread of not over 25 for underside of rafters or:
   a. 7/8" cement plaster
   b. 5/8" Type X, weather protected gypsum wallboard
   c. 2 layers of 5/8" type gypsum wallboard where trusses occurs.
   ALTERNATE CONSTRUCTION: Exposed 4 x 6 rafter tails, supporting 2" T&G roof decking.

4. Projections and Other Building Elements. VCBC Sec. 704A.4.1.1
   Approved fire protection for underside of floor assembly of one hour fire rated or heavy timber construction or:
   a. 7/8" cement plaster
   b. 5/8" Type X, weather protected gypsum wallboard.
   c. 2 layers of 5/8" type gypsum wallboard where trusses occurs.
   ALTERNATE CONSTRUCTION: Exposed 6 x 10 floor beams and 8 x 8 posts, supporting 3" nominal thickness splined or T&G floor decking.

5. Ventilation Openings. VCBC Sec. 704A.2
   Attic or foundation ventilation openings or louvers shall not be located at or immediately below eaves or rakes, soffits or balconies or similar exterior overhangs which may be directly exposed to a fire in adjacent hazardous grass or brush areas.

6. Decks Less Than 30" Above Grade. VCBC Sec. 704A.4.1.1
   a. Decking: Solid flooring without gaps; weatherproofed.
   b. Fire-protect underside of deck per item 4a or 4b above, or enclose perimeter with exterior wall covering per item 2.

7. Decks 30" or More Above Grade. VCBC Sec. 704A.4.1.1
   a. Decking: Min. 3" nominal thickness wood decking; may be spaced not more than 1/4" apart.
   b. Fire protection not required on underside.
   c. Supports when exposed shall be minimum 8 x 8 posts and 6 x 10 beams/deck joists.

8. Attached or Detached Patio Covers, Carports, Arbors, Open Lattice Work, and Sun Shades. VCBC Sec. 704A.5.1
   May be constructed of any materials allowed by the code.

9. Exterior Doors, Glazing and Window Walls. CBC Sec. 704A.3.2.2- CBC Sec. 704A.3.2.3
   a. Doors shall be of approved noncombustible construction or 1 3/8" thick solid core wood or 20 minutes fire rated.
   b. Exterior windows, window walls, glazed doors and glazed opening within exterior doors shall have tempered glass or glass block units or 20 minutes fire rated.

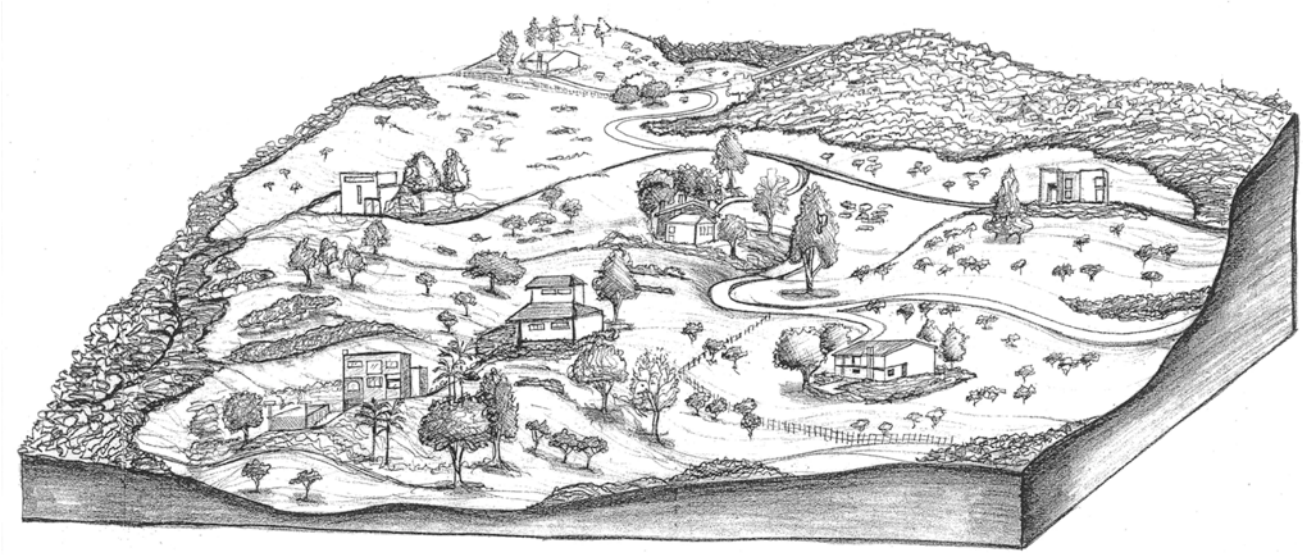
4.1.2. Fuel-Free Zone

Cohen's home ignition zone can be divided into four sub-zones. This zone concept can help you think of your property in these terms to develop the appropriate treatment for each area.

The concept of fuel-reduction zones around your home is now common. Several organizations have developed their own set of zones including:

- California Fire Safe Council, www.firesafecouncil.org/education/attachments/landscapingbrushland.pdf
- Firewise, www.firewise.org/resources/files/fw_brochure.pdf
- California Board of Forestry, www.fire.ca.gov/CDFBOFDB/pdfs/Copyof4291finalguidelines9_29_06.pdf
- Ready, Set, Go – Los Angeles County, www.fire.lacounty.gov/safetypreparedness/ReadySetGo/pdf/Ready%20Set%20Go%2009.pdf
- Ready, Set, Go – Ventura County, http://fire.countyofventura.org/LinkClick.aspx?fileticket=9hQO1rR_ezw=&tabid=231

These various classifications all follow the same basic concept of increasing the intensity of your fuel-reduction efforts the closer you work to your home or other buildings.



Overlapping Fire Safety Zones. Source: *A Road Map to Fire Safety*, Artist: Ron Durbin.

Once you have your home hardened, you can start moving outward from the structure. The **Fuel-Free Zone** extends 5 feet out from your home; it's the area immediately surrounding your house. Remember that embers landing on your roof will fall into this zone. Ground cover should be gravel, sand, rock, or some other non-flammable surface. It can include irrigated plants if they are low-growing, well-watered, and not touching your house. The most important objectives in this zone are homesite protection and thorough fuel-reduction activities.

The true test of whether your home is adequately hardened and your Fuel-Free Zone sufficiently prepared is to imagine someone coming over on a hot, windy day with a box of wooden matches. If this person were to walk around your house lighting and tossing matches at or near the structure, is there anything at all that might ignite (i.e. catch fire)? If not, congratulations, you've passed. If there is anything that could ignite, you need to begin your fire-safety efforts there, to ensure that this zone is fire free.

Another approach is to think about your home in terms of flammability. When you start a campfire, small pieces of wood and paper are required to ignite bigger logs. The same is true for your home. Anything around your home that

will ignite easily can and will threaten the larger structure. It can serve as kindling for your house in the event of a fire. Start your fuel-reduction efforts by removing any of this "kindling" around your house, especially any dead or dying vegetation. Once you do this, you may begin to see the area differently. You are beginning to gain a fire-safe perspective of your property. You may be surprised at what you now notice.

Fuel-Free Zone Best Management Practices[22]

- Use gravel, sand, rock, or other non-flammable surface wherever possible.
- Only use non-flammable mulches (e.g. not redwood bark or straw).
- Ensure that all plants in this zone are low-growing, well-watered, and not flammable.
- Remove all dead and dying vegetation; prune[23] dead material frequently on any vegetation in this zone.
- Remove overhanging dead branches in proximity to your roof.
- Prune trees away from structures and chimneys; ensure that they are free of any dead wood.
- Clean all dead leaves from your roof and rain gutters.
- Plants can be in pots, as long as they are moved away during Red Flag conditions.[24]
- Remove all flammable materials, including baskets, pine cones, brooms, furniture, hanging plants, etc.
- Review your home and this area using the kindling concept described above. Look for anything that would catch fire if an ember landed on it and was left alone to smolder.
- Make sure your decks, porches, and landings are free of clutter, and that anything remaining can be quickly and easily removed.

Source: *A Road Map to Fire Safety*, SMMFSA

4.1.3. Structure Protection Zone

The Structure Protection Zone extends from your house out 30 feet. The local fire station captain has the authority to extend this out to 50 feet anywhere in the Santa Monica Mountains, based on local conditions. This is what CAL FIRE calls the "lean and green" zone. In the Santa Monicas keep it lean, and green where possible while conserving precious water resources. Keep any vegetation here healthy and green.

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[22] Best Management Practices throughout this document are taken from the following sources: ForEverGreen Forestry; University of California Cooperative Extension: Safe Landscapes, Master Gardener Program; Los Angeles County Fire Department, Forestry Division, Fire Hazard Reduction and Safety Guidelines; Brush Management Guide (April 2009); Santa Monica Mountains Fire Safe Alliance, *A Road Map to Fire Safety* (2010); California Native Plant Society, *Care and Maintenance of Southern California Native Plant Gardens* (2006); "A Workshop for Community Wildfire Protection Plan Projects, Compliance with Federal Regulation," Pasadena, CA (March 27, 2008), Eaton Canyon Nature Center.; City of San Diego, "Guide to Fire Safety and Brush Management for Private Property, Bulletin #1" (May 2004).

[23] For pruning guidelines, see: B. O'Brien, B. Landis, and E. Mackey (2006), "Care and Maintenance of Southern California Native Plant Gardens" (Los Angeles: Metropolitan Water District of Southern California).

[24] For more information on Red Flag conditions, see section 4.2.2.

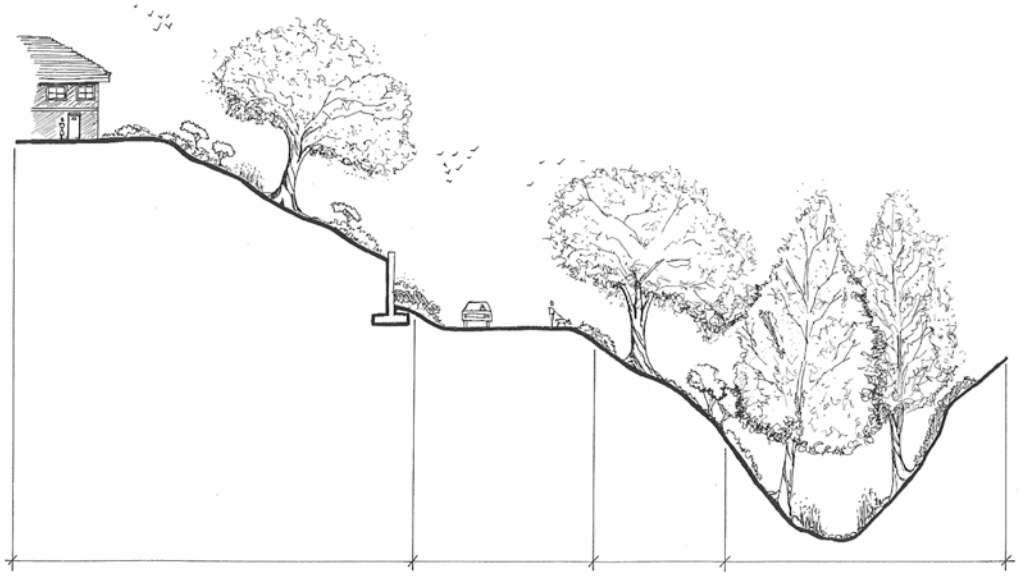
The goal in this zone is to reduce and remove all flammable materials from your home to facilitate fire protection. Keep all flammable materials well separated from each other. Think of fuel separation both horizontally and vertically. Vertically, you don't want plants or grass on the ground to be connected to shrubs, and then those to higher trees, decks, or your roof. Horizontally, think about fences connected to houses that are then touching shrubs or trees further out, which could facilitate a path for fire to travel to your house (or vice versa); or a deck that is next to branches of shrubs or trees. Remember that your house is a major fuel source itself.

In Los Angeles County, the law requires that a homeowner:

> "…remove all flammable vegetation or other combustible growth within 30 feet of any structure or within 50[25] feet of any structure in areas determined to be high hazard. Single trees, ornamental shrubbery or cultivated ground covers may be permitted provided they are maintained in such a manner that they do not readily transmit fire from native vegetation to the structure."[26]

For the inland areas of the Santa Monica Mountains, fuel reduction must be completed to these requirements by May 1st. For the coastal areas, the date is June 1st.

In Ventura County, no specific regulations are aimed at this 30-foot zone; instead they pertain to the 100-foot zone. *See section 4.1.4 below for more information.*



Source: *A Road Map to Fire Safety*, Artist: Ron Durbin.

[25] As determined by your local fire captain.

[26] County of Los Angeles Fire Department, *Los Angeles County Fire Hazard Reduction and Safety Guidelines.*

Fire-Resistant Plant Characteristics[27]

Remember, any plant can burn under the right conditions. For all plants, make sure to trim back and remove any dead vegetation and litter. When choosing species to plant or keep when performing fuel modification, look for plants with fire-resistant characteristics:

- Able to store water in leaves and stems
- Produce limited dead and fine material
- Extensive, deep root systems for controlling erosion
- Maintain high moisture content with limited watering
- Low-growing or prostrate form
- Open loose branches with a low volume of total vegetation
- Low levels of volatile oils or resins
- Ability to resprout after a fire
- Slow growing with little maintenance needed
- Not considered invasive

The moisture content of plants is important because high levels of plant moisture can lower fire risk and act as a heat sink, reducing the intensity and spread of fire.

Characteristics of Flammable Plants

Consider removing plants from your property and avoid purchasing new plants that tend to retain large amounts of dead material within the plant, produce a large volume of litter, and contain volatile substances such as oils, resins, wax, or pitch.

See Appendix J for a list of fire-resistant plants.

Urban Fuels

In the Santa Monica Mountains, one of the greatest threats to home survival in wildfire events is the presence of urban fuels—with "urban" meaning anything related to human development, and "fuels" meaning anything flammable. In other words, urban fuels include everything people have brought into the Santa Monica Mountains that has the potential to burn—homes, belongings, ornamental vegetation, etc.

Generally, urban fuels can be grouped into three categories:

1. Urban structures—Flammable structures of any kind: homes, businesses, schools, any and all outbuildings such as sheds, fences, gazebos, play structures, etc.

2. Landscaping—Flammable vegetation of any kind growing in the human environment. Includes all horticultural plantings and vegetation in the areas associated with human development without distinction between native or exotic, live or dead. This includes leaf litter and the now notorious standing dead fronds of palm trees.

3. Urban "debris"—Anything else that is flammable and does not fall into the above two classes, such as wood piles, doormats, outdoor furniture, toys, tools, vehicles, the 2x4 that the outdoor faucet is attached to, etc. In other words, flammable materials of any kind stored in areas associated with human development. This can even include mowed/disced areas during part of the year if weedy invasive plants are allowed to flourish and die back.[28]

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[27] University of California (March 2009), "Making Your Property Fire-Safe," http://groups.ucanr.org/SAFE/files/72154.pdf. Used by permission.

[28] C.J. Fotheringham and Robert Taylor, personal communication, March 2010.

The term "urban fuels" is also used in southern California to describe all the ornamental plants we have added to the landscape. Even though it may look lush and inviting around homes, it is often that very vegetation that is the cause of home ignition during wildfire. It is possible to maintain some ornamental landscaping and be fire safe. However, this requires paying attention to horizontal and vertical separation of fuels, especially separating any and all urban fuels from directly impacting your house.

Urban fuels.

There are many homes in the Santa Monica Mountains surrounded by highly flammable species such as Italian cypress and eucalyptus. These should be trimmed, pruned, or removed within 50 feet of any structure.

> "Special attention should be given to the use and maintenance of ornamental plants known or thought to be high hazard plants when used in close proximity to structures. Examples include Acacia, Cedar, Cypress, Eucalyptus, Juniper, Pine, and Pampas grass. These plantings should be properly maintained and not allowed to be in mass plantings that could transmit fire from the native growth to any structure."[29]

Reducing urban fuels is the number-one priority in making the neighborhoods of the Santa Monica Mountains fire safe.

Structure Protection Zone Best Management Practices

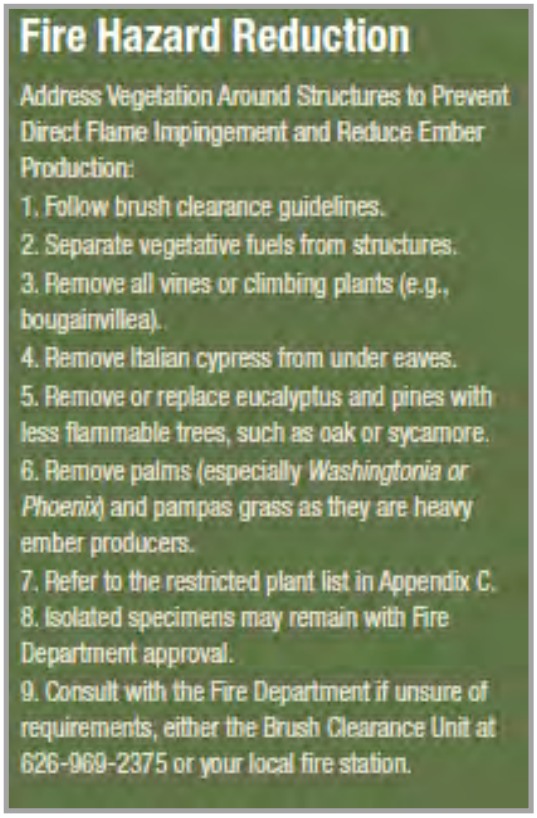
Trimmed or "limbed up" trees.

- Separate all fuels (anything that can ignite and burn) both horizontally and vertically from each other and from your home.
- Keep vegetation well watered and free of dead material.
- Remove all climbing or vining plants that connect your home to anything flammable.
- Prune, trim, or remove highly flammable species such as eucalyptus, Monterey pine, and Italian cypress within 50 feet of any structure. Replace with less-flammable native species such as oak and sycamore.
- Obtain a permit when cutting live wood in native oak trees over 2 inches in diameter. *(See Chapter 5, section 5.4.5, for information regarding necessary permits for pruning oak trees in the Santa Monica Mountains.)*
- Remove all highly flammable natives—e.g., sumac, chamise, buckwheat, and sage. Use low fuel-volume groundcover plants as replacements, like aloe, agave, beach strawberry *(Fragaria chiloensis* or *Fragaria vesca)*, San Diego marsh elder *(Iva hayesiana),* some manzanitas, or ceanothus.
- Pull weeds or weed-whip/weed-whack weeds before seed heads mature to reduce fire hazard and the spread of invasive plants. Plants may go to seed any time between February and April, depending on the previous year's weather.
- Utilize primarily low-growing plant material, less than 4 feet in

[29] County of Los Angeles Fire Department (2009), "Ready! Set! Go!" p. 4, www.fire.lacounty.gov/safetypreparedness/ReadySetGo/pdf/Ready%20Set%20Go%2009.pdf.

height, with the exception of trees. Plants shall be low-fuel and fire-resistant.

- Irrigate to maintain high moisture content in plants, but do not over-water. Prevent irrigation from flowing out of this area (except under extreme drought conditions); this is to avoid encouraging plant growth in the Defensible Space Zone (see below).
- Cut cured grasses to 3 inches.
- Keep canopies of large trees separated by 10 to 30 feet.
- Remove all debris (slash) from fuel-reduction efforts.
- Keep lawn chairs, umbrellas, and other canvas furniture a safe distance from structures. These can be easily ignited from sparks.
- Clear all vegetation and other combustible or flammable materials from beneath deck areas.
- Enclose underside of elevated decks with fire-resistant materials.
- Don't dump lawn and brush clippings in canyons.
- Ensure that structures such as fences are made of noncombustible or one-hour fire-rated materials.
- Call your local utility company for a yearly inspection if utility lines touch any trees on your property.
- Remove or separate wood decks, fences, and other flammable structures and materials wherever possible.
- Stack wood at least 30 feet from structures; remove flammable vegetation within 10 feet of any wood pile.
- Remove all stacks of construction materials, pine needles, leaves, and debris.
- Locate fixed butane/propane tanks at least 10 feet from any structure and with at least 30 feet of clearance from any flammable materials.



Source: *A Road Map to Fire Safety*, SMMFSA
Note: Restricted plant list is in CWPP

- Provide a minimum of 3 feet of clearance around all fire hydrants.
- Ensure that all your fuel-reduction efforts are done safely and never cause a fire. For example, do not use metal blades during dry weather, as they can spark on rocks and ignite nearby vegetation.
- Maintain this zone free of flammable materials throughout the year.

Pruning for Healthy Plants

Most plants will benefit from occasional corrective *pruning,* and all will benefit from the removal of dead wood. Time the pruning of individual plants over several years to allow them to recover. Try pruning about a third of your plants in a given year, so that all are pruned at the end of three years.

Regularly remove dead material and branches from trees and shrubs. For deciduous trees and shrubs, prune before they lose their leaves, when it is easier to see the dead branches.

Hand-prune inside branches to reduce flush of growth. Hedging and shearing alone result in weak, fast growth and more fuel.[30]

For more information on pruning native plants (and other vegetation), look for the book Care and Maintenance of Southern California Native Plant Gardens *(pages 67–131), available from the California Native Plant Society.*[31]

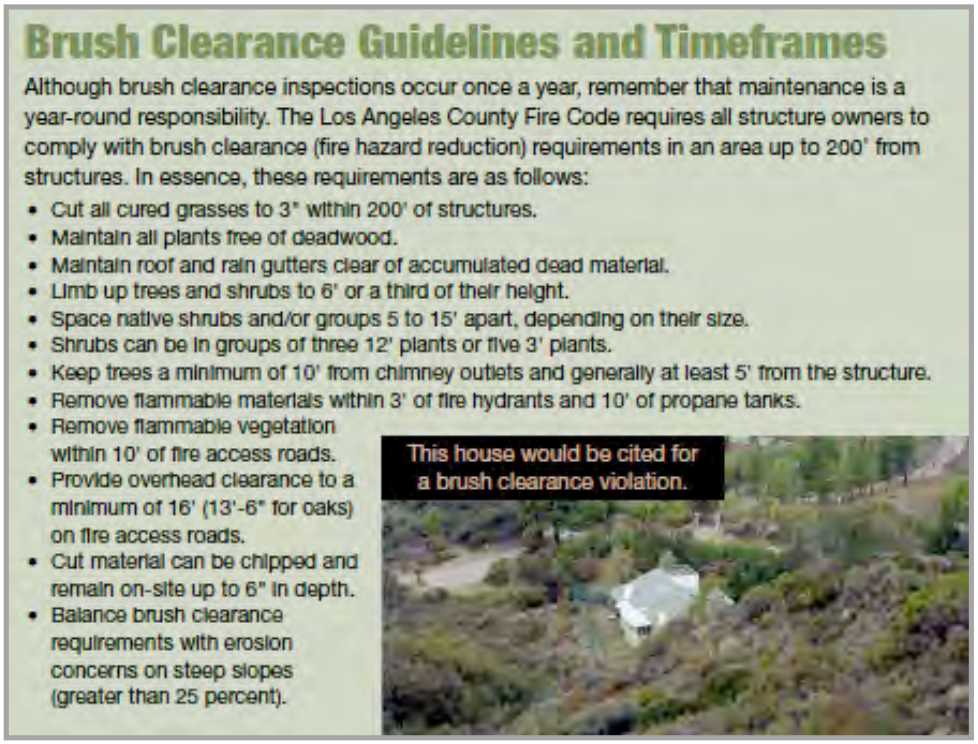
[30] University of California (March 2009), "Making Your Property Fire-Safe," http://groups.ucanr.org/SAFE/files/72154.pdf, Used by permission.

[31] B. O'Brien et al. (2006), "Care and Maintenance of Southern California Native Plant Gardens."

4.1.4. Defensible Space Zone

The Defensible Space Zone extends from your home out to a distance of approximately 100 feet. In many suburban and exurban settings this zone extends onto neighboring properties and may include nearby homes, so cooperation with neighbors is essential. The California Board of Forestry calls this the "Reduced Fuel Zone." 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 ecosystem health are objectives here.

In Los Angeles County, Santa Monica Mountains residents are required to:



Source: *A Road Map to Fire Safety*, SMMFSA

"…thin out and remove vegetation an additional 70 feet from the structure, for a total of 100 feet. The inspecting officer may require an additional 100 feet of thinning or removal, for a total of 200 feet due to high fire hazard."[32]

In Ventura County, Santa Monica Mountains residents are required to:

"…maintain around and adjacent to such building an effective firebreak made by removing and clearing away all combustible material for a distance not less than 100 feet from all portions of the building. Distances may be increased by the fire code official because of a site-specific analysis based on local conditions and, when required, based on a fire protection plan."[33]

"More is not necessarily better! By removing too much vegetation, you will be creating a large weedy or grassy area that will dry out and create warmer temperatures around your home. These fine fuels under more heat can carry flames much more quickly right up to your home! Leaving soil cover in the form of trimmed-up and well-spaced plants, bushes, and trees will keep your property cooler, will reduce the potential for weed growth, will break up the path for fire to travel, and will make your property look much nicer. All these things are more favorable to wildlife as well."[34]

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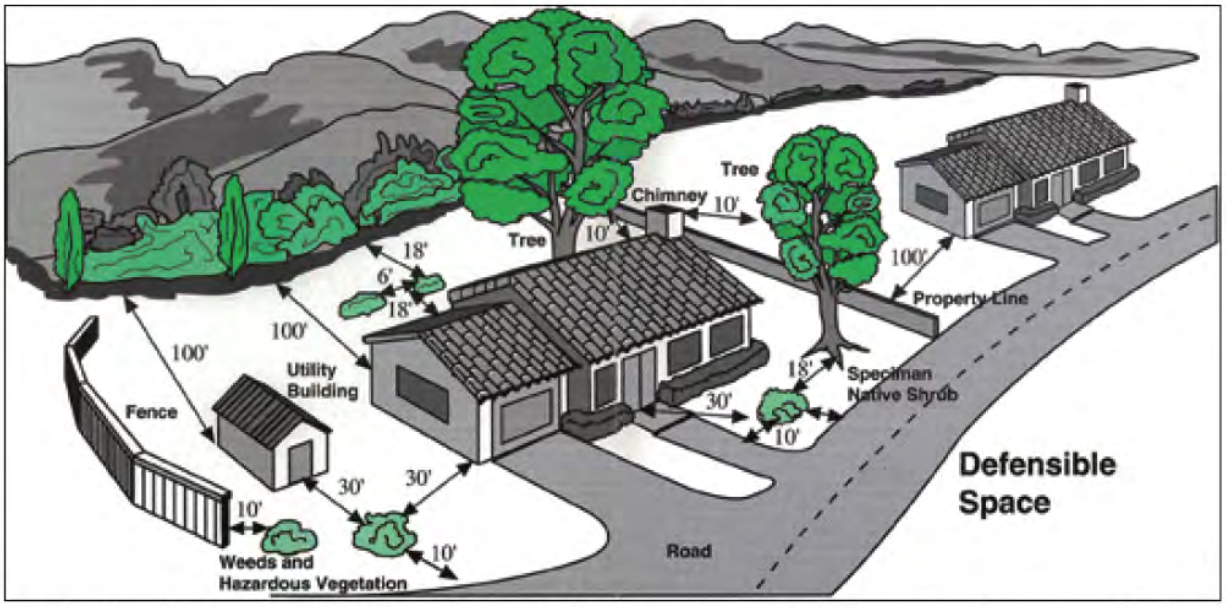
[32] County of Los Angeles Fire Department (2009), "Ready! Set! Go!" p. 4, www.fire.lacounty.gov/safetypreparedness/ReadySetGo/pdf/Ready%20Set%20Go%2009.pdf.

[33] Ventura County, Fire Protection District Ordinance #26, Section H105 (November 2007), p. 11, http://fire.countyofventura.org/LinkClick.aspx?fileticket=GpSPpp%2bxS1g%3d&tabid=58.

[34] "A Workshop for Community Wildfire Protection Plan Projects, Compliance with Federal Regulation."

FIGURE 4-3. SAMPLE CLEARANCE DISTANCES AROUND A HOME (SHOWN ON FLAT PROPERTY FOR DEMONSTRATION PURPOSES)[35]



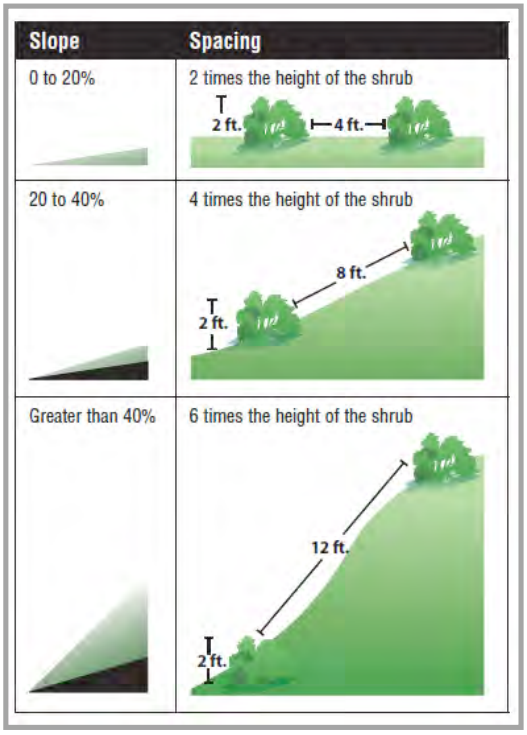
NOTE: Small lots may make these clearance distances impossible. You are only responsible for clearing up to your property line. Clearance of property adjacent to your lot is the responsibility of the property owner. For additional fire safety information call the Los Angeles County Fire Department's Community Relations Office at (323) 881-2411 or contact your local fire station. Source: LACFD

Defensible Space Zone Best Management Practices

- Start by measuring how far 100 feet actually is from your home, so you have a clear concept of where you need to work, and where not. It isn't as far as many people think. Remember that on a slope you will have to figure out how far to go to get a 100-foot horizontal distance from your structure. The steeper the slope and the greater the amount of fuels below your structure, the greater this distance will be. Your local fire department can help you determine what is necessary. You are not responsible or authorized to work beyond your property line unless provided permission by the other landowner.
- Continue to separate fuels in this zone both horizontally and vertically, and *"feather out"* your treatments as you go, meaning less treatment the further you get from your house.
- Choose landscaping plants that are drought-tolerant and fire-resistant.
- Leave a buffer of less-treated vegetation around sensitive habitats. This will help maintain the normal conditions within the sensitive habitat and make it more useful to wildlife.
- Mow grasses to 3 inches or less.
- Keep shrubs low (18 inches or less in height) and widely spaced (a minimum of 15 feet or three times their diameter from other shrubs).
- Space trees to allow a minimum of 30 feet between canopies at maturity.
- Remove lower limbs within a minimum of 6 to 10 feet off the ground, or prune lower branches to one-third the height of the tree (use the latter measure if the tree is less than 18 feet tall).
- Selectively thin and prune native or naturalized vegetation to preserve the natural appearance of the area while reducing the amount of flammable vegetation. Regularly remove dead branches, leaves, and related materials.

[35] County of Los Angeles Fire Department (February 2007), "Brush Clearance Preparedness," www.fire.lacounty.gov/safetypreparedness/PDFs/BrushClearance07.pdf.

- To help prevent future erosion on steep slopes, balance clearance versus erosion control. Thin shrubs to reduce fuel volume. Don't excavate, remove, or disturb existing plant root systems.
- Inspect vegetation regularly and maintain it periodically. Maintain single trees, ornamental shrubbery, and ground covers to ensure they do not readily transmit fire from the surrounding vegetation to your structures.
- Provide clearance of minimum 100 feet upslope from structures located mid-slope.
- Remove only dead materials in riparian (wet) areas. Consult a resource professional before disturbing any soil in these sensitive areas.
- Don't irrigate here except under extreme drought conditions that threaten your perennial vegetation, as irrigation encourages further vegetative growth, often of *flashy fuels.*
- Remove all debris and trimmings from the site. Chip native vegetation on-site up to a maximum depth of 6 inches in Los Angeles County and 3 inches in Ventura County to help prevent erosion, retain soil moisture, and reduce material going to landfills. Rake chips away from base of trees and shrubs out to the *drip line* of these plants to prevent root rot or rot at the base of the plants. Do not allow chips to accumulate on or underneath any groundcover.
- Remove all stacks of combustible materials.
- Provide a minimum of 3 feet of clearance around all fire hydrants.
- Keep fire access roads clear to sky with the exception of oaks, which must be limbed up to a minimum of 13 feet, 6 inches.



Approximate separation distances for shrubs within 100 feet of homes.

4.1.5. Wildland Interface Zone

Finally, the Wildland Interface Zone (or the Wildland Fuel-Reduction Zone) extends from your house out to 200 feet or (under extraordinary circumstances) even further. This is the zone where you will carry out wildland fuel-treatment prescriptions. The objective here is to reduce fire intensity to the point where firefighters can safely work there to protect a structure from ember ignition.

Controlled experiments by Dr. Cohen and many field observations corroborate what we know about the physics of radiative heating by wildfire: because radiative heating decreases as a function of distance from the heat source squared, there is very little additional fire safety to be gained by fuel reduction beyond 100 feet from a structure.[36] If a structure is highly resistant to ignition by embers, then good fuel management in the first 100 feet should allow structures to survive a wildfire under most circumstances.

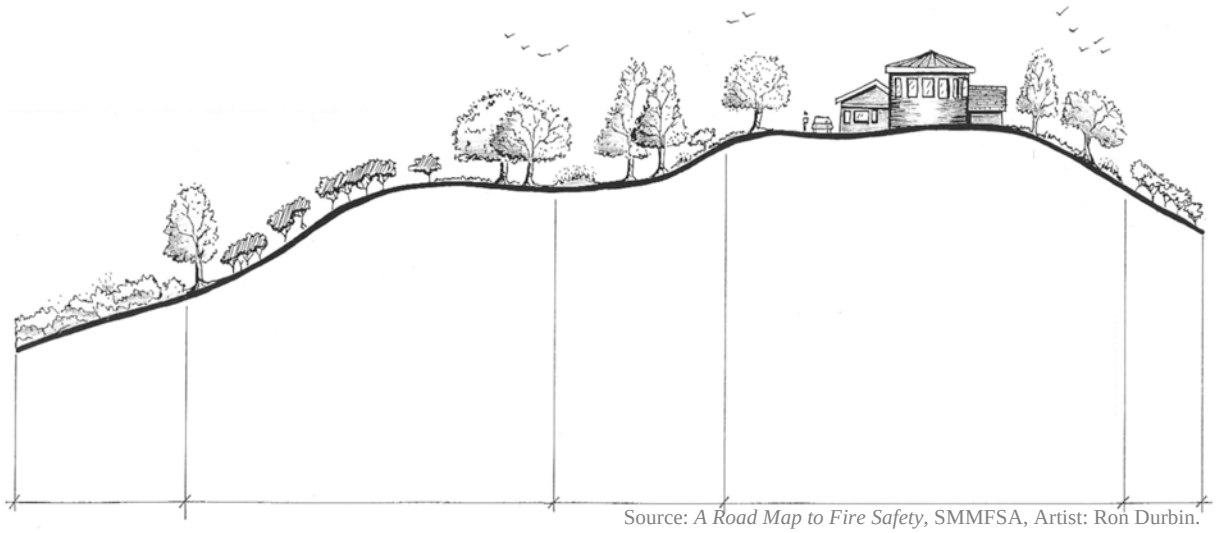
Fuel management beyond 100 feet from a structure is nearly always for the protection of firefighters defending the structure from ember ignition. In order for firefighters to defend a structure safely, additional fuel treatment is sometimes necessary. If a structure is located where firefighters cannot reasonably be expected to deploy and safely defend it from ember ignitions, then additional thinning beyond 100 feet from the structure may be warranted.

If a structure is located in such hazardous fire terrain that large amounts of additional treatment would be necessary to create conditions safe enough to try defending it, then it is likely too dangerous a location for firefighters to put themselves at risk during a wildfire. In such a case, large fuel-management zones should be avoided as a waste of resources that would only cause unnecessary damage to natural areas for little real safety benefit. For such high-hazard locations, funds would be better spent thinning vegetation along the evacuation route.

For any treatments that extend beyond your home ignition zone into the native landscape, you will need to ensure that you are meeting all *environmental compliance* regulations. Generally, but not always, if you are following the Conservation Principles and best management practices in this CWPP, your actions will be consistent with these regulations. However, you will likely still need to complete the required documentation before beginning any fuel-management actions. *See Appendix G for more information on environmental compliance.*

This is an example of how not to create defensible space.
The “donut” method does not work in the Santa Monica Mountains as urban fuels are left close to the homes where they can ignite from embers.
Fuel reduction needs to happen closest to the house or structure.

[36] Robert Taylor, National Park Service, personal communication, February 2010.



Source: *A Road Map to Fire Safety*, SMMFSA, Artist: Ron Durbin.

Wildland Interface Zone Best Management Practices

- Thin native shrubs, remove dead wood.
- Cut cured grasses to 3 inches in height.
- Leave uncut native plant groupings up to 400 square feet—a 20x20-foot area, or an area that can be encircled by an 80-foot rope—separated by groupings of plants cut down to 6 inches. Thinning should be prioritized as follows: 1) invasive non-native species, 2) non-native species, 3) flammable native species, 4) native species, and 5) regionally *sensitive species.*
- Remove only dead materials in riparian (wet) areas. Consult a resource professional before disturbing any soil in these sensitive areas.
- Remove all debris and trimmings from the site, or chip native vegetation on-site up to a maximum depth of 3 inches (Ventura County) or 6 inches (Los Angeles County). Rake chips away from base of trees and shrubs out to the drip line of these plants to prevent root rot or rot at the base of the plants. Do not allow chips to accumulate on or underneath any groundcover.
- Keep fire access roads clear to sky with the exception of oaks, which must be limbed up to a minimum of 13 feet, 6 inches.
- Provide a minimum of 3 feet of clearance around all fire hydrants.
- In Ventura County, large vacant parcels located in Hazardous Watershed Fire Areas bordering developed (interface) areas shall have a 100-foot fuelbreak cleared along the entire interface border. When possible, the fuelbreak may be placed in such a manner so that it is obscured from the public view. *(See Chapter 5 for suggestions regarding how to do this in an ecologically appropriate and aesthetically pleasing way.)*

For more information on detailed BMPs by vegetation type, see Chapter 5.

4.2. Ready, Set, Go

In Los Angeles and Ventura counties, all community preparedness for wildfire is based on the principle of Ready, Set, Go. Hence, we have organized the following sections around those concepts.

4.2.1. Ready: What to Do Before Wildfire

Being "Ready" means preparing your home and property to survive wildfire. As explained in the previous sections, that means hardening your home and creating a fire-safe landscape. It also means ensuring that your home is a safe place for firefighters when they arrive to help protect it during a wildfire. If you are truly ready, then chances are

good that you and your home will survive. If you are not ready, your home may be one of those lost in your neighborhood. Your actions can make a significant difference in your odds of surviving the next wildfire intact.

As the quote below illustrates, lack of preparation can result in the least desirable outcome:

> "The WUI fire disaster context can be generally described as a set of contingencies. The disaster sequence starts when a wildfire or multiple wildfires burn during extreme fire conditions. The combination of vegetation, weather conditions, and topography produces fast-spreading, intensely burning fire behavior that overwhelms suppression efforts. If the extreme wildfire spreads close enough to residential development with its flames and firebrands (lofted burning embers), hundreds of ignitable homes can be simultaneously exposed. Although protection may be effective for some homes, an extreme wildfire's high intensities and high rate of area growth (rapid spread and spot ignitions) ignites too many houses and threatens firefighters' safety, preventing them from protecting all structures. With homeowners likely evacuated and firefighters unable to protect every house, initially small, easy-to-extinguish ignitions can result in total home destruction."[37]

The best defense under this conflagration scenario is to ensure that your home, property, and family are all thoroughly prepared for wildfire, as described throughout this chapter.

Help Firefighters Help You

Work with your local fire station staff well before fire season to acquaint them with your property. Create a map of your property that illustrates the locations of the most valuable structures and other resources. 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 or locations of keys. Also include locations of any pets or livestock. Put your name, phone number (and/or cell number), street address, and parcel number or *GPS* coordinates on this map. Put a copy on the wall by a phone, with the number of your local fire department, so you can use it in case of an emergency. When a fire is imminent, place this information in an envelope clearly marked for firefighters and leave it out in a visible place just before evacuating. Invite local firefighters out to your property (long before fire season) to review this and show them where everything is. This will help them effectively protect your property when wildfire occurs.

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 garage. Your collection should include tools like shovels, hoes, Pulaskis, and McLeods. Keep a set of fire-fighting clothes there as well, including heavy cotton or wool clothing, leather boots, eye protection, 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. Remember, you should only attempt to fight a fire if you have legitimate experience, and if the fire is small, such as from ember ignitions. Never attempt to fight a wind-driven fire. Under those circumstances, the best option is to prepare your home and evacuate early.

Water Storage and Supply

The amount of water you have stored at your homesite could have a significant impact on the ease (or difficulty) of successfully fighting a fire there. For those not on a community or public water system, 2,500 gallons of water storage for fire fighting is the minimum required for new construction in California. In Ventura County, this amount depends on your square footage, with a minimum of 4,250 gallons including 2,000 gallons dedicated to fire

[37] J. Cohen (2008), "The Wildland-Urban Interface Problem–A Consequence of the Fire Exclusion Paradigm," p. 22.

fighting.[38] In Los Angeles County the size of the water tank also depends on the square footage and is determined by the appendix table in Regulation #19.[39]

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.[40] If you cannot do this, position your domestic water line to emerge out of your water tank in the middle of the tank, so you don't accidentally drain your entire tank into the garden or elsewhere. This maintains the bottom half for emergency use. Combined water storage is allowed as long as the minimum required gallons for fire department use is always maintained. Typically, this requires plumbing the domestic water flow line above the minimum water storage requirements mark of your tank.

Good and bad hydrant maintenance.

Your fire water line should be a 4-inch line, buried 2 feet, 30 inches underground. An aboveground plastic water line will likely burn in a fire, but a full plastic water tank probably will not. Put a metal standpipe (hydrant) at the end of the water line with a 2½-inch national male fire hose threaded adapter (NST, NS, or NH) with a cap for pressure for systems of 500 gpm[41] or less. For systems with greater than 500 gpm *fire flow*, a 4-inch national male thread with cap is required. This is so firefighters can quickly attach to your water source. Fire hose thread is known as national thread, national standard, NST, NSFH, NH, or FHT. For standards in Los Angeles County, please refer to Fire Department Regulation #19.[42]

Your water tank can be located most anywhere on your property, but generally near a road, and not too close to your house. In Ventura County,[43] it must not be closer than 20 feet from your house, unless it has been fire-proofed to withstand at least two hours of fire. Tanks of 5,000 gallons or greater require a building permit and perhaps other agency approvals.

To ensure that firefighters can use your water to protect your home, the fire department connection (hydrant) must be located no closer than 6 feet and no further than 8 feet from the road edge; and no closer than 50 feet nor further than 250 feet from the structure. Make sure that your standpipe (hydrant) is somewhere visible, painted yellow with a blue reflective marker on the roadway, kept clear of flammable vegetation out to 3 feet, and positioned where a fire truck can access it and turn around to leave. If firefighters don't know where the water connection is or it's not accessible, it's not going to be very useful. Hence, make sure your local firefighters know exactly where your tank is

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[38] Ventura County, Fire Prevention Standard 14.5.1, Water Supplies Residential, Without A Purveyor, Jan. 1, 2008.

[39] http://fire.lacounty.gov/FirePrevention/PDFs/Reg/fpr_ch7_19.pdf

[40] See Appendix K for sample diagrams.

[41] Gallons per minute.

[42] http://fire.lacounty.gov/FirePrevention/PDFs/Reg/fpr_ch7_19.pdf

[43] Ventura County, 2008.

located, well before any fires. The roadway must also be wide enough to accommodate the fire apparatus without blocking it. *(See "Roads" section below.)* For standards in Los Angeles County, please refer to Fire Department Regulation #19, pages 8–9.[44] For more information on hydrant regulations in Ventura County and tank and hydrant connection diagrams, see Appendix K, and *http://fire.countyofventura.org/LinkClick.aspx?fileticket=0DzHf1sWaDY%3d&tabid=58*.

In an emergency, swimming pools and ponds provide a great source of water. Firefighters can *draft* 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 backup. Remember that when there is a large fire the power will likely go out. Therefore, the generator is needed to pump water from your pool or pond. *See Ventura County Fire Prevention Standards, Figure 5, in Appendix K for more information on setting up a hydrant drafting system from your pool.*

If you have a pool, put a sign on the road in front of your house indicating that you have one, so firefighters can easily find and access it. Pool signs must be 10 inches high and 7.5 inches wide and should depict a white "water and swimmer" icon with a blue background. The sign should be rectangular with reflective properties and placed in plain visibility from the street or road in front of the property. You can order pool signs online from: www.buildAsign.com or www.signsrus.com. For Los Angeles County regulations regarding swimming pool signs visit: www.idm-usa.com/poolsign/auxiliary_water_sources_regulation.pdf.

Options are expanding for inexpensively storing water. Cisterns (catchment to collect rainwater) are becoming increasingly popular. Several websites describe how to make these. Low-cost water tanks are also available. The easily transported Pioneer Tanks from Australia are now seen throughout the US (www.pioneertanks.com.au). FlameSniffer,[45] a company working in the Santa Monicas, provides water tanks and a water defense system based on existing water at your house (e.g. your pool or a water tank).

The use of gray-water systems is an alternative method for watering yards and vegetation to conserve water. A gray-water system collects water after a non-contaminating use such as the kitchen sink or washing machine, and stores it for use in irrigation. For more information on safe and sanitary gray-water systems, see www.oasisdesign.net/greywater or www.greywater.com, and check with your local health department.

Los Angeles County Gray-Water Standards:

- Recycled, Gray, and Cistern projects require an approved backflow prevention device on the potable service(s), installed as close to the meter(s) as possible.
- Signs — Install signs at all entrances stating the use of either recycled, cistern, or gray water for landscape irrigation.
- Gray water and cistern water projects shall obtain approvals from the administrative authority as per UPC, i.e., Building and Safety Department. Include approval documentation with application.
- Joint approval is required due to cross-connection requirements regulated by this department.[46]

[44] http://fire.lacounty.gov/FirePrevention/PDFs/Reg/fpr_ch7_19.pdf

[45] www.flamesniffer.com, http://bushfireprotect.com.au/10958550/bushfire-protection-water-sprinklers.htm.

[46] County of Los Angeles Dept. of Public Health (July 2007), "Cross-Connection Plan Approval Application," www.lapublichealth.org/eh/docs/ep_cross_con_planapp.pdf.

- Gray water systems, rainfall/runoff non-potable cistern systems, and recycled water systems are not to be interconnected. Each shall be stand-alone systems completely separate from one another.
- Gray water and rainfall/non-potable cisterns are to be maintained as separate systems due to gray water systems' direct connection to the sewage system. Rainfall/non-potable cisterns are not to be directly connected to a sewage system.
- A non-potable backup water supply line from a potable source via an approved backflow prevention device can be directly connected to the rainfall/non-potable cistern discharge line to the irrigation system. Gray water systems cannot be directly connected to a potable supply with or without a backflow prevention device, air gaps only.[47]

Ventura County Gray-Water Standards:

- Installations are only allowed for single-family dwellings.
- Gray water can only be used for subsurface landscape irrigation.
- Except in special circumstances, the system shall consist of one or more holding tank(s) which, through a series of underground drain lines, discharge the gray water into subsurface irrigation beds.
- There must be adequate lot area and appropriate soil conditions for absorption of the gray water.
- The capacity of a private On-site Wastewater Treatment System (OWTS) shall not be reduced or affected by the gray-water system, as confirmed by the Environmental Heath Division as a part of the Setback Certification.
- In addition to a plumbing permit, the following is required for the installation of a gray-water system: a report, or log, from a soils engineer detailing the following:
    - Soil absorption rates based on percolation tests.
    - Soil formations and groundwater encountered during excavations of test pits dug in proximity to the proposed disposal fields.[48]

In the City of Malibu, see http://municipalcodes.lexisnexis.com/cgi-bin/hilite.pl/codes/malibu/_DATA/TITLE17/Chapter_17_44_WATER_CONSERVATI.html?graywater for water conservation in landscaping standards.

Emergency Water Supply[49]

- If you have a swimming pool, consider obtaining a gas-powered water pump with a fire hose and nozzle. Be sure to test the pump monthly.
- Make accessible, clearly mark, and maintain all emergency water sources.
- If you have an electrically powered well or booster pump to supply water, consider installing an emergency generator to operate the system during power failures.

Roads and Access

Roads are critical components in the fire equation. They can be a great place for a fuelbreak. They are also vital for evacuation and for firefighters to access your home. Fire engines generally need a minimum clearance of 20 feet wide by 16 feet high, and a 75-foot "Hammerhead T" (70-foot in Los Angeles County) or 80-foot (64-foot in Los Angeles County) circle to turn around for safe retreat. For more information on Los Angeles County road standards see

[47] County of Los Angeles Dept. of Public Health, "Guidelines for the Installation and Pipeline Construction for Safe Reuse of Rainfall/Run-Off, Non-Potable Cistern Water and Urban Run-Off Water," www.watereuse.org/files/images/Cistern_Guidelines07022008.pdf.

[48] County of Ventura, Building and Safety Division (Feb. 29, 2008), "Guidelines for the Installation of Residential Graywater Systems," http://www.ventura.org/rma/build_safe/pdf/handouts/permit_gray_water.pdf.

[49] County of Los Angeles Fire Department, "Los Angeles County Fire Hazard Reduction and Safety Guidelines."

http://fire.lacounty.gov/FirePrevention/Malibu_Rebuild_docx/Handout_APPAR_TURNARND_STAND_PUMP.pdf. For Ventura County, see http://fire.countyofventura.org/LinkClick.aspx?fileticket=LFfYsB7DrxE%3d&tabid=58.

These road clearances for engines are in addition to fuel-reduction treatments of at least 10 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 home or business while you're trying to evacuate, there need to be areas in the road wide enough to accommodate traffic safely from both directions.

Remember, when a wildfire is near, chances are it will be very dark and smoky, thus very disorienting. Take the time now to make it easier on yourself, so you are prepared if and when a wildfire comes.

Most firefighters will not and should not unnecessarily risk their equipment or lives to protect your property. Firefighters will almost always turn around immediately when they arrive to a fire, for safer and quicker escape. 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. You should always do this under Red Flag conditions.[50]

If you have locked gates, they will likely be cut by firefighters. If you don't want that to happen, make sure you leave them 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. Ventura County requires a *Knox Box*[51] for all access roads and gates. Be sure local firefighters have the key.

Bridges also need to be evaluated for safe fire truck passage as per PRC 4290. Weight limits must always be posted on private bridges. Generally, if a propane (or other fuel) truck 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. Don't make their job any more dangerous than it already is. Instead, help them to help you.

Finally, some private dirt roads can become nearly impassable after a rough winter.[52,53] Maintaining your dirt and gravel road is important for many reasons, including keeping sediment out of streams and ensuring 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. For information on how to maintain private roads, see *Rural Roads: A Construction and Maintenance Guide for California Landowners.* [54]

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[50] See section 4.2.2 for an explanation of Red Flag conditions.

[51] Wikipedia (accessed December 2009), "Knox Box," http://en.wikipedia.org/wiki/Knox_Box; www.knoxbox.com.

[52] In Ventura County, dirt roads are not allowed unless providing access to a building of 700 ft^2 or smaller.

[53] In Los Angeles County, dirt roads must be certified by a civil engineer to verify they can support a fire apparatus, including during inclement weather.

[54] The Regents of the University of California (2007), "Publication 8262," *Rural Roads: A Construction and Maintenance Guide for California Landowners.* Susan D. Kocher, UC Cooperative Extension Natural Resources Advisor, http://ceeldorado.ucdavis.edu/files/40828.pdf.

Fuel Treatments along Roads and Driveways

Fuel treatments along driveways and roads is a high priority. While ecological concerns regarding vegetation types are considered, fuel reduction remains the primary management objective in these areas. The main objective for *ingress-egress* corridors is to create a defensible perimeter along and adjacent to all roads and driveways. These access routes are also where a fire would decrease in intensity and provide safer access for firefighters.

Roads can be a potential ignition source for wildfires (from vehicles and people). When treated, they serve important functions as natural fuelbreaks, as well as *anchor points* for tactical fire-suppression activities. Thus, treatment of these areas is a top priority in any fuel-management strategy. Treatments along driveways and road corridors benefit multiple landowners in the event of a wildfire, thus providing an opportunity for community planning and collaboration.

Roads and Driveways Fuel-Reduction Best Management Practices

- *High-prune* all branches that are hanging over the road to a height of at least 16 feet above the ground (13 feet, 6 inches under oaks in Los Angeles County), especially highly flammable vegetation such as eucalyptus.
- Remove all dead and dying vegetation; separate fuel continuity and clear back all flammable vegetation along driveways and roads, for up to 10 feet on either side. Focus treatments first on critical evacuation routes.
- Identify at least two exit routes from your neighborhood.
- Post clearly visible road signs to show traffic restrictions such as dead-end roads and height and weight limits.
- Construct roads that allow two-way traffic.
- Design road width, grade, and curves to allow access for large emergency vehicles.
- Ensure that parking restrictions are followed, thereby keeping roadways clear of obstructions.
- Keep roads clear of impediments such as trash cans. In Los Angeles County, trash cans are only permitted on the roadway from 5 pm the day preceding and 8 pm the day after trash collection.

- Ensure that fences, hedges, and other impediments are well clear of the road right-of-away, to ensure safe passage and off-street parking.
- Design bridges to carry heavy emergency vehicles. Post weight limits on all private bridges.
- Make sure that dead-end roads and long driveways have turnaround areas wide enough for emergency vehicles.
- Construct and/or ensure turnouts along one-way roads.
- Make sure that street names and numbers are visibly posted at each intersection.
- Post your house address on the street fronting the property.
- If your house is not visible from the street, post a sign next to the vehicle entrance using a minimum of 4-inch address numbers on a visible, elevated post. Use noncombustible materials with a contrasting background.

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 visible road and address signs. This is legally required. 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, police) will likely find it. If not, your home may not be defended. This is crucial when emergency vehicles such as ambulances are trying to find you in the case of a medical emergency, where a few minutes can be the difference between life and death. Work with your local fire department if you have questions regarding how to do this most effectively. If you want emergency personnel to be able to find you, do your part.

Your sign should be of reflective material so it is visible at night, and non-flammable (metal on metal post). The letters must be at least 4 inches high and 3/8 reflective stroke,[55] and of a contrasting color to the sign background. Where the structure is not visible from the roadway, they need to be on an elevated post. Finally, they need to be visible from both directions for at least 100 feet.[56]

4.2.2. Set: What to Do When Wildfire Potential is High—Red Flag Warnings

Most Santa Monica Mountains residents are very familiar with Red Flag warnings. According to the National Weather Service, the agency that issues these warnings, a Red Flag warning is:

"A term used by fire-weather forecasters to call attention to limited weather conditions of particular importance that may result in extreme burning conditions. It is issued when it is an ongoing event or the fire weather forecaster has a high degree of confidence that Red Flag criteria will occur within 24 hours of issuance. Red Flag criteria occur whenever a geographical area has been in a dry spell for a week or two, or for a shorter period, if before spring green-up or after fall color, and the National Fire Danger Rating System is high to extreme and the following weather parameters are forecasted to be met:

1. A sustained wind average 15 mph (24 km/h) or greater,
2. Relative humidity less than or equal to 25%, and
3. A temperature of greater than 75°F (24°C).

In some states [including California], dry lightning and unstable air are criteria."[57]

The specific humidity criteria for issuance of Red Flag warnings in southern California are: "either Relative Humidity ≤15%, with sustained winds ≥ 25 mph and/or frequent gusts ≥ 35 mph (duration of 6 hours or more), or

[55] Meaning that the characters need to be at least 3/8-inch thick.

[56] University of California and the Interagency Engineering Working Group (April 2000), "Structural Fire Prevention Field Guide for Mitigation of Wildland Fires," p. 40, www.osfm.fire.ca.gov/codedevelopment/pdf/firesafetyplanning/structural/structuralfirepreventionguide.pdf.

[57] National Weather Service (January 2010), "JetStream—Online School for Weather." www.srh.noaa.gov/jetstream//append/glossary_r.htm.

Relative Humidity ≤ 10%, with sustained winds ≥ 15 mph and/or frequent gusts ≥ 25 mph (durations of 6 hours or more)."[58]

Criteria for Red Flag warnings changed in 2010, to be a more site-specific and effective warning for wildfire conditions. "The new red-flag warning system is meant to be more selective and to take into account local geography and terrain as well as wind conditions and humidity levels."[59] You can check the National Weather Service website to find current weather alerts for California: "Current Watches, Warnings and Advisories for California Issued by the National Weather Service," www.nws.noaa.gov/alerts/ca.html, or national fire weather alerts: http://radar.srh.noaa.gov/fire/.

There are several actions to take when a Red Flag warning is issued. This is the "set" stage of Ready, Set, Go. Fire can be extremely frightening. Taking steps now to prepare you, your family, and your home will make it easier to survive a wildfire crisis. It may also help you reduce panic and effectively address the situation. Even the most organized of us will forget something when a crisis arrives. Create easy-to-follow checklists based on those in this section for your family to use in an emergency.

There are mass notification programs for all residents in the Santa Monica Mountains. This is a service provided by local governments to call residents in the case of an emergency in their community. Residents are encouraged to register both their home and cellular phone numbers at the following websites:

- **Los Angeles County:** http://alert.lacounty.gov
- **Ventura County:** http://portal.countyofventura.org/portal/page/portal/cov/emergencies/reverse911/reverse911register
- **City of Malibu:** www.ci.malibu.ca.us/index.cfm/fuseaction/DetailGroup/navid/471/cid/11670/
- **City of Calabasas:** www.cityofcalabasas.com/connect-cty.html

Finally, there are new commercial services in place for organizations, businesses, and other groups of people to create automated phone calling in a short time frame. One is called One Call Now, www.onecallnow.com/Default.aspx; another is Call-Em-All, www.callemall.com. These are potential community notification options for homeowner's associations, schools, and other neighborhood groups.

To ensure that your family is "set," begin by walking around your property while looking for anything removable outside your home that could ignite or burn. This includes lawn furniture, door mats, hanging plants, etc. Move all of these 1) into your garage, shed, or other enclosed space, 2) into your pool, or 3) 30–50 feet away from your home. You want to ensure that these do not ignite and spread fire to your home. You are now extending your Fuel-Free Zone out to your Defensible Space Zone *(see section 4.1.2 for more information on zones).*

- 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 smoldering embers or sparks. Remember that if the power goes out and you use a system with a pump, you won't have water unless you have a backup generator. Fill bathtubs and any available containers to store water as soon as possible, ahead of any potential power outage.
- Be sure to keep your "water reservoirs" and portable tanks filled, and have mops and hoses stored with the rest of your emergency supplies (ladders, shovels, etc.).[60]

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[58] Geographic Area Coordinate Center, "Watches and Warnings for California." http://gacc.nifc.gov/oscc/administrative/policy_reports/myfiles/Watches_and_Warnings_for_California.htm.

[59] *Los Angeles Times* (April 17, 2010), http://www.latimes.com/news/local/la-me-red-flag17-2010apr17,0,1767104.story.

[60] University of California (March 2009), "Making Your Property Fire-Safe," http://groups.ucanr.org/SAFE/files/72154.pdf.

If you are relying on a cordless telephone, be sure you have a backup non-electric phone. If you have a cellular phone, be sure you have your car charger available so you can charge it from your car battery. Purchase a 12-volt "cigarette-lighter" inverter so you can charge critical items from your vehicle. Ensure that all backup generators have an approved crossover switch, installed by a licensed electrician, so when the power company is fixing downed lines, you don't harm or kill a lineman with your generator.

IF A FIRE STARTS IN YOUR NEIGHBORHOOD, REMEMBER TO CALL 9-1-1. In the midst of the excitement and panic of a fire, and attempts to extinguish it, it is possible to forget to call 9-1-1 to alert firefighters. Do not call the office/station phone numbers of the fire-fighting services. Instead 9-1-1 is the number to report a fire; every second counts in fighting a fire. Should the time come that you do have to call 9-1-1, give them your address (which must be visibly marked on the road so firefighters can find your home) or GPS coordinates if you have them (especially if you live in an area where addresses are confusing).

If you see smoke or fire in your area, immediately report it by dialing 9-1-1. Remember to take note of the location before you hang up so that the dispatcher can send emergency equipment to the correct place.

FIGURE 4-4. CITY OF CALABASAS, RED FLAG WEATHER INFORMATION[61]

RED FLAG WEATHER

JUST WHAT IS "RED FLAG WEATHER" AND HOW SHOULD I REACT?
Red Flag Weather refers to certain weather conditions that lead to a greater possibility for a wildland fire that starts to spread rapidly. These conditions generally exist when the winds exceed 25 mph and relative humidity is below 15%.

On days such as these, listen to the news on radio or TV to see if a Red Flag Warning or Alert has been issued. If so, here are protective measures you can take:

RED FLAG WEATHER WARNING PREPAREDNESS STEPS

1. Park your car heading out with doors and windows closed, and know where your car keys are.
2. Disconnect automatic garage door openers and use the manual function (in case of power failure before you are able to exit).
3. Place your box of important documents, photos, and keepsakes inside your car.
4. Keep pet carriers readily accessible.
5. When you leave your home:
   - Keep drapes or other combustible window coverings OPEN (or remove them completely).
   - Keep fire-resistant window coverings CLOSED.
   - Close all interior doors of the house (this slows the spread of fire).
   - Close all windows.
   - Leave lights on (as long as power remains, your home will be more visible to firefighters through the smoke or darkness).

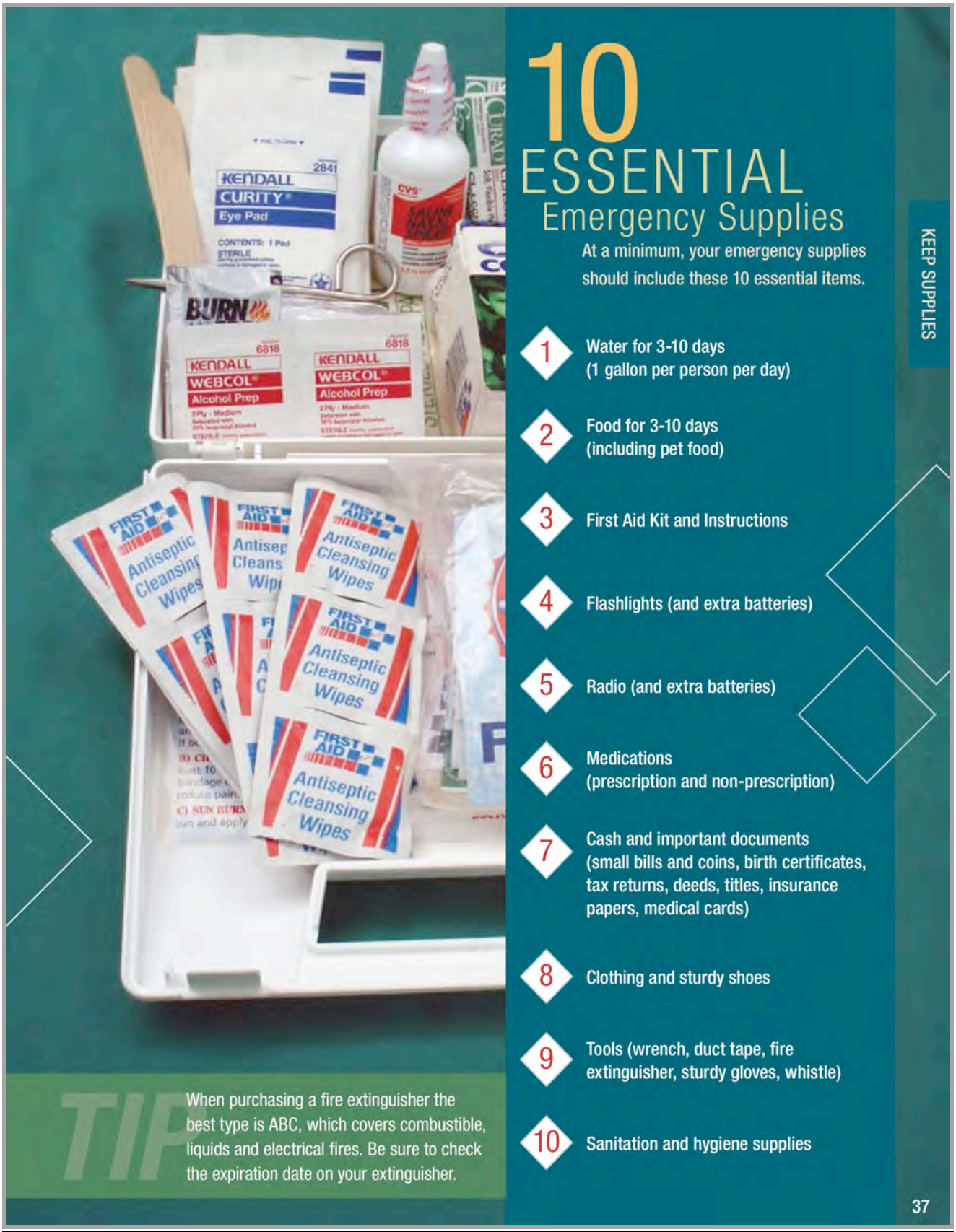
[61] City of Calabasas (June 2008), *Emergency Preparedness Guide, A resident's handbook for emergency preparedness,* p. 20, www.cityofcalabasas.com/pdf/emergency-guide-2008.pdf.

If you live in a remote area and a fire has started on your property, and conditions are safe for you to leave your house, after you call 9-1-1 go to the beginning of your road and either post a person there or put up a non-flammable flag or some other 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.

Preparation Ahead of the Fire[62]

- Back your car in the garage heading out with windows closed and keys in the ignition.
- Close the garage door, leave it unlocked, and disconnect the automatic door opener (if applicable) in the case of power failure.
- Keep a flashlight and portable radio with you at all times and stay tuned to your local news station.
- Move combustible yard furniture and other flammable items away from the house or store them in the garage.
- Cover windows, attic openings, eaves, and vents with fire-resistant materials such as ½-inch or thicker plywood. Close window shutters and blinds if they are fire-resistant.
- Attach garden hoses to spigots and place them so that they can reach all areas of your house.
- Fill all sinks, bathtubs, trash cans, buckets, and other containers with water. Keep small rags or wet towels handy to dip into the water and extinguish spot fires.
- If you have an emergency generator or a portable gasoline-powered pump that will supply water from a swimming pool, pond, well, or tank, clearly mark its location and be ready to operate it.
- Place a metal ladder against the house on the opposite side of the approaching fire for access to the roof.
- Close all windows and doors (including pet doors) around your home to prevent sparks from blowing inside.
- Close all doors within the house to slow fire spread inside.
- Turn on the lights in all rooms of your house, on the porch, and in the yard. Your house will be more visible through the smoke or darkness.
- Shut off butane/propane or natural gas valves.
- Move furniture away from windows and sliding glass doors to keep them from igniting from the radiant heat of the fire.
- Keep everything possible off roadways, including cars, garbage cans, trailers, etc.
- Put your phone's car charger and a portable 12-volt inverter into your car so you can charge your phone and laptop. If you have an Internet aircard (cellular USB modem), add that to your car emergency communication kit. Internet may be your easiest communication avenue at first, especially for reaching family members outside the immediate area.

[62] County of Los Angeles Fire Department, "Los Angeles County Fire Hazard Reduction and Safety Guidelines."



County of Los Angeles, Emergency Survival Guide, February 2010
http://lacoa.org/PDF/EmergencySurvivalGuide-LowRes.pdf

***FIGURE 4-5. GET SET: PREPARE YOUR FAMILY*[63]**

Get SET – Prepare Your Family

- Create a Family Disaster Plan that includes meeting locations and communication plans, and rehearse it regularly. Include in your plan the evacuation of large animals such as horses.
- Have fire extinguishers on hand and train your family how to use them.
- Ensure that your family members know where your gas, electric, and water main shut-off controls are and how to use them.
- Plan several different escape routes.
- Designate an emergency meeting location outside the fire hazard area.
- Assemble an emergency supply kit as recommended by the American Red Cross.
- Appoint an out-of-area friend or relative as a point of contact so that you can communicate with family members who have relocated.
- Maintain a list of emergency contact numbers posted near your phone and in your emergency supply kit.
- Keep an extra emergency supply kit in your car in case you can't get to your home because of fire.
- Have a portable radio or scanner so that you can stay updated on the fire.

As the Fire Approaches

- Alert family and neighbors.
- Dress in appropriate clothing (i.e., clothing made from natural fibers such as cotton, and work boots). Have goggles and a dry bandana or particle mask handy.
- Ensure that you have your brush fire survival kit on hand that includes necessary items such as a battery-powered radio, spare batteries, emergency contact numbers, and ample drinking water.
- Stay tuned to your TV or local radio stations for updates, or check the fire department website at www.fire.lacounty.gov, or http://fire.countyofventura.org.
- If not evacuating, remain close to your house, drink ample water, and keep an eye on family and pets.

Outdoor Checklist

- Gather up flammable items from the exterior of the house and bring them inside (e.g., patio furniture, children's toys, doormats, etc.) or place them in your pool.
- Turn off propane tanks.
- Connect garden hoses to outside taps.
- Don't leave sprinklers on or water running—they can waste critical water pressure.
- Leave exterior lights on.
- Back your car into the garage. Shut doors and roll up windows.
- Have a ladder available. *(But don't leave wooden ladders against your house.)*
- Patrol your property and extinguish all small fires.
- Seal attic and ground vents with pre-cut plywood or commercial seals.

Indoor Checklist

- Shut all windows and doors, leaving them unlocked (if you are comfortable doing this).
- Remove flammable window shades and curtains and close metal shutters.
- Remove lightweight curtains.
- Move flammable furniture to the center of the room, away from windows and doors.
- Shut off gas at the meter. Turn off pilot lights.
- Leave your lights on so firefighters can see your house under smoky conditions.
- Shut off the air conditioning.[64]

[63] County of Los Angeles Fire Department (2009), "Ready! Set! Go!" p. 8.

[64] County of Los Angeles Fire Department (2009), "Ready! Set! Go!" p. 8

4.2.3. Go: What to Do During Wildfire—Evacuating Safely

By leaving early, you will give your family the best chance of surviving a wildfire. Evacuating early means you help firefighters by keeping roads clear of congestion, enabling them to move more freely to do their job. According to firefighting protocol, if people remain in the area, firefighters are instructed to stop fighting the fire and ensure the safety of those who remain. Remember that when you make a decision to stay, you may endanger not only your life and the lives of any family members remaining with you, but also the lives of the firefighters trying to protect your home.

Go Early

Make a Kit

- Keep a pair of old shoes and a flashlight handy for a night evacuation.
- Keep the six "P's" ready, in case an immediate evacuation is required:
  - People and pets
  - Papers, phone numbers, and important documents
  - Prescriptions, vitamins, and eyeglasses
  - Pictures and irreplaceable memorabilia
  - Personal computers (information on hard drive and disks)
  - "Plastic" (credit cards, ATM cards) and cash

When to Leave

Leave early enough to avoid being caught in fire, smoke, or road congestion. Don't wait to be told by authorities to leave. In an intense wildfire, they may not have time to knock on every door. If you are advised to leave, don't hesitate!

Where to Go

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

How to Get There

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

What to Take

Take your emergency supply kit containing your family's and pet's necessary items, such as cash, water, clothing, food, first aid kits, medications, and toys. Also, don't forget valuables such as your computer, photos, and important documents.

Organize your family members and make arrangements for your pets.[65]

[65] County of Los Angeles Fire Department (2009), "Ready! Set! Go!" p. 10.

FIGURE 4-6. MY PERSONAL WILDFIRE ACTION PLAN [66]

Write up your Wildfire Action Plan and post it in a location where every member of your family can see it. Rehearse it with your family.

My Personal Wildfire Action Plan

During High Fire Danger days in your area, monitor your local media for information on brush fires and be ready to implement your plan. Hot, dry, and windy conditions create the perfect environment for a wildfire.

Important Phone Numbers

Emergency: _____ _____ _____

_____ _____ _____

School: _____ _____ _____

_____ _____ _____

Family: _____ _____ _____

_____ _____ _____

Friends: _____ _____ _____

_____ _____ _____

Animal Shelter: _____

_____

When to go: _____

_____

Where to go: _____

_____

How to get there: _____

_____ Destination: _____

What to take: ☐ Insurance Papers ☐ Photos ☐ Prescriptions ☐ Important Documents

_____

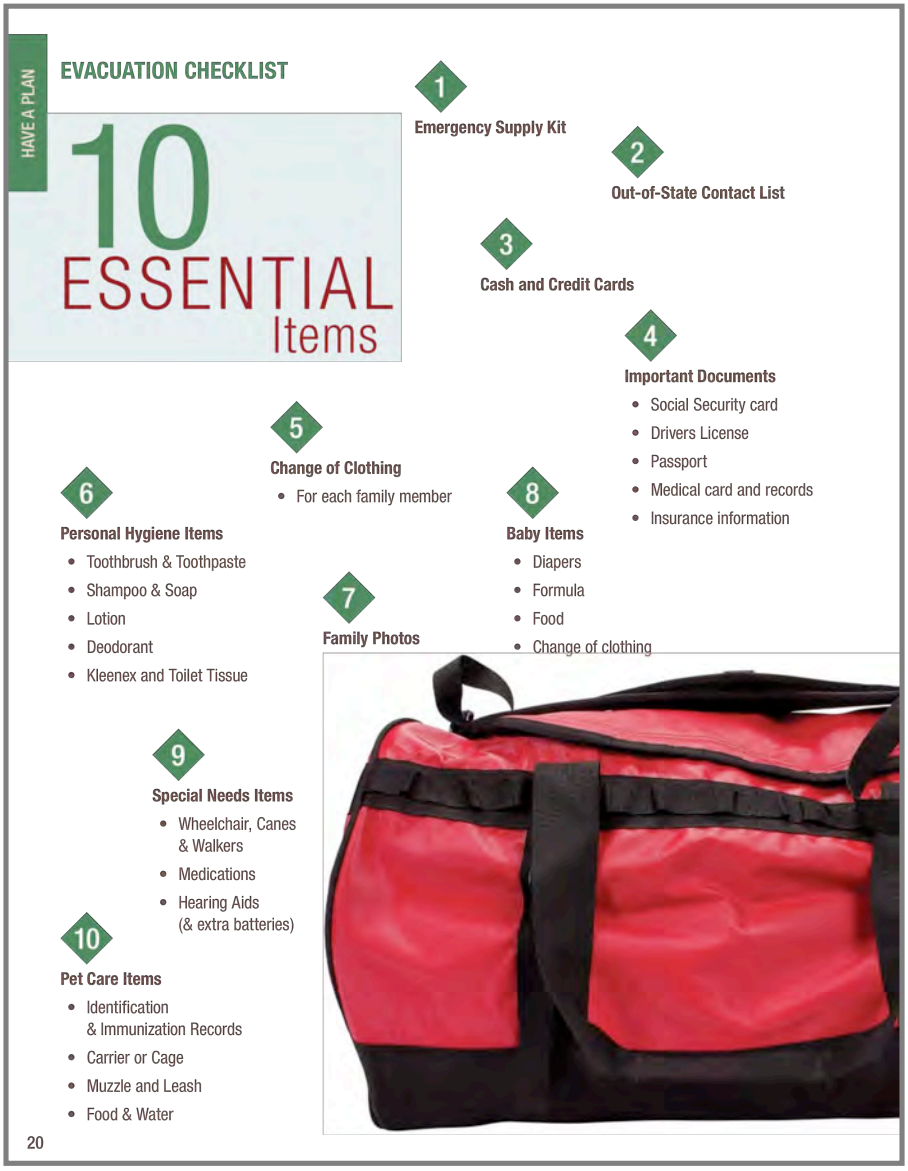
Who to tell (before and after): _____

VENTURA COUNTY FIRE DEPARTMENT
If you have an emergency, call 911
Public Information Office: 805-389-9769
Wildfire Hotline (during major wildfires only): 805-388-4276
Web site: http://fire.countyofventura.org

Los Angeles County Fire Department
If you have an emergency, call **911**
Public Information Office **(323) 881-2411**
Web site: **www.fire.lacounty.gov**

[66] County of Los Angeles Fire Department (2009), "Ready! Set! Go!" p. 11.

Evacuation



County of Los Angeles, Emergency Survival Guide, February 2010

Be ready if you need to evacuate. Have everything you need packed beforehand (including your cellular phone car charger). Some residents in high fire-risk areas move their valuables to a safer location during extreme fire weather. Identify all 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. Sometimes your 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.

See CAL FIRE's evacuation information in Appendix H, and the evacuation information for each community in the relevant Fire Safety Action Plan (Part II), for more detailed information.

If You Are Unable to Evacuate

When it is not physically possible to evacuate, you may be forced to stay. This means you wait out the fire wherever you are, and for as long as it takes. Your chances of surviving a wildfire when you are trapped will be greatly enhanced if you have excellent defensible space. As described below, a better option is to get to a safe area as directed by public safety officials if you are unable to evacuate.

Firefighters and law enforcement do not recommend that you stay home, especially given the 2009 tragedy in Australia when many did not evacuate and died. Often residents do not have the proper equipment or training to stay behind as opposed to evacuating.

Although there are areas in the Santa Monica Mountains referred to in the wildland fire brochures published by the County of Los Angeles Fire Department in regard to sheltering in place, this practice is not recommended. There are several factors that make sheltering in place a very dangerous option in many parts of the SMM, including steep terrain, a dense canopy, the direction from which wildfires come, and extreme fluctuations in water availability and water pressure during a massive wildfire. Neither a garden hose nor a fire hose can put enough water on this type of fire to extinguish it. Therefore, a resident should not shelter in place unless told to do so by a Sheriff's deputy, other law enforcement, or the fire department. If the fire department knows there are citizens who have stayed, they must attempt to rescue these citizens. This pulls critical resources away from fighting the fire and saving homes and jeopardizes the lives of firefighters as well as other citizens who are trying to evacuate.

It can be very difficult to discern the right thing to do as the fire approaches. Be prepared. Talk to your local firefighters now to develop a plan.

FIGURE 4-7. WHAT TO DO IF YOU ARE UNABLE TO EVACUATE[67]

If You Are Trapped: Survival Tips

- Shelter away from outside walls.
- Patrol inside your home for spot fires and extinguish them.
- Wear long sleeves and long pants made of natural fibers such as cotton. Synthetic materials melt quickly.
- Stay hydrated.
- Ensure that you can exit the home if it catches fire (remember, it can be four to five times hotter outside).
- After the fire has passed, check your roof and extinguish any fires, sparks, or embers.
- Check inside the attic for hidden embers.
- If there are fires you cannot extinguish with a small amount of water or in a short period of time, call 9-1-1.

Preparing Pets and Livestock

If you have pets and/or livestock, take the time now to plan how best to ensure their survival. The following text is from "Disaster Preparedness for Dog and Cat Owners," by 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/Emergency_Preparedness/Public.html#Disaster_Brochures.

[67] Los Angeles County (2009). "Ready, Set, Go!" p. 9.

FIGURE 4-8. DISASTER PREPAREDNESS FOR DOG AND CAT OWNERS

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, and 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 in a photo. 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 *(see below).*

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 his or her 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 the neighbor 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 CAN'T 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 the animal(s) 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 entitled "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 that may be disturbed.

• 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'VE LOST YOUR PET:

• Visit each shelter in your area at least once every other day. You must check the shelter in person; only you 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!

Pet 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

• You will need to have your emergency contact information in one easily accessible place. This information is different in every county.

For more information on evacuating animals, please check out the following local resources:

- Los Angeles County – 211 hotline (for all types of assistance).
- City of Los Angeles Emergency Management Department Helpline – 888-356-4661, 213-473-6296 (TTY). This helpline has comprehensive recorded information (no live operators) 24 hours a day for emergency preparedness topics, including lost and found animals.
- Veterinary Public Health and Rabies Control Program, 562-401-7088.
- Los Angeles County Agoura Shelter – 818-991-0071 (serving Calabasas, Malibu, Topanga Canyon, Westlake Village, and surrounding unincorporated areas).
- Los Angeles County Department of Public Health, Disease Control Programs, Veterinary Public Health and Rabies Control, Information for Pet Owners During Disasters, http://publichealth.lacounty.gov/vet/docs/InfoPetOwnersDisasters.pdf.
- Ventura County Animal Regulation – 888-223-PETS from within Ventura County; 805-388-4341 from outside the county.

- Ventura County Animal Services, Disaster Evacuation, http://portal.countyofventura.org/portal/page/portal/animalreg/EVAC/.
- Humane Society of Ventura County – 805-646-6505.

A well-planned and executed evacuation can reduce the impact of wildfire on you and your family. Start preparing today by reviewing "Ready, Set, Go!" Pick up a copy at your local fire station, or download it here:

Los Angeles County:
http://www.fire.lacounty.gov/safetypreparedness/ReadySetGo/pdf/Ready%20Set%20Go%2009.pdf

Ventura County: http://fire.countyofventura.org/LinkClick.aspx?fileticket=9hQO1rR%2Fezw%3D&tabid=56

4.3. After the Fire

Once a fire burns through an area, a separate set of actions commences. For instance, wildfires that have burned at high severity may have dangerous adverse effects on 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 or most of the trees and vegetation gone, will not have the ability to hold back or absorb water when rainfall is heavy. In these situations the potential is high for catastrophic events like landslides—where entire hillsides can turn to liquid and move downslope. This was seen in 2010 in the communities surrounding the Angeles National Forest following the Station Fire.

Source: NPS/SMMNRA

In addition to slope instability, invasive species can take hold after fire, changing the ecological balance for decades. Once established, these invasive species increase future fire risk, as they are highly flammable in late summer when they carry fire very well. This increases the likelihood of more fires and, in turn, more weeds to perpetuate this cycle far into the future.

Directly following a fire the land is at its most sensitive. It is in an unstable state. Therefore, very careful consideration will need to be taken to ensure that your actions benefit its recovery. Section 4.3.2 below details how to go about developing a restoration plan.

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

4.3.1. Assess Your Situation

Because you lived through a fire does not mean it could not happen again, as many Santa Monica Mountains residents know from first-hand experience. Learn to be better prepared next time. *Forestland Steward* published this article after the 2003 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, streamflow, flooding, debris flow
- Need for treatments to upper watershed to minimize downstream impacts, impacts to property

Roads

- Existing problems may be exacerbated by wildfire effects
- Damage to stream crossings, culverts
- Gullies, potholes, fill-slope failure, cut-slope failure, sediment deposits, wet spots
- Potential for culvert obstruction and diversion.[68]

4.3.2. Developing and Implementing a Restoration Plan[69]

After a wildfire has burned through your property you will need to assess the impacts and decide what measures are necessary to restore and mitigate the damage. Similar to developing a fuel-treatment prescription, you will need to develop a post-wildfire recovery plan. It will outline the priority areas on your property to begin work, and the sequence, schedule, and timing of that work. Post-fire restoration activities focus on mitigating ecological damage and improving safety for your homesite and road network.

It is highly recommended that trained resource professionals be consulted in developing your plan. Sometimes a team of specialists (including hydrologists, geologists, soil scientists, botanists, foresters, and engineers) may need to be consulted to assess the impacts the fire may have caused. They can give you direction regarding how to develop a restoration plan to start the healing process. In addition to their advice, consider consulting with an ecologist to review your restoration plan. Often, activities that some professionals consider to be restoration can set back the cycle of ecological recovery, inflicting more damage on the already disturbed land. Many Santa Monica Mountains

[68] California Forest Stewardship Program, *Forestland Steward* (Spring 2004), p. 1, http://ceres.ca.gov/foreststeward/pdf/newsspring04.pdf.

[69] This section is based on the work of Marco Bey, Lomakatsi Restoration Project, www.lomakatsi.org.

residents live adjacent to state or national park lands. The resource staffs at those agencies can be a great help in developing a post-fire restoration plan.

Where to Begin?

Immediate and Long-Term Needs

In developing your restoration plan, prioritize both immediate needs and longer-term actions. Immediate needs relate to seasonal timelines and activities that need to occur right away, for both human safety and the mitigation of ecological impacts. Following a wildfire, you likely will need to be thinking about winter rains. To mitigate slides and erosion, your first step will be to stabilize these areas. Roadway infrastructure, homesite, and riparian areas are other places to immediately begin restoration projects.

Long-term actions are the recovery work that you will undertake over time. Restoration is a process and not a one-time occurrence. Planting native trees, shrubs, and grasses is part of long-term restoration activity. Planting locally appropriate native species is important to minimize the invasion of exotic weeds in the short term.

Restoration Plan Mapping and Layout

Following 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. Free aerial pictures can be obtained from Google Earth;[70] be sure to check the photo date however, as it may not be as current as the fire. With this photo and subsequent map you can define those areas that burned the hottest, require immediate restoration, and need long-term restoration; and you can project locations of greatest concern. This map will correspond to a written plan that describes the proposed restoration activities. Using *GIS* and GPS tools and technology can be extremely helpful in creating your maps and plan.

Developing a Restoration Priority List

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

In order to undertake restoration work, you need access to your property. Following a wildfire, weakened trees can fall across roads or threaten driveways and roads. Ensure safe access and exit by removing them.

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 burned can pose safety issues along roads. These trees can be used to stabilize road banks by *contour-falling* them. You can achieve several goals with one activity. In restoration we call this *stacking functions.* In this situation you can increase safety of travel along your driveway, in turn using the trees to hold slopes in place. Always check with an experienced local arborist before removing any trees, especially native trees such as oaks.

If the fire burned hot within 100 feet of your home, you will need to take measures here to increase safety. If you have steep slopes below or above your house, perform safety-mitigation work and erosion control. If your homesite is on a steep slope directly above your neighbors, prioritize developing a mitigation plan.

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

After safety and access are ensured, focus restoration activities on mitigating stream impacts. To prevent sedimentation and erosion from entering streams, focus your attention on these locations. In addition to riparian areas and streams, think about upland slopes above stream corridors.

[70] http://earth.google.com.

If you have identified important wildlife corridors, sensitive species and their habitat, and ecologically significant locations, you will also 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 your wildlands.

It is important when planning post-fire restoration efforts that you focus attention on areas that have the greatest need. Following fire, some areas on your property may be fine left alone for natural recovery. Ultimately the natural world will heal itself—the land has been here longer than any one of us. 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 its specific needs. Directly after a fire things look charred and heavily impacted; however, new life is there and will literally rise from the ashes.

4.3.3. 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 lost 50% or more of your home, you will be required to meet the latest building codes when you rebuild, as described in section 4.1.1 above.

If you have to start from scratch, think about where to site a new structure. Where are those places on your property that burned less or not at all? What about putting your house there now? 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 when working on other places on your property that did not fare so well. If you improve your understanding of your local landscape and how it reacts to fire, you can improve the survivability of your home and your ability to plan for future fires.

Finally, a few closing words from Dr. David Horne, who has been active with the Greater Laguna Fire Safe Council and a board member of the California 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!"[71]

4.4. Legal Requirements

As stated throughout this CWPP, defensible space not only makes sense, it's the law. Below are some of the most relevant policies and regulations related to homeowner wildfire safety in the Santa Monica Mountains.

4.4.1. California State Laws and Regulations

There are many legal requirements relating to fire safety and defensible space for the non-federal lands in the State of California. Following are some of the most relevant state regulations.

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[71] Dr. David Horne, Director, California Fire Safe Council, personal communication, March 15, 2007.

Public Resources Code 4291/14 CCR 1299: Defensible Vegetation Clearing Around Structures

The State of California enforces basic fire-prevention principles through PRC 4291. "4291," as it's called, regulates the amount of fuel you can have around your property. It is a good summary of the basics of vegetation reduction for fire safety and defensible space. This is the law that requires a minimum of 30 feet of defensible space. This was updated in 2004 to expand some of the 30-foot defensible requirements to 100 feet, as is the case for all of the CWPP Planning Area. It was again updated in 2008 (through SB 1595) to expand this to the property line, or further. Regulations were adopted by the Board of Forestry in 2006 to provide greater specifications for the vegetation removal requirements for the area located 30 to 70 feet from a structure.

> The law requires the owner or person in control of a qualified property to significantly reduce the risk of ignition of a habitable structure by maintaining defensible space, as prescribed, within a certain number of feet from the above-described dwellings, buildings, or structures… Because this bill would change the definition of a crime, it would impose a state-mandated local program.[72]

The revised 4291 states:

> (1) Maintain defensible space no greater than 100 feet from each side of the structure, but not beyond the property line unless allowed by state law, local ordinance, or regulation and as provided in paragraph (2). The amount of fuel modification necessary shall take into account the flammability of the structure as affected by building material, building standards, location, and type of vegetation. Fuels shall be maintained in a condition so that a wildfire burning under average weather conditions would be unlikely to ignite the structure. This paragraph does not apply to single specimens of trees or other vegetation that are well-pruned and maintained so as to effectively manage fuels and not form a means of rapidly transmitting fire from other nearby vegetation to a structure or from a structure to other nearby vegetation. The intensity of fuels management may vary within the 100-foot perimeter of the structure, the most intense being within the first 30 feet around the structure. Consistent with fuels management objectives, steps should be taken to minimize erosion.
>
> (2) A greater distance than that required under paragraph (1) may be required by state law, local ordinance, rule, or regulation. Clearance beyond the property line may only be required if the state law, local ordinance, rule, or regulation includes findings that such a clearing is necessary to significantly reduce the risk of transmission of flame or heat sufficient to ignite the structure, and there is no other feasible mitigation measure possible to reduce the risk of ignition or spread of wildfire to the structure. Clearance on adjacent property shall only be conducted following written consent by the adjacent landowner.
>
> (3) An insurance company that insures an occupied dwelling or occupied structure may require a greater distance than that required under paragraph (1) if a fire expert, designated by the director, provides findings that such a clearing is necessary to significantly reduce the risk of transmission of flame or heat sufficient to ignite the structure, and there is no other feasible mitigation measure possible to reduce the risk of ignition or spread of wildfire to the structure. The greater distance may not be beyond the property line unless allowed by state law, local ordinance, rule, or regulation.[73]

CAL FIRE is the statewide agency that enforces PRC 4290 and 4291 (see below). Los Angeles County Fire Department and Ventura County Fire Department enforce it in the Santa Monica Mountains CWPP Planning Area. They have the legal authority to require you to meet these minimum standards. If you refuse to do so, they can do it and charge you for it. This is the legal basis for local defensible space ordinances and fines. For many reasons, it is to your advantage to meet these minimum standards. *For the full text of PRC 4291, see Appendix H.*

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[72] Senate Bill 1595, Chapter 366, p. 1, www.californiachaparral.com/images/sb_1595_bill_20080927_chaptered.pdf.

[73] Senate Bill 1595, Chapter 366, p. 6.

Public Resources Code 4102, 4125-4229 and 14 CCR 1220: State Responsibility Area (SRA)

These statutes and regulations established the locations where CAL FIRE has the financial responsibility for preventing and suppressing fires. Not only are these designations important to local communities for defining the financial arrangements for fire protection services, they establish the locations where fire safe and defensible space laws or regulations apply. In both Los Angeles and Ventura counties, the county fire department serves as the functional equivalent of CAL FIRE on SRA[74] lands.

Public Resources Code 4251-4255 and 14 CCR 1200: Hazardous Fire Areas

These laws and regulations allow petitioners to the Board Forestry and Fire Protection or CAL FIRE to establish hazardous fire areas (HFA). The designation provides for area closures and other restrictions for fire prevention within the HFA.

Public Resources Code 4290 and 14 CCR 1270 *et seq.*: Fire Safety Standards

Public Resources Code (PRC) 4290 and regulations in 14 CCR 1270 cover the basics of roads, driveway width, clearance, turnouts, turnarounds, signing, and water regulations related to fire safety. 4290 is usually enacted by local ordinances at the county level that are certified by the BOF. *For the full text of PRC 4290, see Appendix H.*

The following summarizes important actions for residents to take to meet 4290/14 CCR 1270 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 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-resistant materials.[75]

Public Resources Code 4292-4296 and 14 CCR 1256: Fire Prevention for Electrical Utilities

These statutes and regulations address the vegetation clearance standards for electrical utilities. They include the standards for clearing around energy lines and conductors such as power-line hardware and power poles. These laws and regulations are critical to wildland fire safety because of the substantial area of power lines in wildlands, the historic source of fire ignitions associated with power lines, and the extensive damage that results from power-line fires in severe wind conditions.

Government Code 51175: Very High Fire Hazard Security Zones

This code defines Very High Fire Hazard Severity Zones and discusses its implementation. This code came about following 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.[76]

CAL FIRE's Fire and Resource Assessment Program (FRAP) uses 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

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[74] See Chapter 6, section 6.1.3, for more information on SRA lands.

[75] Sierra Economic Development District (2002), "Fuel Treatment Recommendations," *Sierra County Fire Safe Council and Community Fire Safe Plan*, pp. 7–1.

[76] California Government Code 51176.

> 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.[77]

The entire Santa Monica Mountains region is classified as Very High Fire Hazard Severity Zone, for both the State Responsibility Areas (SRA) and *Local Responsibility Areas (LRA)* lands. See Chapter 3 for more information on fire hazard severity zones.

Government Code 51189: WUI Building Standards

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. This was updated in 2008 through SB 1595. This is the legal basis for the WUI Building Standards referred to in section 4.1 in this document.

> 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.[78]

Government Code 65302.5: General Plan Fire Safety Element Review

This statute requires the State Board of Forestry and Fire Protection to provide recommendations to a local jurisdiction's General Plan fire safety element at the time that the General Plan is being amended. While not a direct and binding fire prevention requirement for individuals, General Plans that adopt the Board's recommendations include goals and policies that provide for contemporary fire prevention standards for the jurisdiction. The programs and standards typically recommended by the Board are related to local agency development of fire plans, adoption of Fire Hazard Severity Zone maps, adoption of ignition-resistant building codes, reduction of hazards to structures and neighborhoods that do not meet contemporary fire-safe standards, planning for emergency access in open-space areas associated with the jurisdiction, providing adequate levels of emergency services, and addressing post-wildfire safety and recovery programs.

4.4.2. Local and County Regulations

Los Angeles County: Clearance of Brush and Vegetative Growth[79]

This code covers the basic regulations regarding fuel reduction around homes and power lines. It explains exceptions to the code, and the process to notice residents.

For all structures in the Santa Monica Mountains in Los Angeles County, the following "clearances"[80] are required. As stated earlier in this chapter, these distances can be extended by the decision of the local fire captain. *See Appendix I for a complete copy of this ordinance.*

> Any person owning, leasing, controlling, operating, or maintaining any building, structure, or apiary upon or adjoining any mountainous, or forest or brush-covered land or land covered with

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[77] CAL FIRE, Fire and Resource Assessment Program (FRAP) (2007), "Fire Hazard Severity Zone Re-mapping Project." http://frap.cdf.ca.gov/projects/hazard/fhz.html.

[78] California Government Code 51189, section a.

[79] Municipal Code Corporation (February 23, 2010), Title 32. Fire Code. Section 317, http://search.municode.com/html/16274/index.htm.

[80] This CWPP does not advocate complete "clearance," rather reduction of hazardous fuels to safe levels.

flammable growth, and any person owning, leasing, or controlling any land adjacent to such structures, shall at all times:

1. Place or store firewood, manure, compost, and other combustible materials a minimum of 30 feet from any building, structure, or apiary.

2. Maintain around and adjacent to such building, structure, or apiary an effective fire protection or firebreak made by removing and clearing away, for a distance of not less than 30 feet on each side thereof, all flammable vegetation or other combustible growth. This includes ornamental plants and trees known to be flammable, including but not limited to: Acacia, Cedar, Cypress, Eucalyptus, Juniper, Pine, and Pampas Grass.[81]

For new developments and reconstruction, a fuel-modification plan is required:

A fuel-modification plan, a landscape plan, and an irrigation plan prepared by a registered landscape architect, landscape designer, landscape contractor, or an individual with expertise acceptable to the forestry division of the fire department shall be submitted with any application for a subdivision of land or prior to any new construction, remodeling, modification, or reconstruction of a structure where such remodeling, modification, or reconstruction increases the square footage of the existing structure by 50 percent or more within any 12-month period.[82]

For electrical transmission lines, residents are generally required to keep 10 feet of clearance around poles, and 4–10 feet around lines, depending on transmission power. For the complete text, please see Appendix I.

Ventura County: Fire Hazard Abatement

The Ventura County Fire Protection District, Ordinance 26, Appendix H, states:

The purpose … is to establish minimum requirements in wildland-urban interface areas that will increase the ability of a building to resist the intrusion of flame or burning embers projected by a vegetation fire, including the identification of hazardous fire areas that require applicable defensible space provisions as set forth herein and enforced by the fire code official and applicable state and local fire-resistive building standards that are required and enforced by the local building official.[83]

It defines a "Hazardous Fire Area" as follows:

Hazardous Fire Area is land which is covered with grass, grain, brush, or forest, whether privately owned or publicly owned, which is so situated or is of such inaccessible location that a fire originating upon such land would present an abnormally difficult job of suppression or would result in great and unusual damage through fire or resulting erosion. Such areas are designated by the fire code official. The fire code official is authorized to utilize as reference the definition of Hazardous Watershed Fire Area, Local Agency Fire Hazard Severity Zone Maps designated pursuant to California Government Code Sections 51175 through 51189, and the International Wildland-Urban Interface Code.[84]

Finally, a Fire Protection Plan[85] may be required to be prepared, at the discretion of the fire code official. This plan shall be based upon a site-specific wildfire risk assessment that includes considerations of location, topography, aspect, flammable vegetation, climatic conditions, and fire history. The plan shall address water supply, access, building ignition and fire-resistance factors, fire protection systems and equipment, defensible space and vegetation management.[86] It details how residents are noticed to comply with regulations. *For the complete text, please see Appendix I.*

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[81] Municipal Code Corporation (February 23, 2010), Title 32. Fire Code. Section 317.2.2.

[82] Municipal Code Corporation (February 23, 2010), Title 32. Fire Code. Section 317.2.1.

[83] Ventura Fire District Code 26 (2007) H102, p. 10.

[84] Ventura County (2007), H102.1, p. 10.

[85] Ventura County (2007), H105.1, p. 11.

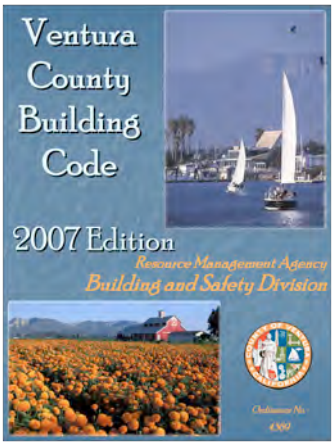
[86] Ventura County (2007), H102.1, p. 10.

Local WUI Building Standards

Both Los Angeles and Ventura counties have specific building standards for Moderate, High, and Very High Fire Danger/ Fire Severity Zones for the Wildland-Urban Interface areas in the unincorporated lands and contract cities of each county.[87] These zones are defined by the State in the California Public Resources Code for State Responsibility Areas, and in the California Government Code for Local Responsibility Areas. The building standards are taken from Title 24, Part 2 of the California Code of Regulations, or the California Building Code.[88]

The standards apply to all "Buildings or structures hereafter erected, constructed or moved within or into designated High[89] Fire Hazard areas/Fire Severity Zones, including mobile homes" and require that all buildings must be one of the types of construction defined in the code and meet all requirements of the section.[90]

Buildings must have roofs made of a Class "A" fire-retardant material, as defined in the California Building Code. Similarly, exterior walls must meet national standards for non-combustibility and ignitability, and the code expressly prohibits wood shingles or shake siding. Both the roofs and the walls must be built in such a way as "to prevent the intrusion of flames or embers in accordance with standard SFM 12-7A-1." This is a standard created by the Office of the State Fire Marshal and defines a number of materials that provide a measure of fire resistance. These are standardized throughout the State of California and apply to all areas defined in the California Public Resources Code and California Government Code as Fire Danger Zones, as discussed above.



There are also a number of architectural elements that have specific requirements, such as balconies, soffits, porches and stairs, or any other element that projects off the side of the building. All such elements must be constructed of materials approved as one-hour fire-resistant. There are some exceptions, but these are largely focused on heavy timber construction (as defined in the California Building Code).

The two major cities in the planning area, Malibu and Calabasas, contract with Los Angeles County for fire safety and project review services. The building requirements for homes in the WUI areas inside the incorporated areas are equivalent to the County requirements.

Before any building or major remodeling in the Santa Monica Mountains, always check with your local building department to ensure that you have the latest standards. *For the complete text of relevant codes, please see Appendix I.*

For a complete list of standards related to fire in Ventura County, please visit: http://fire.countyofventura.org/RecordsDocuments/tabid/58/Default.aspx.

In Los Angeles County, see Title 32 Fire Code at http://search.municode.com/html/16274/index.htm.

These regulations provide the legal basis for the requirements that firefighters discuss with Santa Monica Mountains residents. For more information on those requirements, and how to make your home and property fire safe, please see Appendix H.

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[87] Ventura County Building Code, 2007, p. 30. Ventura County Resource Management Agency. Los Angeles County WUI Building Codes: http://fire.lacounty.gov/FirePrevention/wildfire_Rebuild_Guid.asp

[88] Wildland Hazard/ Building Codes, California Department of Forestry and Fire Protection, California State Fire Marshal's Office, http://www.fire.ca.gov/fire_prevention/fire_prevention_wildland.php#SRA.

[89] Moderate, High, and Very High in Los Angeles County.

[90] Ventura County Building Code, 2007, p. 30. Ventura County Resource Management Agency.

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5. Fire Ecology and Management of the Santa Monica Mountains Vegetation Types[1][2]

This chapter details the fire ecology specific to each of the dominant vegetation types of the Santa Monica Mountains (SMM). It discusses fuel-reduction treatments that can be used to reduce fire hazard within each vegetation type, as well as the role of fire in shaping the assemblage of plants, the historical and current nature of the fire regime, and the common vegetative adaptations to fire. These features are then considered in the development of best management practices that will a) be effective in reducing ignition of homes and other structures; b) facilitate access and improve safety for fire-suppression personnel; and c) promote the Conservation Principles identified in Chapter 1.

There are five broad classes of natural vegetation in the Santa Monica Mountains. They are: chaparral, coastal sage scrub, grasslands, upland tree types, and riparian woodlands *(see Figure 5-1 below).* Additionally, a significant portion of what used to be mostly chaparral and sage scrub vegetation has been converted into semi-urban and heavily disturbed habitat. Fuel treatments for this latter category are discussed in more detail in Chapter 4.

FIGURE 5-1. VEGETATION TYPES AND PERCENT OF LAND AREA OCCUPIED WITHIN THE SMM

GENERALIZED VEGETATION/ LAND COVER TYPES[3]	SUM OF ACRES
Chaparral types	54,782
Coastal sage scrub types	32,050
Urban/disturbed, built up, cleared	12,654
Upland tree types	10,217
Prairie/meadows types (Grasslands)	5,906
Disturbed vegetation types[4]	5,893
Riparian woodland types	2,973
Agriculture	1,531
Rock outcrop types	1,086
Exotic and/or invasive vegetation	707
Sandy, rocky, mud types	447
Wetland types	401
Water	319
Grand Total	**128,966**

Please see Map 5-1 at the end of this chapter for location of vegetation types.

[1] Cameron Naficy contributed to this chapter based on previous work by ForEverGreen Forestry, David Jaramillo, Whole Earth Forestry, and Sue Britting, PhD. Richard Halsey and Betsey Landis provided technical review.

[2] All photos in this chapter are courtesy of the National Park Service, Santa Monica Mountains National Recreation Area.

[3] National Park Service (2007), Fire Management Plan, Santa Monica Mountains National Recreation Area.

[4] This "disturbed" vegetation typing includes landslides, cleared areas such as firebreaks, roadside cut banks, and vegetated urban areas.

Fuel treatments in the SMM do <u>not</u> aim to reduce fuels on a landscape scale. Rather, they are intended to facilitate safe and successful fire-suppression efforts near homes and important infrastructure, and ultimately aid home survival. Neither prescribed fire nor mechanical fuel-reduction treatments (e.g. vegetation clearing, tree thinning) designed to alter landscape-level fire behavior is recommended in this CWPP as a fuel-management tool in the SMM.[5,6] Instead, limited and strategic mechanical vegetation treatments near homes and other structures of interest are substantially more useful and economical here.

Prescribed fire (also known as "controlled burning") is relatively ineffective in altering landscape-level fire behavior in the SMM, and it has negative impacts on chaparral and sage scrub by increasing the annual area burned.[7] Total burn area here is largely independent of the amount and distribution of vegetation that serves as fuel for wildfires[8] because fast-moving, dry, and warm Santa Ana winds spread wildfires rapidly. Furthermore, as outlined in Chapter 3, the annual area burned in the SMM has increased due to human activities, not excess vegetation. Thus while frequent reference is made in fire research to the history of fire suppression and the subsequent build-up of vegetative fuels as a need for landscape-level fuel-reduction treatments in other forests of California and the western US, this historical context and fuel-treatment rationale do not apply to the mostly shrubland vegetation types of the SMM. Here mechanical fuel treatments do not substantially alter fire behavior on a landscape scale under severe weather conditions. However, carried out immediately around homes and other structures ("from the house out") they do reduce fire intensity and structure vulnerability, and enable more effective and safer fire-suppression efforts.[9]

The best management practices for modifying vegetation that are suggested in this chapter are designed with the above goals in mind and are intended to complement the actions recommended in Chapter 4, which focus on the home ignition zone. Higher levels of fuel reduction should be concentrated around structures and along main roads, key ridges, secondary roads, *spurs*, and other strategic areas within treatment boundaries to most effectively increase community safety.

5.1. Grassland

Native grasslands comprise a small portion of the vegetation in the SMM. They are interspersed with shrubland vegetation or open woodlands in a patchy and fragmented distribution. Native grassland is most abundant in valleys and other shallow-sloped areas with clay soils that discourage the growth of chaparral or sage scrub. Native grasslands in the SMM are dominated by perennial bunchgrasses: purple needlegrass *(Nassella pulchra)*, pine bluegrass *(Poa secunda)*, and Junegrass *(Koeleria macrantha)*, commingled with a high diversity of native herbaceous perennials.

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[5] J.E. Keeley et al. (2004), "Lessons from the October 2003 Wildfires in Southern California," *Journal of Forestry* 102(7): pp. 26–31.

[6] J.E. Keeley et al. (1999), "Reexamining fire suppression impacts on brushland fire regimes," *Science* 284(5421): pp. 1829–1832.

[7] A.D. Syphard, K.C. Clarke, and J. Franklin (2007), "Simulating Fire Frequency and Urban Growth in Southern California Coastal Shrublands, USA," *Landscape Ecology* 22: pp. 431–445.

[8] J.E. Keeley and P.H. Zedler (2009), "Large, high-intensity fire events in southern California shrublands: debunking the fine-grain age patch model," *Ecological Applications* 19(1): pp. 69–94.

[9] Keeley et al. (2004), "Lessons from the October 2003 Wildfires in Southern California."

Most of the grassland area in the SMM has been heavily disturbed, often to the point of being type-converted from native chaparral or sage scrub vegetation to grasslands dominated by non-native species. "Type conversion" refers to the long-term shifting of one vegetation type to another by some form of disturbance. In the rugged SMM, type conversion of shrubland plant communities is primarily caused by repeated burns in short succession in the same general area, thereby depleting soil seed banks and preventing successful re-establishment of perennial native shrub communities. Most large, relatively level areas were converted to severely grazed rangeland and dryland farming beginning in the mid to late 19th century and continuing in places throughout the 20th century, which greatly exacerbated the degradation of native grasslands. The majority of grasslands and former agricultural lands in the SMM are today dominated by exotic annual grass species and *forbs*. Exotic grasslands exhibit different ecological characteristics than native grasslands, including changing patterns of soil water availability, nutrient cycling, and fire behavior that prevent re-establishment of native grasses and forbs.

5.1.1. Grassland and the Role of Fire

Native grasslands are resilient to occasional wildfires, with most species able to recover biomass and recolonize burned areas within a year or two post-fire. In fact, fire has historically been used as a tool to restore native grasslands. In the past several thousand years, burning by indigenous groups augmented native grassland, as grassland species expanded out from their edges into areas previously occupied by sage scrub or chaparral. Today, the artificially high recurrence of fire unfortunately favors expansion of exotic species (introduced in recent centuries). During the first several years post-fire, when native bunchgrass cover is still greatly reduced, abundant exotic grasses and forbs can proliferate. This is particularly true where repeated fires in chaparral and sage scrub occur in short succession, leading to extensive degradation and type conversion to non-native grasslands.

5.1.2. Grassland Fire Regime

Wildfires in native grasslands of the SMM have historically shown high variability in their frequency. This is primarily due to grasslands' location in lower elevations and on gentle slopes—areas that have long been focal points of human settlement and land use. Indigenous peoples used these areas because of the abundance and diversity of edible perennial herbaceous species. Given this ongoing use, the frequency and timing of grassland wildfires have been largely a result of human activity and ignition. While summer and fall lightning ignitions alone would historically have led to only a few fires per century,[10] contemporary grasslands experience much higher fire frequency and longer burning seasons. In general, grassland wildfires are *stand*-replacing—that is, they consume most aboveground vegetation—and are of high intensity per unit time, but of low heat output per unit area due to the relatively low levels of plant biomass and the high rate of spread.

[10] J.E. Keeley (2006), "South Coast Bioregion." In: N.G. Sugihara, J.W. van Wagtendonk, K.E. Shaffer, J. Fites-Kaufman, and A.E. Thoede (eds.), *Fire in California's Ecosystems* (Los Angeles: University of California Press).

5.1.3. Grassland Plant Adaptations to Fire

Native bunchgrasses are generally successful in surviving wildfires. The interior of perennial grass bunches, rootstock, and underground *rhizomes* often survive and are stimulated to spread after fires, allowing these grasses to resprout quickly and produce an abundance of flowers and seeds in the first year post-fire. Within a few years after wildfire, native perennial grasses successfully reestablish in burned areas except where fires recur in short succession. In these cases, bunchgrasses suffer higher mortality as soil seed banks are depleted, reducing the diversity and rate of plant recolonization of burned areas.

Many perennial herbs experience minimal wildfire impact despite increasing fire frequency because they enter dormancy before late summer and early fall when most wildfires occur, and living plant parts are protected below ground. However, earlier fires that burn native perennials while they are still blooming will deplete the seed bank over time. Because grass fires burn quickly over an area, the heat rarely penetrates deeply into the soil, leaving the seed bank viable, except when fire occurs too frequently. Under normal fire regimes, many herbaceous species are able to reseed after a fire and take advantage of the newly cleared area to reestablish healthy populations. Annual grass species do not have long-term seed storage, but they produce large numbers of seeds that often survive low-severity grass fires and successfully *colonize* burned areas. Annual herb species are not as restricted as annual grasses by short seed viability, with seeds of some species able to persist as long as decades.

5.1.4. Grassland Conservation and Fuel-Management Objectives

Grasslands contribute to regional diversity and therefore are important to maintain, especially in the case of native grasslands. Native perennial grasses tend to shorten the ignition season and reduce fire intensity and spread. However, most grasslands here have been converted from native vegetation types to annual exotics, increasing potential wildfire hazards.

Short-term fuel-reduction objectives for managing grasslands are to manage them in late winter through early spring when invasive species have immature seeds and native species have not yet produced any seed. Cut perennial non-native grass and shrub vegetation to 6–8 inches by early to mid summer by methods of *weed-eating,* cutting, or mowing. Non-native herbaceous species and annual grasses can be removed by hand, especially in smaller areas.[11]

Long-term objectives are to convert annual grasslands back to native grasses through planting, or winter or early spring grazing followed by native seed sowing. The latter is a very time-consuming task requiring meticulously scheduled seasonal activities and is more appropriate for highly focused areas. Grazing is advisable primarily in areas of heavy weed infestation, as disturbance associated with grazing in areas with few weeds may have counterproductive effects.

If grassland restoration is not the focus, then careful, temporary, and selective rotational grass mowing or grazing by goats can mitigate annual grass heights to reduce flashy fuels. Timing of fuel treatments is particularly important with annual non-native grasses because of their early and abundant setting of seeds.

Fuel-reduction efforts at the edges of grasslands and within neighboring woodlands and shrublands are also important. Like meadows, grasslands can serve as natural fuelbreaks and fire-suppression *anchor points.* For more information on restoring native grasslands, please visit the California Native Grass Association (www.cnga.org), the

[11] J.M. Di Tomaso, S.F. Enloe, and M.J. Pitcairn (2007), “Exotic Plant Management in California Annual Grasslands,” In: M.R. Stromberg, J.D. Corbin, and C.M. D'Antonio (eds.), *California Grasslands, Ecology and Management* (Berkeley: University of California Press), pp. 281–296.

Santa Monica Mountains chapter of the California Native Plant Society (http://lasmmcnps.org), or refer to *California Grasslands, Ecology and Management.*[12]

5.1.5. Grassland Fuel-Management Best Management Practices

- Focus on areas adjacent to structures, roads, and landscaping.
- Mow, weed-eat, or cut grasses as often as possible prior to the beginning of fire season. In some cases, this treatment will need to continue throughout fire season. However, any mechanical treatments during fire season must be done with utmost care so as not to start a fire. Generally all mowing and related activities must occur in the cooler, moister conditions found before 10 am, and never during Red Flag[13] conditions.
- If crews are used for fuel reduction, ensure that all equipment is cleaned daily to reduce the spread of weed seed, and always before moving to a new area.
- Mow or weed-eat annual grasses prior to seeding. Before cutting, identify patches of native plants and any wildlife nests, to protect and buffer these locations. To restore non-native annual grasslands back to natives, plant native perennials in late fall and winter. The cool wet weather then aids in seedling emergence and root development. *Discing* should always be avoided as it promotes invasive weeds and surface soil erosion.
- Selectively mow non-native annuals in the spring before seed set to retain and promote native perennials and to reduce flashy fuels.
- Explore replacing exotic grasses with native species, such as *Nassella pulchra, Nassella cernua,* or *Nassella lepida*.[14] These species would likely still need regular mowing, but they help restore native grasslands. Seeding of native annual species is also acceptable. Examples of native annuals are: *Lupinus succulentus, Lupinus bicolor, Clarkia* spp., *Dichelostemma capitatum, Sisyrinchium bellum, Chlorogalum pomeridianum, Fritillaria biflora, Castilleja exserta, Castilleja densiflora, Collinsia heterophylla, Lasthenia coronaria, Lasthenia californica.*
- In a large grassland area, prioritize grass cutting in swaths at least 100 feet wide between structures, landscaping, and grasslands, and between grass and woodland/shrubland edges, in order to create a fuelbreak to reduce flame lengths. Where grazing is desired in a strip pattern, use fencing to contain animals in the proper location.
- If possible in larger grassy areas, establish berms, breaks with large boulders, or groves of *Quercus agrifolia* or other fire-resistant native trees. These features create breaks in the flow of fire winds and wind-blown embers. ("Fence" native tree areas with boulders or chain link against grazing until trees are taller than grazers or mowers.)
- Mow or otherwise treat along edges of the grassy area and within neighboring woodlands or shrublands in an effort to separate grass and woody plant connections. *(See the fuel-management treatment prescriptions below for whichever vegetation community borders the grassland.)*

5.2. Chaparral

Chaparral is the dominant vegetation type of the Santa Monica Mountains region. Chaparral vegetation can be extremely dense, and many of the dominant species feature tough, fleshy leaves that often contain volatile resinous

[12] M.R. Stromberg, C.M. D'Antonio, T.P. Young, J. Wirka, and P.R. Kephart (2007), "California Grassland Restoration," In: M.R. Stromberg, J.D. Corbin, and C.M. D'Antonio (eds.), *California Grasslands, Ecology and Management* (Berkeley: University of California Press), pp. 254–280.

[13] See Chapter 4 for more information on Red Flag conditions.

[14] None of these grasses should be planted within the Structure Protection Zone; see Chapter 4 for more information.

compounds. At lower elevations chaparral occurs together with coastal sage scrub and grasslands, often occupying more *mesic* aspects, meaning sites with moderate soil moisture. However, chaparral vegetation becomes more dominant as elevation increases, forming extensive contiguous stands on sites of all aspects. Chaparral contains a high diversity of plant species, including shrubs such as toyon *(Heteromeles arbutifolia),* manzanita (*Arctostaphylus* spp.), several species of *Ceanothus*, scrub oak *(Quercus berberidifolia),* hollyleaf redberry *(Rhamnus ilicifolia),* two species of sumac (*Rhus* spp.), mountain mahogany *(Cercocarpus betuloides),* and chamise *(Adenostoma fasciculatum).* Several unique floristic associations (or sub-vegetation types) occur within chaparral vegetation, including chamise chaparral, black sage *(Salvia mellifera)* chaparral, and redshank chaparral. Chamise/chaparral is the most dominant of these subgroups, often forming pure stands of chamise on arid slopes.

5.2.1. Chaparral and the Role of Fire

Due to its broad distribution and the high diversity of plant species and sub-vegetation types, chaparral experiences a variety of fire regimes and post-fire conditions. Most chaparral species are able to survive and/or soon recolonize an area following wildfire, if the fires are not too frequent, ideally 40 to 100 years or more. Many distinct plant strategies exist to accomplish this. Plants that are classified as *obligate seeders* (e.g. some *Ceanothus*[15] and *Arctostaphylos* species, *Helianthemum scoparium, Dendromecon rigida*) are not found in areas with high fire frequency (e.g. 2–10 years) since consecutive fires limit plants from growing to a mature age when they will set new seed. Or, low-intensity fires (due to the sparse vegetation conditions and lack of fuels) do not trigger seed germination. In the latter situation, just one intense fire will stimulate a flush of germination. *Obligate sprouters* (e.g. *Prunus ilicifolia, Rhamnus* spp., *Cercocarpus betuloides, Heteromeles arbutifolia*) cannot survive frequent fires either because fires destroy the shoots and canopy every few years, and no viable seed *crops* are developed for at least 7–10 years. If winter rainfall is adequate or plentiful, obligate sprouters may withstand two or three wildfires occurring at intervals of 3–5 years before sustaining severe declines. However, frequent wildfires and post-fire browsing result in loss of leaf canopies and new sprouts, which normally shade and supply nutrients to the plants during dry seasons. Then the plants' roots cannot supply their year-round needs in the locally nutrient-poor soils and summer-drought conditions. Without new stems and leaves or sufficient nutrients to produce new leaf canopy and feeder roots, obligate sprouters also disappear.

In contrast to these two groups, some plant species are found primarily within recent burn areas where they rapidly produce a lot of seed, replenishing their seed banks, or there are new shrubs taking advantage of open canopy, lack of competition, and perhaps extra nutrients to establish themselves before the obligate seeders and obligate sprouters shade them out. There are a few post-fire plant species, such as wild cucumber *(Marah macrocarpus)* and wild morning glory *(Calystegia macrostegia),* that sprout immediately after fire and cover burned areas like blankets, acting as effective erosion protection during the first few years following fire.

As a result of these complex interactions, fire—especially its frequency and intensity—strongly influences the shaping of chaparral vegetation and the creation of diverse species associations across the landscape. Areas affected

[15] David Fross and D. Wilken (2006), *Ceanothus* (Portland: Timber Press), p. 141.

by multiple fires in short succession are likely to have fewer obligate seeders and sprouters, and instead to have a greater proportion of species that are able to recolonize from outside seed sources. It follows that the size of a fire is an important influence on the stand's future species composition.[16] Fire extent can affect the ability of chaparral to properly recover as the large perimeter-to-area ratio of small burns can make areas more vulnerable to invasion by non-natives than with larger fires.[17]

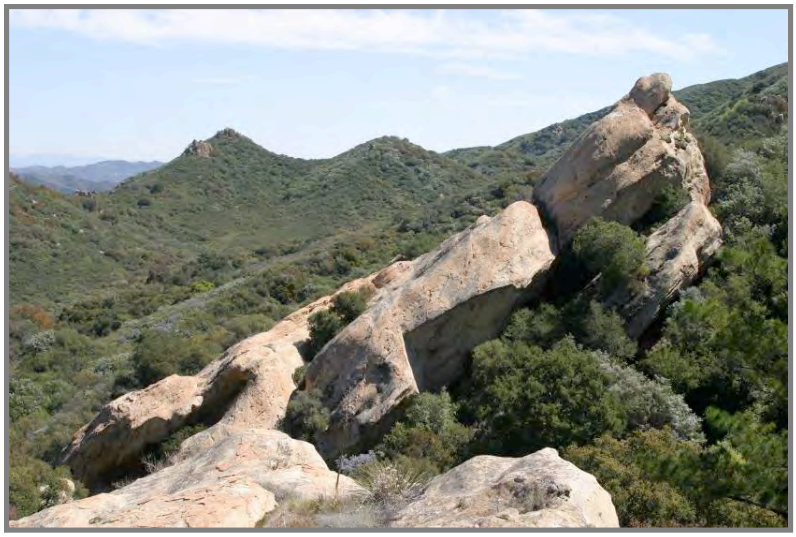
5.2.2. Chaparral Fire Regime

Chaparral vegetation is generally very dense. Wildfires in chaparral communities often are stand-replacing events, where fires burn sufficiently hot to consume all of the surface plant material.

Chaparral fires tend to occur in summer and fall, depending on the dryness of the year and site. In chaparral the time between episodes of fire—known as the "fire return interval"—is highly variable, currently ranging from 4 to more than 150 years. In numerous areas within the SMM, chaparral stands appear to have gone more than 100 years without fire and are quite healthy. Similar examples of healthy chaparral stands with apparent fire return intervals well over 100 years occur in the foothills of the Sierra Nevada. Fire frequency tends to be higher in lower-elevation areas near human ignition sources and on drier aspects.

5.2.3. Chaparral Plant Adaptations to Fire

Chaparral plant communities have developed important adaptations for fire survival and regrowth, such as sprouting from the underground rootstock and the stimulation of seed germination by fire (heat). Some shrub species that usually reproduce by seeds are able to resprout from rootstock after fire; these plants are called *facultative sprouters.* Other shrub species either reproduce exclusively from seeds (obligate seeders) or from rootstock (obligate sprouters), as described above.



Herbaceous plants in chaparral, which are often *"fire followers,"* are usually conspicuous only during initial post-fire years. Many herbaceous plant seeds remain dormant in the soil until germination is triggered directly or indirectly by fire. Thus, soil seed banks are a significant source of plant diversity in chaparral systems. 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 and thereby allow germination and sunlight. However, when fires burn too frequently and consume too much aboveground vegetation, a later fire may not have sufficient fuel to reach the temperatures necessary for seed stimulation, creating a delay in the recovery of native species with this requirement. Chemicals derived from smoke and charred wood can cause seed germination in many species, whereas it can be lethal to other species.

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[16] P.H. Zedler, C.R. Gautier, and G.S. McMaster (1983), "Vegetation Change in Response to Extreme Events: The Effect of a Short Interval between Fires in California Chaparral and Coastal Scrub," *Ecology* 64(4): pp. 809–818.

[17] M.G. Turner, W.H. Romme, R.H. Gardner, and W.W. Hargrove (1997), "Effects of fire size and pattern on early succession in Yellowstone National Park," *Ecological Monographs* 67: pp. 411–433.

5.2.4. Chaparral Conservation and Fuel-Management Objectives

Chaparral contains a high diversity of plant and animal species. It is also very effective at minimizing erosion. Therefore, conservation of chaparral habitat is paramount and must be integrated into fire planning to limit unnecessary or excessive negative impacts of fuel-reduction activities.

Objectives are to retain and protect this valuable habitat while reducing and altering fire behavior close to homes and other structures. This can be achieved by reducing fire intensity through *thinning and pruning* prescriptions, which aim to provide space between and around plants that are closest to homes and structures and to simultaneously remove all dead material.

Whenever operating in chaparral, avoid cutting obligate-seeding chaparral species such as many varieties of *Arctostaphylos* and *Ceanothus*. While these plants generally have a long life in the seed bank, they will not continue to be present in the stand and produce more seeds if all are cut aboveground. Also avoid cutting species that are infrequent or unusual. If there is only one or two of a type of plant in the area, retain those specimens to maintain the present species diversity.

Patch-retention thinning focuses on separating *fuel continuity* by incorporating fuelbreaks in strategic locations where fire-suppression efforts have a higher chance of effectiveness. Higher levels of chaparral reduction are concentrated adjacent to structures and along main roads within treatment boundaries. This can alter *fire behavior* and increase community safety. Note that sensitive, threatened, and endangered native species should not be removed even if near roads or within defensible-space zones. *See Appendix F for a list of federally threatened, and endangered species.*

On steep and mid-slopes where chaparral patches can be isolated, focus efforts on retaining *thickets.* Plans for chaparral reduction or retention need to consider fuel conditions, *future desired conditions,* and accessibility.

5.2.5. Chaparral Fuel-Management Best Management Practices

Prior to beginning fuel reduction in chaparral plant communities, ensure that the treatment area is pre-designated and flagged. Since chaparral tends to be contiguous and dense, it is easy to "overcut" and greatly reduce the vegetative cover. Remember the Conservation Principle: "You can always take more, but you can't put back what you have cut." This is a key guiding concept for treatments in chaparral.

Begin the *layout* by selecting small strategic areas in which to clear chaparral and create openings. These initial and obvious areas are not always necessary to delineate with flagging. Select patches with a high proportion of obligate seeders to retain, but ensure that diverse obligate sprouters and facultative sprouters/seeders are also maintained. Continue the layout by selecting the trees or other individual plants to protect and clearing around them. Planning and layout of fuel treatments in chaparral prior to beginning work will ensure that adequate representative portions of this diverse habitat are conserved.

Thinning

Treatments in chaparral should occur only within 100 feet[18] of homes and access roads, or other strategic fire protection areas (as identified by fire agency professionals). It is important to keep fuel treatments limited to such areas to minimize their negative impacts on the environment and maximize their effectiveness in protecting structures. Always minimize soil disturbance as much as possible, since disturbing the soil promotes weed spread, increasing fire hazard.

[18] Up to 200 feet in special circumstances.

The timing of thinning is dependent on the blooming, fruiting, and seed production of trees, shrubs, perennials, and annuals. Native fauna depend on the food produced by native plants and/or the mammals, birds, insects, amphibians, reptiles, etc., nurtured and sheltered by those plants. If the first 100 feet from the house is to be managed as sustainable habitat, the native plants should be left alone until each species has bloomed, fruited, and set seed. Various laws regulate pruning of trees and shrubs during bird-nesting time as well.[19] Generally, thinning can be done during winter for winter-deciduous trees and shrubs. Thinning can be done for summer-deciduous shrubs and perennials as soon as the leaves dry up in late spring or early summer. Ensure that enough shoot and canopy (dried or not) is left to shade the perennials' root collars (prune to 12 to 18 inches above ground level). Obligate seeders should be thinned lightly because they suffer from sunscald if not shaded by their canopies. Obligate sprouters or *generalist species* can be trained as low shrubs instead of trees, as long as the sprouting burl is protected by leaf canopy. Coast live oaks are a special category. They should be pruned in July or August to prevent fungal diseases from affecting the cut areas. Toyon *(Heteromeles arbutifolia)* is best pruned around March, after the berries are gone and before new buds form.

- Work from the house out. Every foot further away from a house is less important than those that lie closer.
- Remove all dead materials from healthy, live plants around homes and roads.
- Remove any unhealthy plants that are more than 50% dead.
- When thinning in chaparral, leave at least 70% of the original canopy cover.
- Remove any exotic and/or invasive non-native species that have moved into this vegetation type.
- Native annual species can be cut to the ground once they have set seed.
- After perennials have bloomed and produced seeds and/or fruit they can be trimmed down to about 12 to 18 inches.
- *Limb up* one third of the height of small shrubs and about 6 feet on shrubs taller than 15 feet. For larger trees, prune up to the first third of their overall height by removing lower branches and any dead material within the plant. Use good pruning techniques (see Chapter 4) by focusing on removal of dead branches or tangles of live branches. To the extent possible, avoid removal of healthy, young new foliage as it is the most *productive* leaf tissue. The objective is to make the vegetation less dense, while leaving enough leaves and branches for it to thrive. Make shrubs as healthy and strong as possible so they can be a functioning part of your fuel-reduction zone.
- Remove any non-native grasses or herbaceous plants on the soil surface below taller shrub species.
- "Feather out" treatments such that they are more intensive closer to homes and roads, eventually transitioning into undisturbed native habitat. The value of fuel reduction in protecting an asset from wildfire ignition decreases as a function of distance from the asset squared. Except in unusually hazardous terrain, there is generally very little fire protection value to be gained by clearing beyond 100 feet from an asset.
- Thin some patches while leaving others to reduce the abundance of chaparral vegetation while conserving portions of this habitat. Such thinning results in a diversity of beneficial habitat types by creating islands, corridors, thickets, and open understory shrub and herbaceous communities of random shapes, sizes, and occurrences.
- In chaparral fields, patches should be retained to enhance structural habitat diversity and to separate fuel continuity. Impenetrable and contiguously dense chaparral should be separated and thinned to create isolated islands, grouping fuels into clumps. Partial chaparral reduction will be created via random or *strip patches* with the long axis oriented along hillside contours,

[19] Los Angeles Audubon (March 2009), "Guide to Bird-Friendly Tree and Shrub Trimming and Removal," www.laaudubon.org.

using a variety of spacing between strip patches that are 10 to 30 feet wide. Strip patches should be offset from one another so as not to lie directly up and down the slope (to lower fuel connectivity and erosion potential).

- Retain older chaparral individuals by leaving surrounding chaparral intact as a support structure and *leave-patch.* In some chaparral areas, tree-form-sized manzanita may be present. Sometimes these individuals exceed 15 feet in height. Heavy removal of shrubs around these tree-form specimens can result in wind damage such as broken branches and uprooting. Careful consideration should be made to protect these individual locations.
- To enhance the growth of native trees, remove all native and non-native plants touching the tree or growing more than 18–24 inches tall in the area under the *drip line* of the tree. In particular, completely remove all non-native grasses and other non-native plants out to a distance of 10 feet beyond the tree's drip line. Do not remove native lilies, native irises, or other native bulbs that may be growing under a tree canopy. Thin and prune native perennials to 18 inches tall and remove dead annuals after seed cast out to 10 feet beyond the drip line of the tree canopy. Be careful about disturbing the soil or litter layer under the trees, and try not to compact the soil or damage root structures. In particular, do not remove oak leaf litter, as it suppresses weed growth. Remove (or better yet transplant) all oak saplings or oak seedlings growing under the oak canopy out to 10 feet beyond the drip line so their developing root systems will not compete with that of the mother tree.
- In order to provide wildlife habitat and structural diversity, retain clumps and groupings of trees where appropriate. Focus thinning around the drip lines of the outer clumps of trees. Thin the smaller stems beyond the clumps, and between and around tree groupings. This will break up fuel connectivity among groups of trees while maintaining structural diversity. Retain forked trees (another element of structural diversity) for wildlife. "Limb up" the first 10 feet from the base of *leave-trees* 20–30 feet in height or more. For smaller trees, limit *limbing* to no more than one third of tree height.
- In locations outside chaparral leave-patches, smaller patches of *tip-sprouting* shrub species—e.g. *Heteromeles arbutifolia* or *Prunus ilicifolia*—can be isolated from other fuels and cut at chest level (3 to 4 feet from the ground) for the benefit of fresh wildlife browse. To vary this treatment, some root-sprouting shrubs—e.g. *Rhamnus* spp. and Eastwood manzanita *(Arctostaphylos glandulosa)*—can be cut to the ground to encourage diversity through regeneration. Prior to implementing this treatment, research what tip-sprouting or stump-sprouting species grow on the site. Treatment ratios may vary depending on the ratio of sprouting shrubs.

Slash Disposal

Abundant *slash* or cut and downed woody materials (such as branches or trunks) will likely accumulate from chaparral fuel treatments. The disposal of this material needs to be performed carefully. For all slash disposal methods, ensure that a portion (15–25%) of the cut material is left on site and placed across the slopes of the treatment area for erosion control and soil productivity. To minimize weed spread, ensure that slash material left on site consists only of native vegetation.

Lop and Scatter

The basic activity of cutting, trimming, and distributing debris on site is often referred to as *lop and scatter.* The benefit of this method is that it helps maintain soil productivity through retention of sufficient vegetative material for decomposition and integration into soils while also removing the ladder fuels. Preferred materials for scattering on the slopes are the main chaparral trunks greater than 4 inches in diameter. The fine (smaller) flashy branches are best removed from the site, unless treatment is done just prior to rainy season and smaller matter will likely decompose before the next fire season. Otherwise, fire hazard could be increased for the following year or two if smaller cut branches are left on site.

Ensure that the cut main trunks left behind make contact with the ground (i.e., are not stacked high above one another) and remain as intact as possible, 4 to 10 feet long. Manzanita trunks are generally small in diameter; combine and lay them along the contour of the slope, each making some ground contact. Lay them as close together as possible. Within a year they will sink into the ground and be naturally anchored. By combining four to six smaller-diameter pieces you can increase their total diameter, replicating a good-sized log. Place wood randomly in openings or at the edge of leave-patches. The goal is to have *coarse woody material* present for purposes of erosion control, without creating a fuel problem. Often, the majority of the cut material will need to be chipped or removed to adequately reduce fuel hazards.

In rocky or shale-like soils, limit the amount of coarse woody material left on the ground, as it will not quickly settle into the soil surface, causing a potential future fire hazard as a result of slow decomposition.

Chipping

A principal way to dispose of slash is to chip it, which means to utilize a machine to cut it up into many small pieces, or chips. Chipping can be expensive, although very effective, depending on the *site-specific* location of the treatment area. In areas close to main roads, secondary roads, or trails, chipping can be cost-effective if planned correctly. However, transportation of materials to the chipper may not be feasible when they are generated far from where the chipper can be located. The added expense of either machine-*yarding* materials or hand-carrying them long distances to chip can be significant.

To employ the chipping slash-disposal method, choose treatment areas within close proximity to a road or *landing* (this is where the chipper will be located), preferably on a downhill drag. Avoid carrying materials upslope. In some cases larger material may be used for firewood. Where material must be dragged, remember that the dragging process “sweeps” the ground of all material along the haul routes. Try to limit the areas subjected to sweeping by designating only a few haul routes. There is a tradeoff between distance and ease of hauling with resulting erosion potential and future germination of local native plants. The haul route will need to be re-covered with chips or other small local materials.

Collected material can either be chipped into a truck for removal or blown back into the treated areas. Remaining chips should not exceed more than several inches in depth. Where collected material contains invasive pests and/or plant seeds, roots, or cuttings, all the material should be removed from the site.

Grazing

In disturbed chaparral vegetation, grazing with goats (or other livestock) is sometimes used to reduce chaparral fire hazard and to remove weeds (which get eaten indiscriminately). There are several local goat herds available for fuel reduction in the Santa Monicas. 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. For this reason, goats should

not be used in undisturbed chaparral sites. Grazing under contract with a large herd of goats is a possibility for larger acreages. One to three goats can be grazed on smaller parcels. In this latter situation, arrange alternate locations for additional grazing when the animals have eaten all undesirable plants on a site. Goats can be placed on any steepness of slope and can generally graze any shape or size of parcel. However, be careful on sites with steep slopes, as goats can quickly denude them and cause significant erosion. Be sure to work with experienced goat herders, so the animals do not introduce invasive species to your work site.

In undisturbed chaparral vegetation, hand removal of weeds is preferable, as the presence of livestock will likely increase soil disturbance and weed spread rather than decrease it.

5.3. Coastal Sage Scrub

Coastal sage scrub is most abundant in lower elevations of the SMM. This vegetation type often occurs intermixed with nearby chaparral vegetation at lower to mid elevations of the latter's range. In addition, coastal sage scrub can survive in areas too arid or unproductive for chaparral, such as shallow or rocky soils, sites with unproductive soils, or others that don't retain water. This vegetation type shares many of the annual and perennial herbaceous plant species found in chaparral but differs in the composition of its woody shrub species and in its basic ecology. Commonly found species in this *plant community* include coastal sagebrush in great abundance *(Artemisia californica)*, several species of sage *(Salvia mellifera*, *Salvia leucophylla*, and *Salvia apiana)*, ashyleaf buckwheat *(Eriogonum cinereum)*, California buckwheat *(E. fasciculatum)*, chaparral yucca *(Hesperoyucca whipplei)*, coyote brush *(Baccharis pilularis consanguinea)*, laurel sumac *(Malosma laurina)*, and lemonadeberry *(Rhus integrifolia)*. Compared to chaparral, coastal sage scrub vegetation is generally shorter. Healthy stands of coastal sage scrub form a continuous canopy that is resistant to invasion by exotic grasses. Where unusual soil conditions occur there may be openings dominated by perennial grasses or other low-growing species.

5.3.1. Coastal Sage Scrub and the Role of Fire

Compared to chaparral, coastal sage scrub vegetation contains large amounts of fine fuel. Coastal sage scrub also tends to be partially or wholly drought-deciduous, so late in the dry season fuel moisture can be very low. For these reasons, coastal sage scrub can exhibit spectacularly intense fire behavior in the fall. Few obligate seeders are found in this vegetation type, with most of the species being facultative seeders/resprouters. This means species that are able to regenerate via seed production or existing seeds in the soil seed bank, or by resprouting from surviving rootstock after a fire destroys the upper plant. This characteristic may contribute to coastal sage scrub's resiliency to repeated fires. Plants surviving a fire or germinating from seed in the first year often produce large amounts of seed that contribute to the speedy reestablishment of native shrub cover in subsequent years.

5.3.2. Coastal Sage Scrub Fire Regime

As with chaparral, fires in coastal sage scrub are commonly stand-replacing fires that consume virtually all aboveground vegetation. Although generally quite resilient to wildfires, coastal sage scrub has been negatively impacted by unnaturally high fire frequencies and, in some areas, it has been converted to exotic grasslands. During the summer and fall, fires are common in the low-elevation, arid areas where coastal sage scrub is abundant, but fire can occur year-round during severe droughts. Fire size in coastal sage scrub is highly variable.

5.3.3. Coastal Sage Scrub Plant Adaptations to Fire

Many species found within the coastal sage scrub vegetation type are also found within chaparral. For these species, many of the plant adaptations to fire fit the description given for chaparral in section 5.2.3. As in many of the SMM's vegetation types, fire generally consumes much or all of the aboveground vegetation. A major difference between chaparral and coastal sage scrub is the relatively minimal presence of obligate seeders in coastal sage scrub and the greater dominance of non-woody species. Although the majority of the shrub species found here are considered facultative seeders/resprouters, many of the perennial herbs are obligate resprouters. As in chaparral, coastal sage scrub has a diverse community of herbaceous flora that sprouts in the first year to several years following a fire.

5.3.4. Coastal Sage Scrub Conservation and Fuel-Management Objectives

Due to its low elevation and close proximity to populated areas, coastal sage scrub has been heavily impacted by human-caused fires and historical grazing, both of which have led to increased invasion of coastal sage scrub by exotic weed species.

Fuel-management goals in the coastal sage scrub vegetation type are similar to those in chaparral. Heavy and/or dead fuels close to homes should be thinned, with all dead materials removed from the home ignition zone *(see Chapter 4),* while retaining and protecting this valuable habitat. Reduce fire intensity in these systems through thinning and pruning prescriptions, which aim to provide space between and around plants closest to homes and structures. Additionally, removal of exotic grasses and forbs in type-converted or weed-infested coastal sage scrub is an important method of fuel reduction that also has significant restoration benefits.

On steep slopes, coastal sage scrub is often critical in stabilizing soils and minimizing erosion. Plan fuel treatments to avoid steep areas or retain substantially more vegetation cover than on milder slopes.

5.3.5. Coastal Sage Scrub Fuel-Management Best Management Practices

Treatments in this vegetation type should occur mainly within the first 100 feet[20] around homes and access roads, or other strategic fire-protection areas (as identified by fire agency professionals).

- Remove all dead materials from healthy, live plants around homes and roads.
- Maintain at least 50% of the original canopy cover.
- Remove any unhealthy plants that are more than 50% dead. Many coastal sage scrub species may appear to be unhealthy or dead during summer drought periods when in fact they are not. These plants should not be removed. Plan fuel treatments or mark dead plants during the winter/spring growing season when healthy plants are obvious.
- Remove any invasive or non-native species that have moved into this vegetation type.

5.4. Upland Tree Types

Three distinct plant communities comprise this vegetation type: coast live oak, valley oak savannah, and walnut woodlands. Of these, coast live oak is the most widespread.

Coast live oak *(Quercus agrifolia)* is found on mesic (moderately moist) north slopes or in shaded ravines and canyons. Structure of coast live oak forests varies from closed-canopy stands on wetter sites to open-canopy stands on drier sites, where large, old, live oak trees can be found in association with chaparral or grassland vegetation types. Coast live oak is often found in conjunction with hollyleaf redberry *(Rhamnus ilicifolia)*, California bay laurel *(Umbellularia californica)*, coffeeberry *(Rhamnus californica)*, and poison oak *(Toxicodendron diversilobum)*.

Valley oak *(Quercus lobata)* savannah occurs primarily in deep *alluvial* (floodplain) soils in valley bottoms and low-elevation foothills, where the oaks are widely interspersed in grasslands. Historically, valley oak savannahs consisted of native perennial bunchgrasses, but today non-native annuals are dominant. Purple needlegrass *(Nassella pulchra)* is the most common native grass species. Wild oats *(Avena fatua)* and ripgut brome *(Bromus diandrus)* are common exotic grasses. Native wildflowers include mariposa lilies *(Calochortus catalinae)*, blue dicks *(Dichelostemma capitatum)*, and fiddleneck (*Amsinckia* spp.).

Native California walnut *(Juglans californica)* woodlands have a very restricted distribution in the SMM, limited to small patches on the northern slopes of the SMM on deep clay soils. The variable understory can include species from grasslands, coastal sage scrub, or chaparral plant communities.

Where coast live oak, bay laurel, or walnut trees are found immediately along streams or rivers, they are considered to be a component of riparian woodlands. *See section 5.5 below.*

[20] Up to 200 feet in special circumstances.

5.4.1. Upland Tree Types and the Role of Fire

Larger valley and coast live oak trees often survive wildfires; however, growth in surviving trees may be diminished for one to several years following fire.[21] Fire normally kills tree seedlings and some saplings. Intense fires consume acorns of oak species and the seeds of walnut trees. However, during many years when fires are absent, or in cases where some seeds survive, successful sprouting from acorns does occur. Oaks and walnut trees are also able to resprout following fire, although successful regeneration of the forest by resprouting requires an extended fire-free interval (i.e., decades).[22] On wetter sites where these vegetation types occur, fires are not as frequent as in chaparral, coastal sage scrub, or grasslands, occurring sporadically and often only in extreme drought years when moisture levels are severely low. In most years, these forest sites can actually help reduce fire spread by providing shade and maintaining vegetation moisture. However, drier sites of coast live oak and valley oak that share components of grassland, coastal sage scrub, or chaparral vegetation may burn with more frequency.

Dry sites of valley oak are known to have burned historically every 3–5 years, due to indigenous burning practices.[23] Indigenous people routinely used fire in oak woodlands to facilitate acorn harvest and minimize pest damage to acorns. They burned the herbaceous understory, generally in open-canopy oak woodlands, not only to improve the size of the acorn crop by removing competing young tree saplings and destroying pests in accumulated litter, but also to encourage the spread of edible bulbs and other fruits they harvested. Burning was done either annually or every few years so the fuel load was low and the fires were fairly low in temperature and easily controlled.[24] However, it would be difficult to replicate this pattern today because of the presence of non-native weeds and grasses that can be encouraged by fire use.

5.4.2. Upland Tree Types Fire Regime

Fire regimes of upland tree vegetation types are heavily influenced by site conditions. Forest stands on more open, arid sites usually experience a different fire regime than sites in shaded ravines or canyons. The former sites, occupied by valley oak or drier coast live oak woodlands, historically experienced lower intensity and more frequent grass fires, while the latter sites, such as the more mesic and dense coast live oak forests, had less frequent and more severe wildfires unless indigenous people managed the area with fire. The high-frequency fire regime in valley oak woodlands was probably largely a function of indigenous fire use.

5.4.3. Upland Tree Types Plant Adaptations to Fire

Due in part to its very thick bark, coast live oak is among the most fire-resistant of the California oaks. It is also a vigorous resprouter. As long as fires do not occur in rapid succession, coast live oak forests are able to resprout, even

[21] National Park Service (2005), Final Environmental Impact Statement for a Fire Management Plan, Santa Monica Mountains National Recreation Area, Chapter 3, p. 53.

[22] Keeley (2006), “South Coast Bioregion,” p. 377.

[23] NPS (2005), Final EIS for a Fire Management Plan, Chapter 3, p. 54.

[24] Betsey Landis, California Native Plant Society, personal communication, June 7, 2010.

from heavily charred trunks, and can regrow a full forest canopy within approximately 2–10 years, even following very severe fires.[25] In addition to root sprouting, coast live oak canopy regeneration is enabled by *epicormic branching*, defined as the ability to resprout directly from the central trunk or from main branches.

Mature valley oaks are also quite fire-resistant, although juveniles are often consumed by fire. Valley oaks are capable of resprouting from rootstock or epicormically from branches and the main trunk following wildfire.

Local oak species that have thick bark, well-developed trunks, healthy canopy, and are mature trees can act as ember interceptors and heat sinks, meaning the trees themselves will absorb the impact of a fire and limit its spread. This is another reason why it is beneficial to have large native oak trees around homes and other structures.

Walnuts have thin bark, and aboveground portions of the tree are easily killed by fire. Seeds are likewise killed. Older walnut trees have a sub-soil woody root platform that protects much of the below-ground parts of the tree from severe wildfire effects. As a result, mature walnuts can survive even severe fires and regenerate by resprouting.

5.4.4. Upland Tree Types Conservation and Fuel-Management Objectives

Intense urbanization of former valley oak woodlands has caused this vegetation community to be among the most threatened in the Santa Monica Mountains. There is a low occurrence of successful sapling recruitment, making conservation of juvenile valley oak critical. Remaining valley oak savannahs have been greatly altered by grazing, frequent fire, and other forms of human use, which have cumulatively shifted their understory vegetation from perennial bunchgrasses and native forbs to annual grasslands dominated by exotic species.

Although regeneration of coast live oak and walnut woodlands is not as limited as it is for valley oak, both forest types, especially walnut, have a small range within the SMM. They are all important for wildlife habitat and as natural fuelbreaks.

Conservation objectives for these forest types include live-tree retention, maintenance of existing closed-canopy structure, and reduction of exotic species. Fuel reduction should emphasize removal of branches (which usually requires a permit, see below) or downed wood near structures. Opening up stands by thinning may actually cause stand drying and greater susceptibility to wildfire as a result of greater windflow and increased sun exposure to the understory. Hence, fuel treatments that alter the structure of the forest may actually reduce the ability of these forest types to act as fuelbreaks.

For savannahs or arid sites where annual grasses have invaded and displaced native grasses and perennial herbs, restoration of native species is recommended.

5.4.5. Upland Tree Types Fuel-Management Best Management Practices

Treatments in this vegetation type should occur only within the first 100 feet[26] around homes and access roads, or other strategic fire-protection areas (as identified by fire agency professionals). Fuel treatments should be carefully planned and conducted to retain and avoid damage to large trees, especially oaks, while accomplishing the recommended fire hazard reduction measures.

Oak trees are protected in both Los Angeles and Ventura counties, as well as in the municipalities of Malibu and Calabasas. In Los Angeles County, the following ordinance applies:

[25] NPS (2005), Final EIS for a Fire Management Plan, Chapter 3, p. 52.

[26] Up to 200 feet in special circumstances.

"Under the Los Angeles County Ordinance, a person shall not cut, destroy, remove, relocate, inflict damage, or encroach into the protected zone of any tree of the oak tree genus, which is 8" or more in diameter four and one-half feet above mean natural grade or in the case of oaks with multiple trunks combined diameter of twelve inches or more of the two largest trunks, without first obtaining a permit."[27]

- Before pruning or any manipulation of oak trees, obtain the advice of a certified arborist or other professional and consult the local city or county where the tree is located to determine what regulations apply. For oak species, pruning of both live and dead wood often will require a permit. For more information see the Los Angeles County Fire Department's Forestry Division: www.fire.lacounty.gov/forestry/environmentalreview_oaktreecareandmaint.asp, or the Ventura County Planning Division's Tree Permit: www.ventura.org/RMA/planning/Permits/tree.html. In the city of Calabasas, contact the Community Development Department at 818-224-1600, before any trimming, pruning, or cutting of any oak trees. In Malibu, visit http://qcode.us/codes/malibu-coastal/ and search for the "Native Tree Protection Chapter."
- The occasional removal of dead wood during periods of tree dormancy should be the only pruning needed. Pruning or cutting of live branches may create scars that permit the entry of organisms or disease.
- Minimize soil disturbance within the drip-line area of oak trees and up to 15 feet beyond this zone. Oaks have extensive superficial root systems that are sensitive to ground-disturbing activities.
- For dry sites, remove invasive and/or non-native species that have moved into this vegetation type.
- In both oak and walnut woodlands, avoid treatments that reduce canopy closure.

- Limbing tall trees up to a height of 10 feet can be beneficial near buildings, to help open space for fire-suppression crews, but it is not necessary away from buildings. Removal of branches greater than 8 inches in diameter must be done with a permit.
- Irrigation of oak trees should be avoided as it encourages the development of root rot and other fungal diseases, leading to greater risk of tree mortality and increased amounts of dead, woody, flammable material.

5.5. Riparian Woodlands

"Riparian woodlands occur along canyon and valley bottoms with perennial or intermittent streams in nutrient-rich soils, or within the drainage of steep slopes. The riparian community contains the greatest species diversity of all the plant communities in the Santa Monica Mountains. Dominant species are coast live oak *(Quercus agrifolia)* and sycamore *(Platanus racemosa);* associates or locally dominant species include arroyo willow *(Salix lasiolepsis),* black willow *(Salix laevigata),* alder *(Alnus rhombifolia),* California black walnut *(Juglans californica),* Mexican elderberry *(Sambucus mexicana),* California bay laurel *(Umbellularia californica),* and mule fat *(Baccharis salicifolia).* Riparian woodland is a particularly important plant community because of its limited area and its extremely high plant and animal diversity."[28]

[27] County of Los Angeles Fire Department, Environmental Review Oak Tree Ordinance, http://fire.lacounty.gov/Forestry/EnvironmentalReview_OakTreeOrdiance.asp.

[28] NPS (2005), Final EIS for a Fire Management Plan, Chapter 3, p. 53.

5.5.1. Riparian Woodlands and the Role of Fire

Fire's role in the ecology of the riparian woodlands of the SMM is not well known. The shaded, cool, and moist conditions of riparian areas can act as natural fuelbreaks, minimizing fire spread. However, wildfires do sometimes occur in riparian areas, especially during very dry years. In such instances, fire effects vary with fire severity. Following severe wildfires, riparian areas are susceptible to debris flows and landslides, which can alter streambed *geomorphology*.

5.5.2. Riparian Woodlands Fire Regime

Fire frequency and fire history of riparian areas are largely unknown. Fire severity in recently recorded riparian wildfires is highly variable, ranging from low-severity fires where plants are minimally scorched to high-severity, stand-replacing fires. A rule of thumb is that the riparian areas have a fire interval about twice as long as the surrounding vegetation.

5.5.3. Riparian Woodlands Plant Adaptations to Fire

Resprouting occurs in many riparian plant types including alder, sycamore, and oak. Resprouting may account for the majority of post-fire vegetation recolonization in riparian areas, but not enough is known about post-wildfire seed germination and seedling establishment to determine whether sprouting or seeding is more important in long-term recovery from wildfire. Of the major tree species found in riparian areas, oak and sycamore generally re-establish more quickly than does alder.

5.5.4. Riparian Woodlands Conservation and Fuel-Management Objectives

Due to the very high diversity of plants and animals in riparian areas, their limited distribution, and the value of riparian woodlands as natural fuelbreaks, objectives in this vegetation type should emphasize habitat protection and minimal alteration. As with mesic upland tree types, alteration of forest structure that results in increased openness of the canopy leads to increased solar radiation, wind movement, and drying of understory vegetation that can increase fire risk in this vegetation type. Furthermore, vegetation changes in or near streams can lead to increased erosion, reduced resilience to flood events, and impacts to aquatic or riparian species habitat.

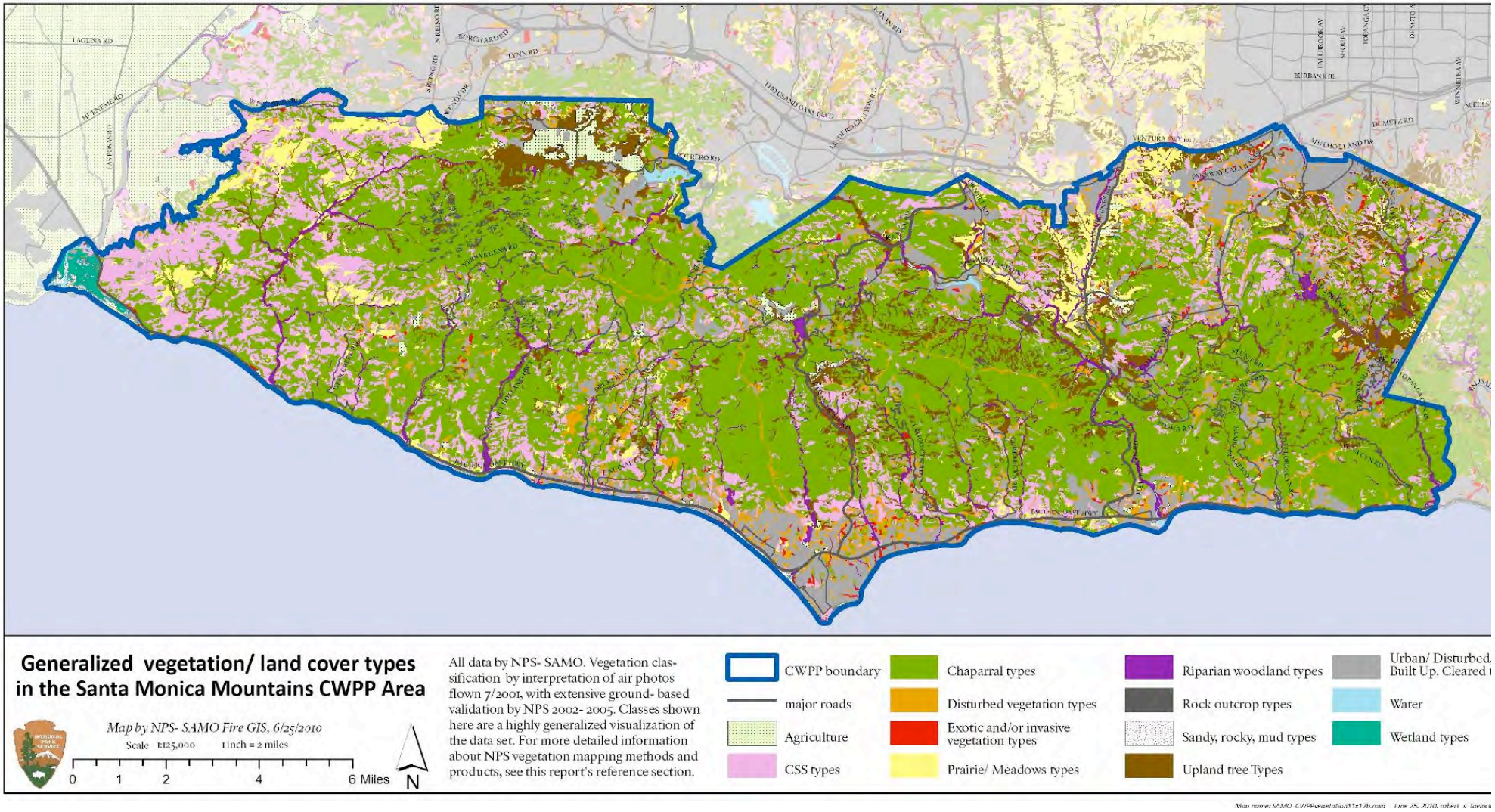
5.5.5. Riparian Woodlands Fuel-Management Best Management Practices

Rarely would it be appropriate to treat native vegetation within riparian zones. In the rare case where a tree dies and is close to a home, it would be advisable to contact a resource professional to determine whether or not the tree should be removed.

Fuel treatments should be limited to removal of non-native species such as *Arundo donax, Delairea odorata, Vinca major,* and *Phragmites australis.*

With some knowledge of local vegetation patterns and requirements, it's possible to reduce fire hazard near human developments while supporting conservation measures that will help retain fire-adapted native ecosystems into the future. Ideally this chapter has alerted or reminded residents of some important "best management practices" that will make any fuel-reduction and wildland conservation efforts more effective. Resource professionals are able to help residents with decisions about what to do in site-specific circumstances, so take advantage of their expertise.

MAP 5-1. VEGETATION TYPES OF THE SANTA MONICA MOUNTAINS[29]



[29] This map prints best at 11x17. Visit www.forevergreenforestry.com/smmcwpp_pub.html to download a print version.

COMMUNITY FIRE
PLAN MEETING
For the neighborhood of: La Costa, Big Rock & Pena Cyns
Thursday, October 22nd
6:30 - 9:00 pm
Malibu City Council Chambers

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6. Santa Monica Mountains Community Context[1]

6.1. Social and Legal Setting

The Santa Monica Mountains (SMM) region is home to a variety of plant, animal, and human communities. Most of the area is rural and unincorporated, particularly the western part of the mountain range in Ventura County (with the exception of the Hidden Valley and Lake Sherwood areas). Further east in Los Angeles County are more concentrated urban populations, including the CWPP Planning Area's two cities, Malibu and Calabasas.

The SMM's increasing popularity and desirability as a place to live can be attributed to its proximity to the metropolis of Los Angeles and the appealing combination of beaches, mountains, and fresh air. Communities include a mix of historic ranches, decades-old houses on land purchased long before it was prime real estate (the Monte Nido area, for example), and newer upscale houses and gated communities in the canyons and along the ridges built after more recent population influxes. The city of Malibu has a unique character of its own with its surfing culture and the many celebrities who make their home here.

6.1.1. Land Use and Development Trends

Land uses in the Planning Area are primarily residential and recreational. The area is all within the roughly 160,000-acre Santa Monica Mountains National Recreation Area (SMMNRA).[2] Administered by the National Park Service, the SMMNRA was created in 1978.

Urban development in the region had already started in earnest in the 1920s, with most of it occurring after World War II. Growth spiked in the period between 1970 and 1990, during which the SMM's population increased by 45%. Suburban development grew at four times the rate of the rest of Los Angeles County, and the rate of conversion of open space to developed space tripled.[3]

Many of the residences in the Santa Monica Mountains are personal second and third homes, and thus not inhabited all year round. Furthermore, many of the permanent residents are not home during the day as they commute out of the Planning Area for work. In both cases, day laborers often occupy the area in the absence of homeowners.

Despite the existence of urban pockets in this region, the CWPP Planning Area's borders are almost congruent with those of the SMMNRA, 90% of which is undeveloped.[4] The Planning Area contains myriad public parks and

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[1] Much of this chapter was written by Stephen Umbertis, with assistance from Deanna Sverdlov.

[2] See section 6.2.1 below for more information on the National Recreation Area.

[3] Julie D. Clark De Blasio (2007), "Defensible Space: Environmental Implications of Fire Clearance Regulations in the Santa Monica Mountains National Recreation Area," UCLA, LD791.7 U7 D351 2007: pp. 21–22.

natural areas, making it popular for hiking, horseback riding, birding, camping, and more. Further details of the recreational uses are found later in this chapter *(see "Public Lands," section 6.3, below).*

Public and private development projects in the Santa Monica Mountains are ongoing and increasingly controversial. There is growing support for limiting human impacts among concerned stakeholders across the board: private, public, and local governments. Regulators say that the SMM area is *"built out"* and the infrastructure cannot handle much more development, yet at any given time there are scores, if not hundreds, of proposed projects in the SMM. Two current notable and controversial projects involve a proposed development by The Edge, guitarist for the rock band U2, and a city park slated for Trancas Canyon.

6.1.2. Community Legal Structure and Jurisdictional Boundaries

A variety of jurisdictions is found within the Planning Area, each with a different mandate, different area of focus and priority, and varying degrees of regulatory authority. **There are two counties (Los Angeles and Ventura), two cities (Malibu and Calabasas), several water management districts (see below), two federal agencies (National Park Service and US Navy), and two state agencies (California Dept. of Parks and Recreation, and the Santa Monica Mountains Conservancy).** Two joint exercise of powers agencies, local agencies, and some nonprofit organizations also are active in land-use planning and conservation in the Santa Monica Mountains and coastal areas. This creates a challenge for coordinating policies and actions across the CWPP Planning Area.

The Planning Area is situated within the 41st California State Assembly District, the 30th and 24th US Congressional Districts, and State Senate Districts 23 (mostly) and 19. With the exception of Malibu and Calabasas, the Planning Area is unincorporated, with no other municipal jurisdictions. Both Malibu and Calabasas were incorporated in 1991.[5]

Los Angeles County is governed by the five-member Los Angeles County Board of Supervisors, each with a constituency of approximately two million people.[6] The portion of the CWPP Planning Area within Los Angeles County falls in the third supervisorial district.[7] In Ventura County (also governed by a five-member Board of Supervisors) the majority of the Planning Area falls into the second supervisorial district, with some portions in the third district.

In 2004, a Blue Ribbon Task Force appointed by the Governor examined the State's fire protection system in the wake of the devastating 2003 fires. The Commission found that the greatest impediment to effective fire fighting in the state was "conflicting public policy mandates, lengthy bureaucratic administrative processes and procedures, and antagonistic litigation tactics," and that the key to protecting communities and residents was "fire prevention and effective vegetation/fuels management programs."[8]

The seemingly conflicting goals of environmental protection and vegetation management for fuels reduction continue to challenge agency managers and policy makers across the state. These concerns have been addressed in

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[4] National Park Service (2002), General Management Plan and Final Environmental Impact Statement, Santa Monica Mountains National Recreation Area, Volume 1: p. 3.

[5] http://en.wikipedia.org/wiki/Malibu,_CA

[6] http://en.wikipedia.org/wiki/Los_Angeles_County_Board_of_Supervisors

[7] http://portal.lacounty.gov/wps/portal/lac/government/

[8] The Governor's Blue Ribbon Fire Commission, Report to Governor, 2004. Executive Summary, www.oes.ca.gov/WebPage/oeswebsite.nsf/Content/56A8C1B3AAF790058825742600818EC0?OpenDocument

some cases with habitat conservation plans, natural community conservation plans, or multi-species conservation plans, which provide an ecosystem approach to environmental protection on a landscape level. These types of plans are an effective way to balance fire protection with environmental standards.[9]

6.2. Fire Protection Agencies

Wildfire suppression in the Santa Monica Mountains is carried out by several agencies, principally the Los Angeles County Fire Department (LACFD) and the Ventura County Fire Department (VCFD). Additional wildland fire protection (primarily for parkland) is provided by the National Park Service (NPS) and the Mountains Recreation and Conservation Authority (MRCA).[10]

Source: NPS / SMMNRA

The two county fire departments provide fire protection for all structures in the CWPP Planning Area, and have the majority of fire-suppression resources in and near the SMMNRA. LACFD provides structural fire protection for all unincorporated land in Los Angeles County in the Planning Area, as well as the cities of Calabasas and Malibu, which are part of the Consolidated Fire Protection District of Los Angeles County (a.k.a LACFD). VCFD provides structural fire protection for the Ventura County portion of the Planning Area.

All fire-protection agencies have the responsibility to provide fire suppression within their jurisdictional boundaries. These jurisdictions include *Federal Responsibility Areas (FRA),* State Responsibility Areas (SRA), and Local Responsibility Areas (LRA). Jurisdictions are based on a variety of factors, including ownership, population, and land use. Different fire-protection agencies will be dispatched based on these jurisdictional boundaries. However, agreements are in place for *Mutual Aid* in order to provide the best emergency services to all areas.

On FRA lands, federal agencies have primary responsibility for protection of wildlands in case of fire. This includes the financial responsibility of preventing and suppressing fires. NPS wildfire resources can respond to any wildfire emergency in the National Recreation Area, and the agency is specifically responsible for wildland fire on NPS-managed land. NPS has cooperative fire agreements with the State of California, LACFD, and VCFD for wildfire suppression on NPS land.

The US Navy protects its jurisdictional lands on both sides of Pacific Coast Highway at Point Mugu in the northwestern part of the Planning Area. Naval Base Ventura County (NBVC) maintains its own fire-fighting force, which is responsible for fighting fires and protecting infrastructure at the facility. It has a Mutual Aid agreement with VCFD for fighting fire in the areas adjacent to NBVC, Point Mugu.[11] *See section 6.3.1 for more on NBVC.*

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[9] Christopher Zimny, California Board of Forestry, personal communication, March 5, 2010.

[10] www.parks.ca.gov/?page_id=25415

[11] Salim Rahemtulla, Community Planner and Liaison Officer, Naval Base Ventura County, personal communication, April 7, 2010.

SRA lands are defined based on land ownership, population density, and land use. The California Dept. of Forestry and Fire Protection (CAL FIRE) determines SRA lands per the guidelines established by the State Board of Forestry and Fire Protection. CAL FIRE has a legal responsibility to provide wildland resource fire protection on all SRA lands, including the financial responsibility of preventing and suppressing fires. In both Los Angeles and Ventura County unincorporated lands within the Santa Monica Mountains, CAL FIRE contracts with the county fire departments to provide fire protection to SRA lands. Lands in incorporated cities or surrounded by federal land are excluded from SRA lands.

Local fire districts and urban fire departments are responsible for providing structure fire protection on SRA lands. They are also responsible for providing all fire protection on LRA lands. Los Angeles and Ventura County Fire Departments have the primary responsibility for fire protection for LRA lands within the Planning Area.

For a map of FRA, SRA, LRA and locations of fire stations and other fire protection resources, *please see Map 6-1, Fire Protection Resources of the Santa Monica Mountains.*

6.2.1. Los Angeles County Fire Department

The operations of the LACFD are divided into three regional bureaus. They are the North Region, the Central Region, and the East Region. Each bureau is centrally based in the community it serves.[12] The Central Region Operations Bureau, specifically Division VII, Battalion 5, is responsible for the Los Angeles County section of the CWPP Planning Area.[13]

FIGURE 6-1. LOS ANGELES COUNTY FIRE DEPARTMENT STATIONS IN THE SMM

STATION NAME & NUMBER	STATION ADDRESS	GEOGRAPHIC SERVICE AREA (APPROX)	PUBLIC PHONE #	TOTAL NO. REGULAR STAFFING
Fire Station #65	4206 N. Cornell Rd., Agoura, CA 91301	17.43 square miles	818-889-0610	3
Fire Station #67	25801 Piuma Rd., Calabasas, CA 91302	16.08 square miles	818-222-1099	3
Fire Station #68	24130 Calabasas Rd., Calabasas, CA 91302	9.02 square miles	818-222-1107	5
Fire Station #69	401 S. Topanga Canyon Road, Topanga, CA 90290	17.87 square miles	310-455-1766	4 – add'l call firefighters available but number varies
Fire Station #70 Division Headqtrs.	3970 Carbon Canyon Rd., Malibu, CA 90265	7.96 square miles	310-456-2513	4, plus 1 BC 1 AC
Fire Station #71	28722 W. Pacific Coast Hwy., Malibu, CA 90265	25.62 square miles	310-457-2578	5
Fire Station #72	1832 Decker Canyon Rd., Malibu, CA 90265	22.16 square miles	310- 457-6186	3

[12] http://fire.lacounty.gov

[13] www.fire.lacounty.gov/HometownFireStations/HometownFireStations.asp

STATION NAME & NUMBER	STATION ADDRESS	GEOGRAPHIC SERVICE AREA (APPROX)	PUBLIC PHONE #	TOTAL NO. REGULAR STAFFING
Fire Station #88	23720 W. Malibu Rd., Malibu, CA 90265	8.39 square miles	310- 456-2812	5
Fire Station #99	32550 PCH., Malibu, CA 90265	8.04 square miles	310-457-3706	3
Fire Station #125[14]	5215 N. Las Virgenes Rd., Calabasas, CA 91302	5.93 square miles	818-880-4411	7

LACFD has 11 fire engines in the CWPP Planning Area on a year-round basis, and consistently adds one to three *engine strike teams* during Red Flag conditions. LACFD also maintains helicopters as air support for fire suppression. This is critical to effective wildland fire suppression due to the remote nature of many areas and road-building restrictions in many of the protected areas of the SMMNRA.

6.2.2. Ventura County Fire Department

The Ventura County Fire Department (VCFD) provides fire protection and emergency response services for the areas of Ventura County within the Planning Area. VCFD maintains two of its 31 fire stations inside the CWPP Planning Area, and has two others that service it.[15]

FIGURE 6-2. VENTURA COUNTY FIRE DEPARTMENT STATIONS IN THE SMM

STATION NAME & NUMBER	STATION ADDRESS	GEOGRAPHIC SERVICE AREA (APPROX)	PUBLIC PHONE NUMBER	TOTAL NO. REGULAR STAFFING
Lake Sherwood #33	33 Lake Sherwood Dr., Thousand Oaks, CA 91361	Hidden Valley and southern Westlake Village area of Thousand Oaks	805-371-1111 x33	Staffed by 3 firefighters, houses Engine 33, a reserve Engine 133, and Utility Pickup 233
Malibu #56	11855 PCH., Malibu, CA 90265	South coast, Yerba Buena and Deer Creek areas	805-371-1111 x.56	Staffed by 3 firefighters and houses Engine 56 and Patrol 56
Potrero, #32	830 S. Reino Rd., Newbury Park, CA 91320	Southwestern Newbury Park, Potrero Rd. from Hidden Valley to CSUCI.	805-371-1111 x32	Staffed by 3 firefighters and 1 firefighter/medic. Medic Engine 32, Medic Engine 332, Patrol 32
Airport, #50	189 Las Posas Rd., Camarillo, CA 93010	Southern Camarillo and Oxnard Plains. South Coast to Mugu Rock.	805-371-1111 x50	Staffed by 3 firefighter and 2 firefighter/medics. Engine 50, Crash 50, Haz-mat 50, Squad 50

[14] Fire Station #125 is located outside the CWPP Planning Area but has jurisdiction within it.

[15] http://fire.countyofventura.org/AboutVCFD/Stations/tabid/80/Default.aspx

6.2.3. National Park Service

The National Park Service manages fire in accordance with the National Fire Plan and the Santa Monica Mountains National Recreation Area Fire Management Plan.[16] The latter plan describes four Fire Management Units and discusses which agencies have primary responsibility for wildland fire within those boundaries. The SMMNRA enabling legislation states that the "NPS is specifically charged with protecting resources within the entire Recreation Area."[17] NPS has two wildland fire engines stationed at Paramount Ranch. The Type III engine is fully staffed during fire season (5 firefighters, 7 days a week), and minimally staffed in the off season. The Type VI engine can be staffed as needed throughout the year. The park has a Fire Management Officer, qualified to act as an Incident Commander and Operations Chief, and a Fire Information Officer. They both respond to wildfires in the National Recreation Area. The fire management staff includes a fire program assistant, fuels technician, fuels crew, fire ecologist, fire monitor, and fire GIS staff. In addition, many SMMNRA employees hold wildfire qualifications and receive orders to provide their skill on incidents throughout the nation. Additional federal resources may be ordered during extreme fire weather conditions. All of these resources respond to emergencies throughout the nation.

FIGURE 6-3. NATIONAL PARK SERVICE STATIONS IN THE SMMNRA

STATION NAME & NUMBER	STATION ADDRESS	CONTACT & TITLE	PUBLIC PHONE NUMBER	TOTAL NO. REGULAR STAFFING
Paramount Ranch	2813 Cornell Rd., Agoura Hills, CA 91301	California –Santa Monica Park Engine 73 & Engine 74 Fuels Staff	805-370-1840	Staffed business hours w/ 2 firefighters and 1 leader. Staffed during fire season w/ 5 firefighters, 7 days, and w/ 1 leader and 5-person fuels crew. One permanent and 3-5 seasonal crew members that implement mechanical fuel-reduction projects.

[16] www.nps.gov/samo/parkmgmt/upload/Final_FMP_07update.pdf

[17] National Park Service (2007), Santa Monica Mountains National Recreation Area Fire Management Plan, p. 5; www.nps.gov/samo/parkmgmt/upload/Final_FMP_07update.pdf.

STATION NAME & NUMBER	STATION ADDRESS	CONTACT & TITLE	PUBLIC PHONE NUMBER	TOTAL NO. REGULAR STAFFING
SMMNRA HQ	401 W Hillcrest Dr. Thousand Oaks, CA 91360	Fire Management Officer, Fire Information Officer, Fire Program Management Assistant, Fire Ecology and Mapping	805-370-2300	Fire Chief & Fire Information Officer, Fire Program Assistant Fire Ecologist, Fire GIS

6.2.4. Mountains Recreation and Conservation Authority

A land-managing agency operating under a Joint Powers Agreement with the State of California, the Mountains Recreation and Conservation Authority (MRCA) maintains an Operations Division that serves as a first responder to emergency incidents (wildland fires) on or adjacent to its lands. It responds to incidents on property that it or its partner state agency the Santa Monica Mountains Conservancy owns and/or manages, as well as assists other agencies (primarily park agency partners) with fire protection. The MRCA participates in the Master Mutual Aid[18] program and is dispatched through the California Office of Emergency Services (OES).[19] It has four key area locations in which fire engines are pre-deployed to expedite response time to emergency incidents. Two of these are in the Planning Area:

- Holiday Camp (King Gillette Ranch) - 1670 Las Virgenes Canyon Rd., Calabasas
- Ramirez Canyon - 5750 Ramirez Canyon Rd., Malibu
- Temescal Canyon - 15601 Sunset Blvd., Pacific Palisades
- Franklin Canyon - 2600 Franklin Canyon Dr., Beverly Hills

MRCA's Fire Management Unit of the Operations Division cooperates with LACFD, VCFD, Los Angeles City Fire Department, California Dept. of Parks and Recreation, and NPS to prevent and protect against wildfire. The MRCA Fire Management Unit employs 106 trained and certified wildland fire-fighting personnel and is capable of deploying fire-fighting equipment including three Type III wildland fire engines, one 2,000-gallon water tender, two mobile command units, 50+ chainsaws, and eight fire patrol vehicles equipped with a minimum of 200 gallons of water. Personnel patrol parklands and the Mulholland Scenic Corridor.

6.3. Public Lands

More than 70 government and municipal entities share jurisdiction in the 154,095-acre Santa Monica Mountains National Recreation Area,[20] which includes the entire CWPP Planning Area and extends beyond to east of Topanga Canyon and north of Liberty Canyon across Highway 101.

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[18] A state Office of Emergency Services program in which agencies provide the state equipment and staff to render mutual aid outside their operating areas.

[19] State OES Region 1 contracts through the LACFD for dispatch of this service.

6.3.1. Federal Lands

National Park Service[21]

The US Congress designated the Santa Monica Mountains a National Recreation Area (SMMNRA) in 1978 following a campaign by local conservationists. There are 18 National Recreation Areas in the United States. Five of these, including the SMMNRA, are characterized by their proximity to major urban centers and were created to combine scarce open spaces with the preservation of significant historic and/or natural resources, with the goal of providing outdoor recreation opportunities for a large number of people.[22,23]

The purpose of the SMMNRA's designation is to "preserve the scenic, natural and historic, as well as public health values of the Santa Monica Mountains."[24] **The area is nationally significant for encompassing the greatest expanse of mainland Mediterranean ecosystems in the National Park system (exhibiting one of the world's rarest and most endangered ecosystems), as well as for having more than a thousand archeological sites within its boundaries.[25]**

Most of the SMMNRA lies in Los Angeles County, while about one third of the western section extends into Ventura County. **It is the largest and most heavily visited urban recreation area in the US,[26] and is managed through a collaborative partnership among federal, state, local, private, and nonprofit groups.** A core tenet of the designation is partnership between federal/state agencies and private landowners. Parklands within the SMMNRA include national, state, and county parks, as well as beaches, municipal parks, and privately managed recreation sites.[27] A total of 69,099 acres of parkland are encompassed by the SMMNRA.[28]

The National Park Service manages 18,172 acres, or about 15% of the total land within the Planning Area, and is responsible for operation, maintenance, resource management, education, and visitor protection on its lands.[29] NPS manages the following public lands within the CWPP Planning Area: Arroyo Sequit, Backbone Trail System, Castro

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[20] NPS (2002), General Management Plan and Final EIS, SMMNRA, Volume 2: p. 443.

[21] Most of the information for this section was gathered from www.nps.gov/samo.

[22] www.ohranger.com/qa/15840/what-difference-between-national-recreation-area-and-national-park

[23] The difference between a National Recreation Area and a National Park is that National Parks have significantly stricter regulations, including the prohibition of resource extraction and hunting.

[24] NPS (2002), General Management Plan and Final EIS, SMMNRA, Volume 1: p. 34.

[25] NPS (2002), General Management Plan and Final EIS, SMMNRA, Volume 1: pp. 34–35.

[26] http://samofund.org/About/about.htm

[27] For a complete list of parks in the SMM, see www.lamountains.com/searchresults.asp?regionid=3.

[28] NPS (2002), General Management Plan and Final EIS, SMMNRA, Volume 1: p. 19.

[29] NPS (2002), General Management Plan and Final EIS, SMMNRA, Volume 1: p. 28.

Crest, Circle X Ranch, Diamond X Ranch, Paramount Ranch, Peter Strauss Ranch, Rancho Sierra Vista/Satwiwa, Rocky Oaks, Solstice Canyon, and Zuma/Trancas Canyons.[30,31]

The NPS' land management goals for the SMMNRA are to protect and enhance species and habitat diversity; protect and restore native plant species, plant communities, estuaries, and wetlands; reduce the extent of invasive plants and animals; manage fire in the recreation area to mimic natural fire regimes and reduce the threat of wildfires; preserve the cultural history of the area; and maintain or improve water quality in riparian areas, estuaries, and coastal waters.[32]

Fire Management

The SMMNRA Fire Management Plan guides management of wildland fire, prescribed fire, and hazard fuel reduction within the National Recreation Area.[33] NPS is responsible for wildland fire protection on all SMMNRA land.

The SMMNRA Fire Management Plan states that wildfire will not be used as a resource management strategy within the SMMNRA, which means that all fires are suppressed. NPS believes that it is not feasible to manage wildfire in this high-population area without threatening public safety. Unlike fire-dependent forest ecosystems where fire may need reintroduction after being excluded by fire suppression, the Santa Monica Mountains have experienced an increase in fire frequency since the 1950s even with successful fire suppression.[34] This is due to an increase in human ignitions and the inability to control extreme wind-driven wildfires.[35] In fact, the mountain chaparral communities in the SMM "are not fire-limited (do not need additional fire, in the form of prescribed fire, to thrive) under the current fire management strategy of active suppression."[36] If prescribed fire were to be utilized on NPS land it would be undertaken in cooperation with the jurisdictional agency, LACFD or VCFD, and South Coast Air Quality Management District or Ventura County Air Pollution Control District.[37,38]

The goals of the SMMNRA Fire Management Plan are to provide for firefighter and public safety first, reduce fire hazards in the SMMNRA, protect ecological and cultural resources, and identify resource conditions and hazards on private property near the park boundary that require specific fire management actions. Finally, it provides a decision-making framework for fire and resource managers to evaluate fire management proposals.[39]

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[30] http://smmc.ca.gov/partners.html

[31] http://en.wikipedia.org/wiki/Santa_Monica_Mountains_National_Recreation_Area

[32] NPS (2002), General Management Plan and Final EIS, SMMNRA, Volume 1: pp. 40–46.

[33] National Park Service (2007), SMMNRA Fire Management Plan, p. 5; www.nps.gov/samo/parkmgmt/upload/Final_FMP_07update.pdf.

[34] See Chapter 3 for more information on SMM fire history.

[35] J.E. Keeley, C.J. Fotheringham, and M. Morais (1999), "Reexamining fire suppression impacts on brushland fire regimes," *Science,* Volume 284: pp. 1829-1832.

[36] NPS (2007), SMMNRA Fire Management Plan, p. 20.

[37] NPS (2007), SMMNRA Fire Management Plan, p. 47.

[38] NPS (2007), SMMNRA Fire Management Plan, p. 17.

[39] National Park Service (2005), Final Environmental Impact Statement for a Fire Management Plan, SMMNRA, Chapter 1, pp. 3–4.

FIGURE 6-4. NATIONAL PARK SERVICE EXISTING FUEL PROJECTS IN THE SANTA MONICA MOUNTAINS

PROJECT NAME	METHOD OF TREATMENT	ACRES TREATED
Arroyo Sequit	Defensible Space	4.4
Castro	Defensible Space	.9
Cheeseboro	Defensible Space	10.8
Circle X	Defensible Space	14.5
Corral	Defensible Space	.8
Decker School Road	Defensible Space	2.5
Diamond X	Defensible Space	4.1
Franklin Canyon	Defensible Space	6.1
Fryman Canyon	Defensible Space	5.2
Gillette	Defensible Space	1.8
Paramount	Defensible Space	6.8
Rancho Sierra Vista	Defensible Space	22
Rocky Oaks	Defensible Space	4.9
Shea	Defensible Space	.4
Trancas Canyon	Defensible Space	4.7
Zuma Canyon SE	Defensible Space	10.6
Cheeseboro	Strategic Fuels	89.5
Paramount Ranch NE	Strategic Fuels	64.1
RSV, Potrero Rd	Strategic Fuels	39.2
Las Virgenes	Strategic Fuels w/ CDPR	102.9
Reagan Ranch	Strategic Fuels w/CDPR	51.6

United States Navy

The US Navy and the Department of Defense operate the Naval Base Ventura County (NBVC), Point Mugu. NBVC Point Mugu is a 28,000-acre facility surrounding the Mugu Lagoon, which is 22,600 acres of the total base area. The remaining 4,490 acres include runways and other land-based facilities. Most of these are outside the CWPP Planning Area. NBVC maintains a Mutual Aid agreement with the VCFD. VCFD is responsible for dispatching the federal fire resources as needed to fires adjacent to the base, or at the request of the fire department.[40]

In addition to the federal resources located at NBVC, the facility houses the 146th Airlift Wing of the California Air National Guard. The 146th maintains a number of cargo aircraft (C-130E Hercules) that can be outfitted with Modular Airborne Firefighting (MAF) systems. These systems allow cargo aircraft to deliver and drop fire retardant as part of a larger fire-fighting effort. These airborne resources are dispatched as described in the National

[40] Salim Rahemtulla, Community Planner and Liaison Officer, NBVC, personal communication, April 7, 2010.

Mobilization Guide,[41] which provides protocols for interagency operations during large regional fires such as those experienced across the western US in 2000.

6.3.2. California State Lands

Several California state agencies manage land within the CWPP Planning Area: California State Parks, the Santa Monica Mountains Conservancy, the Mountains Recreation and Conservation Authority, and the University of California Natural Reserve System. Together, these state lands add up to over 35,000 acres within the Planning Area.

California State Parks

California Department of Parks and Recreation (CDPR, or California State Parks) manages 278 park units in the state, and 8 in the Planning Area.[42] CDPR focuses on natural and cultural heritage preservation, outdoor recreation, education and interpretation, facilities maintenance, and public safety. The following California State Parks and Beaches are located within the Planning Area and have a combined area of approximately 26,500 acres: Topanga State Park, Leo Carrillo State Park, Malibu Creek State Park, Malibu Lagoon State Beach, Point Mugu State Park, Point Dume State Beach, Point Dume Natural Preserve, and Robert H. Meyer Memorial State Beach.[43,44]

Santa Monica Mountains Conservancy

The Santa Monica Mountains Conservancy (SMMC, or the Conservancy) was established by the California State Legislature in 1980. It works in an "area of interest" of approximately 450,000 acres in which it acquires land, including within the CWPP Planning Area. Much of the land in its area of interest is publicly protected; the Conservancy works closely with other agencies to cooperatively acquire and manage land. The Conservancy's goals and objectives were initially set in the Santa Monica Mountains Comprehensive Plan[45] and the Rim of the Valley Trail Corridor Master Plan.[46] These goals were to buy back, preserve, protect, restore, and enhance pieces of southern California to create a connected series of parks, trails, and habitats that are easily accessible to the public.

The Conservancy's programs to educate landowners and developers on open-space benefits to property value, biodiversity, and ecosystem health have resulted in the acquisition of thousands of acres through private donations.[47] In addition, it utilizes a combination of funding sources and methods to acquire land and create parkland. These include State bond funds, local parks funding, grant funding, and funds generated from the partnership of numerous local, state, and federal entities.

Another signature mechanism through which the Conservancy expands its acquisition capabilities is the formation of joint powers agencies (JPAs) with local governments. JPAs allow the partners to exercise their separate authorities jointly. One of the JPAs with which the Conservancy works most closely is the Mountains Recreation and Conservation Authority (MRCA). *See 6.3.6 below for more information on MRCA and its relationship with the Santa Monica Mountains Conservancy.*

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[41] www.nifc.gov/nicc/mobguide/

[42] Information for this section came largely from www.parks.ca.gov.

[43] http://en.wikipedia.org/wiki/Santa_Monica_Mountains_National_Recreation_Area

[44] Craig Sap, Public Safety Superintendent-Angeles District, California Department of Parks and Recreation, personal communication, June 23, 2010.

[45] http://smmc.ca.gov/objectives.html

[46] http://smmc.ca.gov/ROV Master Plan.pdf

[47] Rorie Skei, Deputy Director, Santa Monica Mountains Conservancy, personal communication, February 2010.

The SMMC and MRCA are jointly proposing campgrounds in the Planning Area, which generated major concern amongst local residents at the CWPP community meetings in 2009-10. According to the proposed plans, SMMC will not allow campfires or barbeques of any kind, nor smoking in the proposed campgrounds.[48] All campsites will be closed during Red Flag[49] conditions. More information on the campgrounds, the proposed management actions, and environmental documentation can be found at the Mountains Recreation and Conservation Authority's website.[50]

FIGURE 6-5. SMMC AND MRCA EXISTING FUEL-REDUCTION PROJECTS IN THE SANTA MONICA MOUNTAINS

PROJECT AREA	PROJECT NAME	METHOD OF TREATMENT
Ramirez Canyon Park	Hazard tree removal or pruning; maintain defensible space	Mechanical
King Gillette Ranch	Hazard tree removal or pruning; maintain defensible space	Mechanical
Upper Las Virgenes Canyon Open Space Preserve	Hazard tree removal or pruning; maintain defensible space; exotic weed treatment	Mechanical, Pre-Post Emergents
Other Agency-Owned or Managed Lands	Defensible Space	Mechanical, Pre-Post Emergents

University of California Natural Reserve System

The University of California Natural Reserve System (UCNRS) is the largest and most diverse system of university-administered natural reserves in the world, managing 35 wildland sites in the state, together encompassing about 130,000 acres.[51]

Located in the Cold Creek watershed, the Stunt Ranch Santa Monica Mountains Reserve is a 310-acre reserve administered by the University of California, Los Angeles Campus of the Natural Reserve System.[52] Stunt Ranch officially joined the UCNRS in November 1995, becoming the system's 32nd site and the only one administered by the Los Angeles campus. After the 1993 Old Topanga Fire burned more than 17,000 acres of this region, the reserve is reopen and is being used for research and education.[53]

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[48] Coastal Commission, City of Malibu LCP Override, LCPA 1-08 Revised Finding, October 7, 2009.

[49] See Chapter 4 for more information on Red Flag conditions.

[50] http://mrca.ca.gov/pwp4.html

[51] http://en.wikipedia.org/wiki/University_of_California_Natural_Reserve_System

[52] http://stuntranch.ucnrs.org

[53] http://nrs.ucop.edu/Reserves/stunt/Stunt1.html

6.3.3. Nonprofit Agency Lands

Mountains Restoration Trust

The Mountains Restoration Trust (MRT) is a nonprofit land trust "dedicated to preserving natural land in the Santa Monica Mountains through restoration, education and land acquisition."[54] MRT has acquired more than 6,000 acres throughout the SMM. In 1992, MRT and the California State Parks began the Commemorative Oaks program in Malibu Creek State Park, removing non-native vegetation and planting more than 2,500 oak trees. MRT has also completed numerous restoration projects and has partnered with state and local government agencies in environmental management.

Nature Trust of the Santa Monica Mountains

The Nature Trust of the Santa Monica Mountains is a nonprofit land trust dedicated to preserving and protecting environmentally significant areas within the Santa Monica Mountains. Its property is located in the western part of the City of Malibu, at the Malibu Riding and Tennis Club and Guest Ranch. Originally 280 acres, this property was first acquired by the Mountains Restoration Trust in 1997. It was subsequently transferred to the Nature Trust of the Santa Monica Mountains. In 2000, the Nature Trust transferred 180 acres of this land to Leo Carillo State Park. In addition to land stewardship, the Nature Trust partakes in habitat conservation, nature-based education, outdoor recreation, and wildland-urban interface research.[55]

6.3.4. County Lands

The CWPP Planning Area spans two counties, though very little property within the Planning Area is actually managed by those counties. Los Angeles County controls tax default properties and some parkland, although it contracts with local municipalities or other entities to manage those areas. Ventura County manages or has easements on small pockets of land in the Planning Area, mostly dedicated to cell phone tower sites or watershed protection. More important than property ownership/management are the policies in the counties' General Plans. These provide development and management guidelines for the unincorporated lands, and are described in Section 6.4 below.

6.3.5. Municipal Lands

City of Malibu

The City of Malibu, incorporated in 1991, encompasses 25 miles of coastline in Los Angeles County from the Ventura County line to Topanga Canyon Road. It encompasses the entire southern, or coastal, side of the Planning Area. The city extends approximately 2 miles inland and contains some slopes and coastal terraces of the SMMs. According to the 2000 Census, the city had a population of 12,575 people. The City of Malibu Parks and Recreation Department operates the 532-acre Charmlee Wilderness Park. In June 2003

[54] www.mountainstrust.org/about/mission.html

[55] www.naturetrust.net

the park was rededicated and ownership transferred from Los Angeles County to the City of Malibu, making it the largest park owned by the city. It manages numerous smaller parks and recreation centers.

The city itself is an urban area containing commercial, residential, and recreational land uses. The residential areas are typically clustered lots of approximately 10,000 square feet to an acre in size, with mid-sized parcels between 2 and 10 acres. There are large parcels, greater than 20 acres, on the coastal slopes throughout the city, reaching up to 300 acres in western Malibu.[56]

City of Calabasas

The City of Calabasas is located on the eastern boundary of the Planning Area.[57] The city covers approximately 13 square miles and had a 2009 population of 23,375 people.[58] The city contains 8,615 housing units, the majority of which are single-family homes. The residents have consistently identified the scenic character and environmental quality as high priorities for preservation, and the city has a number of zoning regulations designed to protect natural resource areas, restrict development, and maintain open character.[59] The city owns and manages 56.6 acres of parkland inside the city limits. It also manages around 300 acres of open space. There are approximately 3,000 acres of permanently protected open space within the city limits. SMMC, MRCA, the Las Virgenes Municipal Water District, and Mountains Restoration Trust manage these lands, along with a number of homeowner's associations that protect open space through deed restrictions and other vehicles.

6.3.6. Other Local Lands

Mountains Recreation and Conservation Authority[60]

In 1985 the Santa Monica Mountains Conservancy formed a joint powers entity partnership with the Conejo Recreation and Park District and two years later with the Rancho Simi Recreation and Park District. These agreements created the Mountains Recreation and Conservation Authority (MRCA), a local public agency established pursuant to the Joint Exercise of Powers Act.[61]

The MRCA provides ranger services, fire protection, planning, and natural resources expertise, along with educational programs for more than 50,000 acres of public lands and parks administered by it and/or SMMC.[62] The Operations Division is responsible for ensuring that all agency and agency-controlled parkland is well maintained

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[56] City of Malibu (2002), City of Malibu Local Coastal Program Land Use Plan, pp. 5–6.

[57] www.cityofcalabasas.com

[58] www.cityofcalabasas.com/stats.html

[59] Calabasas Parks and Recreation Master Plan, www.cityofcalabasas.com/pdf/Parks-Master-Plan/02-Sect%202%20Community%20Profile.pdf.

[60] Much of the information for this section came from www.mrca.ca.gov.

[61] Section 6500 et seq. of the Government Code

[62] www.preserveopenspace.org/backgrounder.html

and safe for public use. In addition, the Operations Division provides a wide variety of contract services, including loaning personnel and equipment resources during wildfires to several land management agencies *(see "MRCA" in 6.1.3, above).* These agencies include the County of Los Angeles, the Puente Hills Landfill Native Habitat Preservation Authority, the National Park Service, the State Coastal Conservancy, the Santa Clarita Watershed Recreation and Conservation Authority, and the Eastern Ventura County Conservation Authority.

MRCA's fire prevention activities include fuel reduction to protect structures on its properties, and the housing of a remote automated weather service station for the LACFD at Ed Edelman Park in Topanga Canyon.[63] MRCA provides helicopter landing zones on its property for Ventura County Fire Department, LACFD, and Los Angeles City Fire Department.

SMMC and the MRCA have ongoing fuel-reduction projects in Ramirez Canyon Park and King Gillette Ranch, among other locations. These projects include selective hazard tree removal and pruning; annual assessments of fuel loads; and fuel-reduction/defensible space activities around park buildings. The MRCA does not do prescribed burning or large-scale fuel-management projects on their property; rather it is focused on resource protection and exotic species removal.[64] *See Figure 6-5 above for MRCA fuel-reduction projects.*

Conejo Open Space Conservation Agency

The Conejo Open Space Conservation Agency (COSCA) was established in 1977 by a joint powers agreement between the City of Thousand Oaks and the Conejo Recreation and Park District. This agency currently owns or manages 869 acres of open space in the Planning Area, and 15,000 acres in total.[65]

Las Virgenes Municipal Water District

Las Virgenes Municipal Water District (LVMWD) provides potable water, wastewater treatment, recycled water service, and compost production from *biosolids*.[66] The District has infrastructure to and serves the communities of Agoura Hills, Calabasas, Hidden Hills, Westlake Village, and the unincorporated areas of western Los Angeles County. The LVMWD owns approximately 775 acres of land inside the Planning Area. Approximately 360 acres surround the Las Virgenes Reservoir, while the rest of their holdings are located at their headquarters on Las Virgenes Road and scattered parcels throughout the service area. Maintaining water quality in these reservoirs following wildfires has been difficult for local water management agencies in the past; controlling the land immediately around the reservoir is essential for the LVMWD to maintain water quality in its service area.[67]

6.4. Community Planning Context

Integrating this CWPP planning effort with existing municipal and agency plans is important for the long-term success of wildfire prevention in the Santa Monica Mountains. Land management in the area is complex, with different management entities and jurisdictions operating in close proximity to each other.

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[63] http://smmc.ca.gov/fire-prevention.html

[64] Rorie Skei, Deputy Director, Santa Monica Mountains Conservancy, personal communication, April 8, 2010.

[65] www.cosf.org/website/pdf/COSCA%20Open%20Space%20by%20Name.pdf

[66] www.lvmwd.com

[67] www.lvmwd.com

Wildfires are especially complex to manage due to the cross-jurisdictional nature of the events and the urgency of response efforts. As discussed in section 6.2 above, a number of Mutual Aid agreements and service contracts are in place between the counties, cities, state and federal agencies, and some of the nonprofit groups in the region.

Wildfire prevention is even more complex across these various boundaries. The Santa Monica Mountains Fire Safe Alliance *(see section 6.5 below)* is moving in the direction of integrating wildfire planning and prevention in the area.

Source: NPS / SMMNRA

Land use in unincorporated Los Angeles County within the CWPP Planning Area is governed by both the 2000 Santa Monica Mountains North Area Plan (NAP) and the 1986 Malibu Local Coastal Program Land Use Plan (LCP). The LCP applies to the Los Angeles County lands in the coastal area surrounding (but not including) the City of Malibu. These documents are part of the Los Angeles County General Plan and provide focused policies for these areas. Land-use policies for the City of Malibu are provided in their own Local Coastal Program Land Use Plan of the same name, adopted in 2002 and discussed below in section 6.4.8. The NAP provides guidance for all other Los Angeles County lands in the Planning Area.

The sections below provide relevant information and policies culled from various planning documents of local governments and land-use agencies.

6.4.1. Los Angeles County: Malibu Local Coastal Program Land Use Plan (1986)[68]

The 1976 California Coastal Act (CCA) codified a distinct set of policies governing coastal areas statewide. The Act established a permit process and an inland boundary line for the designated Coastal Zone,[69] and delegated the enforcement and policy authority to local governments through the adoption and certification of Local Coastal Programs (LCPs).

The LCPs contain the local government's land-use policies, zoning ordinances, and district maps, which must be detailed enough to guide the type, location, and intensity of land use in the Coastal Zone. The LCPs must be certified by the Coastal Commission as conforming with and meeting the goals of the CCA.

A large amount of the 1986 Malibu LCP is focused on providing or improving access to the beaches in the greater Malibu area. The CCA was enacted partly as a response to new developments removing access to the beaches and affecting quality of life in coastal areas. The relevant sections with policies pertinent to fire safety or environmental protection are listed below.

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[68] Malibu Local Coastal Program, 1986 http://planning.lacounty.gov/view/malibu_local_coastal_plan/

[69] California's Coastal Zone generally extends 1,000 yards inland from the mean high-tide line. In significant coastal estuarine habitat and recreational areas it extends inland to the first major ridgeline, or 5 miles from the mean high-tide line, whichever is less. In developed urban areas, the boundary is generally less than 1,000 yards. These land and water area boundaries were established by the State Legislature as defined in Coastal Act Section 30103. Almost all of the CWPP Planning Area falls into the category of significant habitat and recreational area, so the Coastal Zone therefore extends up to 5 miles inland (or to the ridgeline) because of the many sensitive resources and riparian areas.

Section 4.2. Marine and Land Resource Protection

This section of the 1986 Malibu Local Coastal Program Land Use Plan contains a number of policies designating specific resources of concern to Los Angeles County. These include *Environmentally Sensitive Habitat Areas (ESHAs)* designated on the Sensitive Environmental Resources Map and any undesignated areas that meet these criteria and are identified through a *biotic* review process. Such undesignated areas include oak woodlands or other areas identified by the California Department of Fish and Game.

Habitat areas that can no longer support a significant number of species normally associated with healthy habitat "shall be designated as 'Disturbed Sensitive Resources'." This is juxtaposed against specific areas that were identified as relatively undisturbed and providing important contributions to the integrity of local woodlands, including: Arroyo Sequit, Zuma Canyon, Solstice Canyon, Corral Canyon, Malibu Canyon, Cold Creek Canyon, and Tuna Canyon.

Many of the policies in this section are designed to minimize impacts from proposed developments to these sensitive areas. One policy states that any project "which cannot mitigate significant adverse impacts as defined by the California Environmental Quality Act on sensitive environmental resources shall be denied."[70]

In addition, "ESHAs shall be protected against significant disruption of habitat values," and only uses that are dependent on those resources will be allowed in those areas. Residential use is not considered a resource-dependent use and thus is inappropriate for these areas.

Within the Malibu Local Coastal Program Land Use Plan document, Los Angeles County required that buildings be clustered to minimize impacts unless it could be demonstrated that other mitigation methods would be more effective. Furthermore, open space or conservation easements could be required to protect undisturbed watershed cover and riparian vegetation from the proposed development.

Most relevant to fire protection are two policies (Policies 74 and 75) requiring that new developments be placed as close to existing roadways and services as possible to minimize the effects on sensitive resources, and that development adjacent to parks should be sited to allow enough room for fire preventative fuels management, respectively.

The majority of the LCP policies are focused on erosion control, riparian impacts, and preventing impacts to ESHAs. There are scattered policies, such as those discussed above, which address or are related to fire protection. One such policy (Policy 84) requires that "landscape plans shall balance long-term stability and minimization of fuel load." The policy suggests a combination of taller and deep-rooted plants with low-growing ground cover to reduce heat output, and requires that native plant species be used, "consistent with fire safety requirements."

Section 4.2.4. Hazards

The LCP contains a hazards section that covers geologic, flood, fire, and bluff and beach erosion. The first section provides policies regarding Public Notice and Waivers of Public Liability. There is some general language relevant to fire hazard specifying public policy on hazards. Policy 144 requires the County to provide hazard information and means to minimize the harmful effects of natural disaster to residents and private property.

The fire hazard section contains eight specific policies:

- Policy (P) 156: Continue to evaluate all new developments for impacts on, and from, fire hazard.

[70] Malibu Local Coastal Program Land Use Plan, 1986.

- P157: Continue to present requirements for fire-retardant roofing in fire hazardous areas (Fire Zone 4[71]).
- P158: Continue to enforce code requirements for clearance or reduction of flammable vegetation for a minimum distance of 100 feet around any residential structure in a fire hazard area (Fire Zone 4). Encourage use in landscaping of fire-retardant plant species.
- P159: Continue to present requirements on all new development for emergency vehicle access and fire-flow water supply, as determined by the Forester and Fire Warden, until such time as alternative mitigation measures providing an equivalent degree of safety are developed and implemented.
- P160: Require residential structures in fire hazard areas to utilize fire-resistant building materials and designs (i.e., one-hour fire-resistant walls and enclosed eaves, double-pane windows, and improved vent requirements).
- P161: Based on recommendations of Forester and Fire Warden, adopt a program for management of combustible vegetative materials (controlled burns) in fire-hazardous materials.
- P162: Encourage the establishment of a closure policy for public recreation areas during periods of extreme fire hazard.

6.4.2. Los Angeles County: Santa Monica Mountains North Area Plan[72]

The Santa Monica Mountains North Area Plan (NAP), adopted in 2000, is a component of the Los Angeles County General Plan. It is used to focus policy in the unincorporated areas of the county west of the city of Los Angeles and north of the Coastal Zone boundary.[73] This covers all of the CWPP Planning Area in unincorporated Los Angeles County. There are two components of this plan with policies pertinent to wildfire planning. These are the Conservation and Open Space Element, and the Safety Element.

Conservation and Open Space Element

The guiding principle for managing natural resources in this portion of the Santa Monica Mountains, as stated in the NAP Conservation and Open Space Element, is that "resource protection has priority over development." This is in recognition of the irreplaceable resource that the Santa Monica Mountains provide to the residents of the area, state, and nation. The benefits derived from the SMM in its immediate area, in terms of recreational, scenic, and educational opportunities as well as wildlife habitat benefits, are dependent on maintaining the area's natural setting and wild nature.

In order to preserve the open space and biological functions of the area, a number of policies and programs have been put into place. These include Natural Resource Areas, Cultural Resource Areas, Significant Watersheds, and the Significant Ecological Areas (SEAs) program. The latter identified areas throughout the county that contain unique, rare, or endangered species, and examples of rare or declining habitats.[74] There are several SEAs in the Santa Monica Mountains area:

- SEA No. 3A (Buffer) – Zuma Canyon
- SEA No. 3B (Buffer) – Zuma Canyon
- SEA No. 4 – Upper La Sierra Canyon
- SEA No. 6 – Las Virgenes
- SEA No. 12 – Palo Comado Canyon

[71] Fire Zone 4 refers to areas classified by CAL FIRE as Very High Fire Hazard Severity Zones.

[72] Santa Monica Mountains North Area Plan, 2000, http://planning.lacounty.gov/view/santa_monica_mountains_north_area_plan/.

[73] Santa Monica Mountains North Area Plan, p. I-1.

[74] http://planning.lacounty.gov/assets/upl/project/gp_web-ch06.pdf

Because the value of the biological areas does not stop at the rather arbitrary SEA boundary, the NAP recognizes the importance of buffering these places from development. Protecting the surrounding lands and using them as development buffers helps to protect the SEAs from effects of runoff, erosion, grading, and vegetation clearing.

The Biological Resources Goals and Policies section contains one goal and eight supporting policies. The goal is: "An environment that retains significant animal and plant communities in an undisturbed condition and provides the highest possible protection for Significant Ecological Areas."

The first policy places "primary emphasis on the preservation of large unbroken blocks of natural open space and wildlife habitat areas" as well as protects the linkages and corridors between such areas. The policy supports purchasing open-space lands for preservation purposes, clustering new developments to preserve the maximum amount of open space and reduce the need for vegetation clearing, and having new developments meet high environmental sensitivity standards.

Other pertinent language requires that development designs provide adequate space to buffer habitat areas from development impacts (such as grading-induced erosion and runoff), prevent the use of non-native or invasive species for landscaping, and allow for fee-title acquisition of property for open-space dedications by a public agency wherever possible to ensure long-term preservation.

The Open Space section of the element provides policy guiding the management of the more than 5,000 acres of permanently protected public open space in the region of the North Area Plan. This is approximately one-fourth of the land area in the NAP jurisdiction, and it is managed by the National Park Service and the State of California.

Preserving open space is a recognized land management tool for protecting significant environmental resources, protecting public health and safety, managing the production of resources, and providing public recreation. Fire safety and prevention is clearly within the realm of public health and safety. The plan states that since fires occur in the SMM, certain areas in the mountains are best left in their natural condition, protected from development.

The first policy in the Open Space section requires that areas set aside for open space have clearly defined open-space functions, and that management of such areas be consistent with the stated function. Subsequent policies also require that open-space corridors physically link open space and habitat areas to populated human areas and other open-space resources.

Safety Element

The Safety Element of the NAP takes the approach that "it is more prudent to avoid environmental hazards than to attempt to overcome them," and that only the most unavoidable risks should be tolerated.[75] The NAP states that "the entire jurisdiction of the North Area Plan and surrounding communities are susceptible to varying degrees of urban and/or wildland fire hazards." In order to lessen the risk of fire damage to human developments, the following goals and policies were adopted:

- Goal V-3: A built environment designed to minimize the potential for loss of life, physical injury, property damage, economic loss, and social dislocation due to wildland fires.
- **Policy V-8: Promote fire prevention as the region's preferred management strategy and facilitate programs aimed at the prevention of fires; where fire safety is compromised by vegetation growth, vegetation management (selective plant clearance and use of low-combustion plant materials) shall be emphasized over complete clearance.**

[75] Santa Monica Mountains North Area Plan, Safety Element.

- Policy V-9: Promote the connection of fire and unpaved private roads to other local roads, to be used as escape routes in the event of fire.
- Policy V-10: In fire-hazardous areas with significant biological resources, place a higher priority on avoiding development than on designing mitigation measures that would require intrusive fuelbreaks and fuel-modification areas to protect new development.
- Policy V-11: Minimize potential biological impacts of fuel-modification activities by limiting modification areas to those necessary to protect existing development, whenever feasible, and by emphasizing the planting of fire-resistant vegetation that is compatible with the area's natural vegetative habitats, rather than the use of open fuelbreaks.
- Policy V-12: Require that new development within areas subject to wildland fires be designed and sited in a manner that minimizes the threat of loss from wildland fires (located low on slopes, or set well back from tops of slopes) while avoiding the need for massive vegetation clearance; such designs should facilitate access by fire-fighting equipment and provide adequate evacuation routes for residents. Improvements shall be set back from public lands where possible—particularly where required vegetation clearance may affect the public lands. However, massive vegetation clearance should be avoided where safety is not an issue in order to protect the area's natural environment.
- Policy V-13: Prohibit development in areas with insufficient water pressure, fire flows, or other accepted means for adequate fire protection unless such safety measures can be reliably provided.
- Policy V-14: Encourage, where appropriate, "prescribed burn" programs and special planting and maintenance programs to reduce potential fire hazards in hillside and wilderness areas.
- Policy V-15: Maintain, where feasible, alternative water resources for fire-fighting purposes during a disaster.
- Policy V-16: Require that structures within rural areas be located along a paved, all-weather, and publicly accessible road in a manner that avoids the need for firefighters to move equipment onto private properties without adequate turnaround space. If a structure cannot feasibly be sited in this manner, require that interior fire sprinklers be installed.

6.4.3. Ventura County General Plan[76]

General Plan Goals, Policies, and Programs

The Ventura County General Plan was last amended and approved on December 16, 2008. The document contains goals, policies, and programs for Resources, Hazards, Land Use, and Public Facilities and Services. The following is a review of relevant sections from the document.

Hazards

The Hazards chapter focuses on general "…goals, policies, and programs relating to known existing and potential hazards, and other significant physical constraints to development/land use." There is specific language regarding a variety of natural and man-made hazards. Those specifically related to fire hazards, vegetation management, or natural hazards in terms of fire safety are included here.

Goals, Policies, and Programs

The goals are to: identify all major hazards and other physical constraints to development in Ventura County; protect public health, safety, and welfare; shield public and private property and essential facilities; minimize loss of life, injury, and damage to structures, as well as economic and social dislocations resulting from identified hazards and potential disasters.

The policies require that applicants for land-use and development permits must show how identified hazards may affect or be affected by their proposed project, and proposed mitigation. Additionally, all essential facilities, special

[76] Ventura County General Plan, www.ventura.org/rma/planning/General_Plan/general_plan.html.

occupancy structures, and hazardous materials storage facilities shall be designed to resist natural hazards. Finally, the County [Ventura] will develop and maintain cooperative response plans and mutual training and aid agreements with other public agencies.

There are a number of programs in the Safety Element; Programs 1, 5, 6, and 9 are most pertinent. These policies require that: the County Planning Division and the Public Works Agency periodically review and update the Hazards Appendix; that the Sheriff's Department Office of Emergency Services (OES) will maintain and periodically update the Ventura County Multihazard Functional Plan, including mitigation measures and preparedness, response, and recovery strategies for 12 contingency areas, including fire; all agencies involved with warning and evacuation activities should review and update their plans and procedures; and the Planning and Resource Management divisions maintain an updated GIS of county hazards.

Fire Hazards

This section of the Goals, Policies, and Programs document is focused on fire hazards in Ventura County. These include wildland, structural, chemical, petroleum, electrical, vehicle, and other human-caused material fires. The Fire Chapter, however, is focused on the rural and/or wildland areas of the county. According to the Ventura County General Plan, the following parts of the CWPP Planning Area are of particular concern due to the length of time since the last fire, the build-up of flammable brush and other vegetation, and inaccessibility: Yerba Buena Road–Carlisle Canyon Area, Lake Sherwood area, and the Santa Monica Mountains in general.

The goals, policies, and programs that apply to fire hazard are included below.

Goals, Policies, and Programs

Goals are to minimize the risk of loss of life, injury, damage to structures, and economic and social dislocations resulting from fire hazards, and to ensure that development in high fire-hazard areas is designed and constructed to minimize fire-hazard risk.

Four policies specifically target fire safety and risk reduction. They mandate that all projects requiring discretionary permits shall provide adequate water supply and access for fire protection and evacuation. In addition, these projects must include hazard-reduction measures in the project design, including fire-resistant vegetation and cleared firebreaks, or provide a long-term comprehensive fuel-management program. The policies state that new residential subdivisions will have no less than two means of access for emergency vehicles and resident evacuation, unless the proposed road conforms to the County Road Standards, and the County Fire Chief approves the road. Finally, all new subdivisions, multi-unit residential complexes, and commercial and industrial complexes must show that adequate fire protection is available, or will be available prior to occupancy.

Other Ventura County programs include a coordinated street-naming procedure with VCFD, the Public Works Agency, and cities. The Sheriff's Department Office of Emergency Services and VCFD maintain the County Multi-hazard Functional Plan's Wildland Fire Contingency section. The County Office of Emergency Services provides public information on emergency response notification, evacuation, and sheltering due to fire.

Land Use

The Land Use Chapter of the General Plan provides Ventura County policies related to land use, the establishment of zoning, and subdivision regulations. It also establishes the distribution of specific land uses and allowable densities throughout the county. While the majority of these policies are focused on "…promoting orderly growth and development," there are some targeted at maintaining healthy environments and preventing encroachment on hazardous areas. Those are summarized here.

Goals and Policies

The first two goals, while focused on preventing uncontrolled growth in Ventura County, emphasize two important criteria when considering the placement of new development. The first Land Use goal acknowledges that new development should be steered "away from hazardous areas," which implies high fire-hazard areas. The second goal seeks to prevent "step-out development," which can stretch the ability of firefighters and emergency personnel to adequately serve residents.

Most of the policies in this section do not apply directly to this CWPP. However, Policy 2 is focused on ensuring consistent zoning where discrepancies or uncertainties exist, and it utilizes the presence of natural hazards as part of the criteria for resolving those uncertainties. There is recognition that significant natural resources and hazards and the provision of adequate public services can affect zoning and development decisions at the county level.

Land-Use Designations

The Ventura County General Plan uses six basic land-use designations: Urban, Existing Community, Rural, Agricultural, Open Space, and State and Federal Facilities. In terms of fire hazard, the Rural, Agricultural, and Open Space designations are most likely applied to the areas representing the highest risk of wildfire.

This section contains goals specific to each land-use designation in the Ventura County General Plan. There are few goals related to hazards or fire safety. However, the county has a policy that new rural residential areas should avoid hazards and provide adequate public services. Similarly, the policy states that open-space areas should be used to site development away from hazardous features to protect public safety.

There is no language in the policy section related directly to hazard abatement or fire protection. However, the policies acknowledge that not all land is suitable or appropriate for rural residential development.

Public Facilities and Services

This chapter of the General Plan is intended to ensure that all residents of Ventura County receive adequate public services relative to public health, safety, and welfare. The county is responsible for providing such services to the unincorporated areas, including fire and emergency services. Many of the General Goals and Policies are directed to that task. Those policies have not been included here in the interest of limiting redundancy. Below is a summary of the introduction to section 4.8, and a list of Goals, Policies, and Programs specific to fire safety and service.

Fire Protection Goals, Policies, and Programs

The Ventura County Fire Department provides "fire prevention, fire education, fire suppression, and rescue services" to the unincorporated areas of the county and eight cities. The Fire Protection District (a.k.a. VCFD) is responsible for enforcing the Uniform Fire Code, inspecting "buildings, schools, and homes," and also sponsors fire prevention programs in the "schools, service clubs, and other organizations."

The County's goal is to reduce the loss of life and property by providing effective fire prevention, suppression, rescue services, and facilities. To do this, development will only be permitted if adequate water supply, access, and response time for fire protection can be made available. Fire stations will be centrally located to minimize response time, and VCFD's Bureau of Fire Prevention will continue to review all new development to ensure that an adequate level of fire protection can be provided. VCFD will continue to retain Mutual Aid agreements with all adjacent cities and counties, military installations, and other appropriate federal agencies, and to be a partner in the California Master Mutual Aid system.

Lake Sherwood/Hidden Valley Area Plan[77]

The Lake Sherwood/ Hidden Valley Area Plan is an integral part of the Ventura County General Plan that provides focused development guidelines for these communities. The Area Plan covers approximately 8,252 acres in the Lake Sherwood basin and was first adopted on July 14, 1987. The document is required to present policies consistent with the Ventura County General Plan under California law. It states that the Planning Division of Ventura County will coordinate with the National Park Service and the Santa Monica Mountains Conservancy to ensure that future amendments to their plans are consistent with the Area Plan.[78]

The Plan contains four major sections – Land Use, Resources, Hazards and Constraints, and Public Facilities and Services. Of these, the subsections concerning biological resources and fire hazards are most relevant. They have policies regarding the removal of hazardous fuels, the inclusion of drought-tolerant and fire-resistant landscaping, the provision of emergency vehicle access to developments, and guidelines for adequate water for fire flow. All policies are subservient to the Ventura County Fire Ordinance, discussed in Chapter 4 of this CWPP.

The Biological Resources section gives policies on protected tree species (such as oaks), mitigation requirements if protected trees are removed, and makes provisions for wildlife corridors in the plan area. Most pertinent to fire safety are Policies 3, 4, and 6, which are applicable to the entire area of the plan and focused on brush removal, fuel modification, and landscaping. Policy 2 states that "brush clearing" must be limited to 2 acres or less per lot, unless more is required by the Fire Protection Ordinance; Policy 4 says that the required fuel modification zones be replanted with fire-retardant native plants. This dovetails into Policy 6, which requires that all landscape plans use non-invasive, fire-resistant native species "to the maximum extent feasible".[79] These policies not only protect the developed areas from wildfire, but help to prevent fires from spreading out of urban areas into wildlands.

The Fire Hazards section is entirely applicable to the CWPP, as the policies are focused on both urban and wildland fire protection and prevention. The fire-related goals of the plan are to: protect the public and minimize public and private losses due to fire; ensure that development in "High Fire Hazard" areas provides adequate protection of life and property; and support controlled burn programs and other fire-prevention measures.

The policies of the Fire Hazard section all support and provide authority to VCFD. As previously discussed, the Area Plan is subservient to the countywide Fire Ordinance, which provides for defensible space areas around buildings and other specific information. These Fire Hazard policies are only pertinent to the Lake Sherwood Community and the Hidden Valley area, and take precedence over the Biological Resources policies where any conflict may occur.

The section gives the VCFD the authority to require adequate water and access for fire-fighting purposes in development permit applications, and directs all residences in High Fire Hazard Areas to have non-combustible roofs and exterior siding. These residences must also landscape with fire-retardant plants and maintain defensible space areas as required by other fire policies. The policies have strict requirements on cul-de-sac lengths, emergency vehicle access, fuel-modification programs in the immediate vicinity of residential buildings, and overall conformance to VCFD standards.

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[77] Ventura County General Plan – Lake Sherwood/Hidden Valley Area Plan (4-6-10 edition), www.ventura.org/rma/planning/pdf/plans/Lk._Sherwood_Hidden_Vly_Area_Plan_4-6-10.pdf.

[78] Ventura County General Plan – Lake Sherwood/Hidden Valley Area Plan.

[79] Ventura County General Plan – Lake Sherwood/Hidden Valley Area Plan.

Ventura County Coastal Area Plan[80]

The Ventura County Coastal Area Plan applies to the coastline and adjacent settlements located within Ventura County, including the western portion of the Santa Monica Mountains within the Coastal Zone. The policies for the SMM are focused on preserving the unique and rare habitats that occur in the area, and protecting other valuable natural resources. Similar to the Los Angeles County LCP and Malibu LCP, and in line with the State Coastal Act, within Environmentally Sensitive Habitat Areas (ESHA) or their buffer areas (100 feet from the boundary of an ESHA), only the following uses are permitted: a) nature study; b) developments where the primary function is habitat enhancement or restoration; c) shoreline protective devices; d) passive recreational uses not involving structures; e) uses dependent on habitat values such as aquaculture and scientific research; and f) Public Works facilities in accordance with Section 8175-5.9 of the Coastal Zoning Ordinance. The Coastal Zone portion of the Santa Monica Mountains in Ventura County has been designated as the "M" overlay zone to recognize that the Mountains are a coastal resource of statewide and national significance. The Mountains contain ESHA, but these areas have not been identified or mapped, and therefore development, including vegetation removal and grading, require case-by-case consideration in order to identify and ensure protection of ESHA. Because the "M" overlay zone is considered to be a sensitive area, even minor developments (e.g., fences and walls 6 feet in height or less, grading less than 50 cubic yards, vegetation removal on less than one-half acre of land, structures under 400 square feet) require a discretionary permit and review of potential environmental impacts.[81]

The document directs that all new development should preserve unique native vegetation, which could potentially conflict with the need to create reduced fuel zones around new development.[82] However, the overriding goal of the Coastal Area Plan as it pertains to the SMM in Ventura County is to preserve and protect the unique habitats that the Mountains provide. It states that ensuring that communities are protected from wildfire, and that the natural environment is protected from urban fires, will help to protect both the environment and the residents of the SMM.

6.4.4. Los Angeles County All Hazard Mitigation Plan[83]

The Los Angeles County All Hazard Mitigation Plan is a massive document covering all aspects of county governance related to hazards. It contains population estimates and analysis, as well as descriptions of the different county departments and their responsibilities during emergency situations. A breakdown of the emergency response assets such as personnel, vehicle types and amounts, areas of responsibility, and other pertinent information is included. Due to the length and depth of the document, only discussions and policies specifically focused on wildfire and WUI issues are summarized here. For more information on Los Angeles County's Hazard Mitigation programs, please see: http://lacoa.org/hazmit.htm.

Hazard Vulnerability Analysis, Natural Hazards

This section of the Hazard Mitigation Plan provides an analysis of Los Angeles County's vulnerability to a variety of natural hazards, including seismic, wildland-urban interface fire (WUI), flood, drought, landslide, severe weather, tsunami, a rise in groundwater, volcano, and tornado.

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[80] Ventura County General Plan – Coastal Area Plan (9-16-08), www.ventura.org/rma/planning/Programs/local.html.

[81] Christine Danko, Staff Biologist, Ventura County Planning Division, personal communication, June 21, 2010.

[82] Ventura County General Plan – Coastal Area Plan.

[83] http://lacoa.org/hazmit.htm

The Wildland-Urban Interface Fire section is detailed, discussing a wide variety of issues ranging from land-use planning to smoke hazards to the hazards of clean-up following a wildfire. The breadth and coverage of this section illustrate the importance of the issue to Los Angeles County.

Because of the expanding wildland-urban interface, not only are homes now more at risk from wildfire, but the wildlands themselves are more at risk from spreading structure fires. **In order to more effectively prepare for wildfire, the hazard plan suggests a number of land-use strategies to reduce the risk of fire to both wildlands and homes. These include fire-resistant construction standards and hazard reduction near structures (defensible space).**

The Hazard Mitigation Plan discusses the characteristics and effects of wildfire smoke on the public, especially residents with increased sensitivities such as age, cardiovascular disease, or respiratory problems. These health issues are yet another reason to engage in fire planning to reduce the extent and severity of wildfire where possible.

Los Angeles County Fire Plan (or Pre-Fire Management Plan)[84]

The Los Angeles County Fire Plan is part of the All Hazard Mitigation Plan focused on creating a planning and operational framework for state, federal, and local officials, and the public. The goals of the fire plan are:

- Allow the County of Los Angeles Fire Department to create a more efficient fire protection system focused on meaningful solutions for identified problem areas.
- Give citizens an opportunity to identify public and private assets and to design and carry out projects to protect those assets.
- Identify, before fires start, where cost-effective pre-fire management investments can be made to reduce taxpayer cost and citizen losses from wildfire.
- Encourage an integrated intergovernmental approach to reducing cost and losses.
- Enable policy makers and the public to focus on what can be done to reduce future cost and losses from wildfire.

Source: NPS / SMMNRA

The Fire Plan also provides an outline of Los Angeles County's Wildfire Protection Strategy. This is an eight-point strategy founded on prevention, vegetation management, agency cooperation, and stakeholder involvement. The programs that make up the strategy are summarized below. For a full discussion, please refer to the Hazard Mitigation Plan.[85]

- Prevention: The County Fire Department is focused on preventing fire using educational programs, developing fire and building codes coupled with enforcement, and focusing in high-priority areas such as Very High Fire Hazard Severity Zones. The efforts are coordinated by the department's Fire Plan Unit.
- Vegetation Management: The Vegetation Management Program is a cost-sharing program that addresses wildland fire fuel hazards and other resource management issues on State Responsibility Area and Local Responsibility Area lands and allows private landowners to contract with CAL FIRE to use prescribed fire.

[84] Los Angeles County Fire Plan, http://fire.lacounty.gov/Forestry/PDF/LACoFDPre-FireMgmt.pdf.

[85] http://lacoa.org/hazmit.htm

- Brush Clearance: This program is able to declare a public nuisance where it is deemed that "hazardous vegetation" exists and can require that the vegetation be removed. The intent of the program, managed by the county's Brush Clearance Unit, is to create "defensible space" and enforce "the Fire Code as it relates to brush clearance."
- Fuel Modification: The intent of this program is also to create defensible space by reducing fuel loads adjacent to open-space zones and around the perimeter of subdivisions for new developments. Ornamental vegetation can be replaced with drought-tolerant, low-fuel-volume plants to create fuel-modification zones.
- Environmental Review: The Fire Department works with the Department of Regional Planning to implement existing environmental ordinances. The department also provides recommendations on CEQA[86] documents.
- Passive Protection: Rather than a program, this section describes an approach to fire preparation. It is based on defensible space, fire-resistive landscaping and construction, and good housekeeping.
- Fire Suppression: The goal of the county and its fire-fighting partners is to attempt to control fires at "the incipient stages when intensities are lower and the perimeter is small."
- Stakeholders: The department identifies stakeholders as "any person, agency or organization with a particular interest, a stake in fire safety, and protection of assets from wildfires." Involving stakeholders not only results in a more widely accepted plan, it improves community education and knowledge of fire issues.

The remainder of the Fire Plan provides a summary of assets at risk in Los Angeles County, the current fire situation, fire history of the county and surrounding area, and a glossary of terms and conditions affecting the wildfire environment. The section provides maps showing the location of fuel types, densities, and comparative rankings, and discusses the locations and impacts of severe weather as it relates to wildfire.

The section also discusses the Level of Service (LOS) provided by the department in different parts of the county, describing methods for developing their LOS. In the SMM, the LOS is good in the inland areas, but fires in the coastal areas are prone to escape the firefighters' initial attack due to topography and severe weather.

Perhaps most relevant to the CWPP is the Fire Plan's discussion of Priority Areas. These areas are derived from a WAFL calculator (Weather, Assets at Risk, Fuel, and Level of Service), which takes aggregated scores for individual areas and uses them to target "critical areas and prioritize projects." The weakness of the WAFL system is that it does not account for community dynamics, which are essential to implementing fuel reduction and other fire-safety projects. However, the county does believe that the system, "in conjunction with other intangibles," provides them with a good method of assessing the needs of the different areas in the county, and the likelihood of accomplishing such projects. The WAFL identifies much of the SMM as "High: Top 5%" priority for fire management.

6.4.5. Multi-Jurisdictional Hazard Mitigation Plan for Ventura County[87]

The Ventura County Multi-Jurisdictional Hazard Mitigation Plan (HMP) was developed with "county residents, adjacent jurisdictions, and interested local, state, and federal agencies." The plan was developed in response to the many natural hazards that face Ventura County (floods, landslides, fires, and earthquakes), as well as the requirements of the Federal Disaster Mitigation Act of 2000. The intent of the Act is to "facilitate cooperation between state and local authorities, prompting them to work together to address hazard mitigation planning in a comprehensive manner."

The Ventura County HMP was developed in order to serve the county on a large scale as well as the individual municipalities, and all 34 communities in the county are eligible to receive disaster mitigation and planning funding.

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[86] California Environmental Quality Act

[87] http://portal.countyofventura.org/portal/page/portal/cov/emergencies/mitigation/plan/OES_MHP_03-02-05.pdf, p.5-90-5-96.

It identifies four types of wildfire: those that occur mainly on federal lands, interface fires, firestorms, and prescribed fire. It identifies fire hazard areas consistent with CAL FIRE's Fire Hazard Severity Zones, thus the entire SMM area is Very High. The most relevant action items from the Mitigation Strategy are:

- Objective 1.A. Encourage and facilitate the development or updating of general plans and zoning ordinances to limit development in hazard areas.
  - Action 1.A.4. Establish buffer zones for development near hazard-prone areas.
  - Action 1.A.5. Prohibit development in extreme hazard areas that cannot be adequately mitigated and set aside for open space.
  - Action 1.B.1. Adopt local building codes to address local building issues in hazard areas.
- Objective 3.D. Assure adequate infrastructure is in place for emergencies
  - Action 3.D.1. Promote the establishment and maintenance of safe and effective evacuation routes, ample peak-load water supply, adequate road widths, and safe clearances around buildings.
- Objective 9.A. Develop a comprehensive approach to reducing the possibility of damage and losses due to wildfires.
  - Action 9.A.1. Evaluate the need for an alerting and warning system in the wildland-urban interface and implement a system, if needed.
  - Action 9.A.2. Continue wildfire hazard reduction pilot project that reduces fuels in high-risk areas.
  - Action 9.A.3. Annually conduct fire safety inspections to reduce the risk of wildfire.
  - Action 9.A.4. Evaluate existing emergency resources (e.g. brush trucks, water tenders) and, if necessary, purchase additional resources.
  - Action 9.A.5. Ensure the open space around structures is sufficient to promote fire safety.
  - Action 9.A.6. Ensure the space separating buildings is consistent with fire-safety practices.
- Objective 9.B. Prevent the loss of life in wildland fires.
  - Action 9.B.1. Continue public awareness campaign for current wildfire risks.
  - Action 9.B.2. Ensure that street widths, paving, and grades can accommodate emergency vehicles and fleeing residents.
- Objective 9.C. Prevent the ignition of structures by wildland fires.
  - Action 9.C.1. Incorporate fire-resistant building materials and construction methods in new development adjacent to wildlands.
  - Action 9.C.2. Ensure a defensible fire-fighting space adjacent to wildlands in new developments.
  - Action 9.C.3. Pursue state and Federal funding for the elimination of combustible roofs and siding on existing homes and structures.

6.4.6. Las Virgenes–Malibu Council of Governments Hazard Mitigation Plan[88]

This 2004 Hazard Mitigation Plan (HMP) was the result of a joint effort by the cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village. The five cities signed a Joint Powers Agreement in order to engage in regional planning and coordination. The effort resulted in a five-year action plan, including background on conditions and descriptions of the hazards facing the area. The HMP goals are to protect life, property, and the environment; develop public awareness of hazards facing the area; strengthen existing partnerships and coordinate implementation of the plan; and ensure effective emergency management.

Implementation of the HMP is expected to be carried out by each of the individual cities. The individual governments are able to fulfill the requirements of the HMP by implementing the recommended mitigation measures

[88] Las Virgenes–Malibu Council of Governments Hazard Mitigation Plan (2004), www.cityofcalabasas.com/pdf/documents/Risk/Hazard-Mitigation-Plan-1-3.pdf

through existing city programs. All five cities contract with Los Angeles County Fire Department for fire protection services. The HMP contains a description of each of the cities, their relevant general plans, population information, critical facilities, and general environmental descriptions.

Section 7 of the HMP focuses on wildfire risks in the region. It includes a section on fire history in the area, a description of the fire department assets and the cost of fire suppression, and a discussion of the causes and characteristics of wildfire.

The major wildfire concerns center on the wildland-urban interface areas and the threat of urban conflagrations spreading outward to the wildlands. The document states that the "mountainous areas of southern California are considered to be interface areas" and addresses slope, fuel buildup, unsafe structures and landscaping, and increased development in the wildlands in relation to fire hazard.

The HMP discusses existing mitigation strategies currently in use by the city governments and LACFD. These include: prescribed burning, pre-fire management plans, fuel modification and vegetation management programs, and a "brush clearance" inspection program. Each of these is intended to address fuel buildup and residential safety within the WUI. As stated above, the HMP aims to use existing programs to address the needs identified as part of the planning process.

6.4.7. City of Malibu General Plan[89]

The City of Malibu uses both a City General Plan and a Local Coastal Program Land Use Plan. The California Coastal Commission requires the latter, since the entire city is located in the Coastal Zone. Settlement began in the original areas of the city in the 1920s. As more exclusive residents moved in, residential development expanded into the mountains and canyons to the east.

Generally speaking, the Land Use Element of the General Plan is focused on preserving the community character and scenic vistas commonly associated with the City of Malibu. Policies are in place to prevent "leap-frog" development and construction on ridge lines and visible hillsides, and to require new developments to design landscaping and structures to blend in with the surrounding landscape. Open Space dedications from developments and guidelines on clustering new structures are included. These are balanced with recreational guidelines intended to limit visitor parking in residential areas, and prevent recreational uses from impairing the privacy of residents.

Safety Element

The Safety Element discusses policy addressing the variety of hazards affecting the City of Malibu. The City is subject to flooding, earthquakes, landslides, beach erosion, and wildfire. This element recognizes that wildfire is inevitable, and states that structural loss due to wildfire is more commonly the result of inappropriate siting, flammable ornamental landscaping, or flammable outbuildings. To minimize the risk to residential structures, the following measures are required by the County and/or City:

- Elimination of wood-shake roofs for new construction.
- Establishment of minimum greenbelt systems along new subdivisions.
- Improvement in existing water systems and vehicular access in a number of areas.
- Improvements made in the "Incident Command System" used by the Los Angeles County Fire Department and in the emergency communications and coordination among various fire resource agencies.

[89]City of Malibu General Plan, www.ci.malibu.ca.us/index.cfm/fuseaction/nav/navid/250/

- Installation of smoke detectors in homes and sprinkler systems in commercial buildings.
- An aggressive brush clearance program.

The City aims to be a "community that is free from all avoidable risks to safety, health, and welfare from natural and man-made hazards." The Safety Element contains a number of fire-specific implementation measures that are targeted at developing a fire prevention and hazard identification master plan; working with other agencies to "ensure effective and efficient fire suppression, prevention, and rescue services;" encouraging residents with swimming pools to have gas-powered pumps for fire-fighting use; and establishing guidelines for fire-safe landscaping, including buffers of fire-resistant vegetation between residential areas and open-space areas.

Other implementation actions include developing dedicated water storage facilities for fire fighting, creating an evacuation plan based on major streets and routes, and developing fire-safe guidelines for home remodels in terms of design elements and materials. There are other measures included that provide for keeping fire-suppression systems and agreements up to date to ensure adequate emergency response when needed.

The City of Malibu contracts with the Los Angeles County Fire Department for fire services. There are seven fire stations serving the city, four of them located inside the city limits. The Environmental and Building Safety Division oversees the adoption and enforcement of building codes and permits, including fire code. The City of Malibu has adopted Los Angeles County Code Title 32, Fire Code.[90] This code applies within Malibu as well as in all unincorporated Los Angeles County communities.

Open Space and Recreation Element

The Open Space and Recreation Element is intended to improve the overall quality of life for Malibu residents through good management of its recreational areas. The city occupies most of the SMMNRA coastline; hence coordinated management between the city government and the National Park Service is essential to meeting the goals of both. There are two parks in the city managed by outside agencies—Corral Canyon Park, run by the Santa Monica Mountains Conservancy, and Solstice Canyon Park, managed by the NPS.

Pertinent Open Space objectives and policies include:

- OS Objective 1.3. Open Space that complements the City's health and safety policies.
- OS Policy 1.3.1. The City shall favor the dedication of open space where the dedicated land could be used to prevent damage from fires, flood, landslides, and other natural disasters.

The implementation measures associated with the policy above state that open-space dedications can be required where there are potentially hazardous impacts as a result of proposed development, and provide that the applicants must obtain fire department cooperation in protecting coastal sage scrub habitat from unnecessary clearing for fire hazard-reduction purposes.

Conservation Element

The Conservation Element discusses a variety of resources, including mineral, air, wildlife, and beach resources. Of concern to fire planners are the seven different vegetation communities within the city limits and their resistance to fire. These include chaparral, coastal sage scrub, and a number of different grassland types. Many sensitive wildlife species also live in the area, making habitat conservation a mandated priority for development review. One policy in the General Plan states that "development in areas adjacent to Environmentally Sensitive Habitat Areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade such

[90] http://search.municode.com/html/16274/_DATA/TITLE32/FIRE_CODE.html

areas." The element goes on to identify specific wildlife habitat linkages, specific habitat types, significant watersheds in the city, and resource protection goals for each of them to prevent impacts from development.

The Conservation Element contains policies focused on preventing habitat degradation and impacts to natural resources. These are applicable to fire planning in that new developments must reduce their impact to the surrounding environment. Siting these new developments in locations where they are buffered from habitat and wildlands with open areas not only mitigates long-term impacts as a result of the development but also helps to prevent fire from moving out of the urban areas and into the wildlands, a significant concern in the SMM.

6.4.8. City of Malibu Local Coastal Program, Land Use Plan (2002)[91]

Municipal regulations in Malibu relevant to vegetation management and building are guided in part by certain sections of the Local Coastal Plan, 2002 (LCP). (*Note:* This LCP has the same name, but is not the same as the LCP mentioned for unincorporated Los Angeles County lands in section 6.4.1 above.) The Land-Use Plan component of the LCP addresses fuel-modification requirements and management of post-burn areas, requiring that new development minimize the removal of natural vegetation except in cases where required by the fire department to reduce the risk of fire hazard. The document also states that wildfire burn areas be allowed to revegetate naturally, except where previously subject to fuel modification or brush clearance for existing structures.[92] In general, fire protection and fuel-modification activities are guided with regard for causing minimal habitat or natural vegetation disturbance. Protecting Environmentally Sensitive Habitat Areas (ESHAs) is a high priority of the LCP.

Furthermore, the LCP outlines requirements for new development in order to minimize risks from fire hazard. These include fuel-modification rules stating that developments shall be sited in such a way as to minimize fuel modification in order to protect habitat. The LCP adds that alternative fuel-modification techniques, including fire walls, shall be used when possible and without degrading visual resources. Fuel-modification plans must be submitted for review that depict areas of vegetation removal, quantify the area subject to the modification, and provide mitigation measures to ESHAs in the area.

The City Manager Department oversees an Emergency Preparedness program, which coordinates the city's response to disasters such as fires, floods, earthquakes, and storms. Under the City Manager's direction, the Emergency Services Coordinator is responsible for maintenance and implementation of the city's Emergency Operations Plan. This includes training of city staff and community volunteers, equipping and managing the Emergency Operations Center (EOC), overseeing of the Community Emergency Response Team (CERT), and managing the city's emergency notification systems.[93] The city's Planning Division maintains and implements the General Plan and Zoning Ordinance and prepares other specialized planning documents. It reviews development requests for conformance with planning policies and standards, and conducts environmental review under the provisions of the California Environmental Quality Act. The department provides staff support to the Planning Commission and City Council through the processing of rezonings, subdivisions, use permits, variances, and other entitlements.

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[91] www.coastal.ca.gov/ventura/malibu-lup-final.pdf

[92] City of Malibu (2002), *City of Malibu Local Coastal Program Land Use Plan.*

[93] www.ci.malibu.ca.us

6.4.9. Calabasas General Plan 2030[94]

Safety Element

The Safety Element of the Calabasas General Plan focuses on identifying natural and man-made hazards, and to the extent feasible, reducing their impact on the public's "health, safety, and property." The Calabasas Safety Element discusses six specific hazards, including Fire.

Fire Hazards

The Calabasas General Plan recognizes three different types of fire that threaten the city. These are "wildfires which affect open space and development on the urban fringe," structure fires, and industrial fires. The following section focuses on wildfire policy, though the General Plan states "Fire…can result both from natural processes and from the intentional or accidental actions of people."

The General Plan cites the need for quick response times from firefighters and adequate water supplies in order to minimize damage. The location of fire stations to new developments and open space and the ability to access those areas quickly are key factors in reducing the community's vulnerability to fire. All of Calabasas is considered a Very High Fire Hazard Severity Zone. The General Plan contains provisions to address the many issues affecting community risk reduction. In terms of fighting wildfire, the city states that "water availability and peak-load water supply are essential" to effective suppression.

Following are the policies from the Fire Hazards section of the Calabasas General Plan:

- Policy VII-12: Emphasize prevention of physical and economic loss associated with wildland fire through early identification of potentially hazardous conditions prior to project approval.
- **Policy VII-13: Promote fire prevention as the City's preferred management strategy; facilitate programs that are aimed at the prevention of fires.**
- Policy VII-14: Discourage development and encourage sensitive siting of structures within hazardous fire areas as higher priorities than attempting to implement fuel-modification techniques that would adversely affect significant biological resources.
- Policy VII-15: Require design and siting of new development within areas subject to wildfires in a manner that minimizes the threat of loss from wildland fire.
- Policy VII-16: Ensure that new development is designed to facilitate access by fire-fighting equipment and to maintain adequate evacuation routes.
- Policy VII-17: Do not permit development within areas that do not have adequate water pressure or fire flows until sufficient pressure and fire flows can be reliably provided.

The policies require that fire hazard be considered early in the development approval process to ensure that developments are not sited in hazardous areas. Biological resources are placed as a higher priority than fuel-modification techniques to discourage sensitive areas from being removed. Developers are encouraged to place new construction in other areas.

Policies VIII-15 and -17 may significantly reduce the pace of development in the outlying areas of Calabasas, thus reducing the expansion of the WUI, depending on the ability of property developers to provide new infrastructure and the city to deliver adequate water supplies. Taken together, this policy set will lessen the risk of wildfire to new developments. However, there is little here to address fire hazards for existing developments.

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[94] Calabasas General Plan 2030, www.cityofcalabasas.com/general-plan.html

Open-Space Element

According to the 2030 Calabasas General Plan, there are currently 3,245 acres of land zoned as Open Space–Resource Protection. In addition, the City itself owns 302 acres of open-space lands dedicated to recreational purposes and resource protection *(see section 6.3.5 above for more information).* The City has a goal of reaching 4,000 acres of open space in and around the city to create an open-space system that "conserves natural resources, preserves scenic beauty, promotes a healthful atmosphere, provides space for a variety of recreational activities, and protects public safety."

The City intends to continue its acquisition efforts on high-priority parcels throughout its jurisdiction. Approved methods include dedications, purchases and/or annexations, in whole or in part. The City has identified a number of hillside properties that are high priorities for acquisition.

Open-Space Policies

The City of Calabasas acknowledges a number of functions for its Open Space lands, including the protection of Significant Environmental Resources, Public Health and Safety, and providing public recreation. These multiple functions for public open space directly recognize the connection between open-space protection and management and fire safety. The management of these open-space lands for fire safety and risk reduction is compatible with the stated functions of the City of Calabasas' General Plan. Properly planned and managed areas can provide anchor points for fire-suppression efforts and opportunities for firebreaks and vegetation management.

Conservation Element

The City of Calabasas has two general goals for the conservation of natural resources and environmental protection within its jurisdiction. These goals are to:

- Preserve significant environmental features within Calabasas and provide for their wise management.
- Minimize the consumption of natural resources needed to support life in Calabasas and ensure the wise use of those resources.

For the most part, this element is unconcerned with public safety and is focused on environmental health. However, a number of ideas and policies in this section can be helpful in reducing the risk of damage to human construction from wildfire. These include clustering development in the least sensitive areas of a parcel, maintaining buffers between riparian areas and development, and sustaining partnerships with the agencies involved in the SMMNRA. While the focus of these goals is to protect sensitive areas and species, the collaboration and the attention to site design and natural features will provide increased opportunities to discuss fire hazards.

Services, Infrastructure, and Technology Element

This General Plan element is focused on providing the basic services and infrastructure necessary for the orderly function of the City of Calabasas. Included in this element are: Fiscal Management, Municipal Services, Educational Services, Water Service and Infrastructure, Wastewater Service and Infrastructure, Storm Drains, and Technological Infrastructure.

Fire services are included in the municipal services section—pertinent objectives and policies are presented below:

- Ensure that local police and fire services meet the needs of the community.
- Coordinate development activity with the provision of municipal services and facilities in a manner that maintains defined performance standards, eliminates gaps in service provision to new development, realizes cost efficiencies, and achieves an equitable sharing of the cost of municipal services and facilities based on the principle that new development is to pay for itself, both in terms of capital facilities and ongoing operations and maintenance.

The Fire Protection Services segment in the Municipal Services section enunciates a vision and series of principles to guide the provision of services for the city. Fire-protection services are provided by the County of Los Angeles, which operates two stations in Calabasas, as well as others near Topanga Canyon, Agoura Hills, and Monte Nido.

The City of Calabasas emphasizes fire prevention on an equal basis, if not more heavily, than fire suppression. Preventing fire will help to create a "safer community and a reduction in the cost of providing fire protection services within Calabasas." The City will provide "community education as well as fire-safe landscaping and brush clearing within hillside residential areas."

6.5. Integrating Fire Safety: The Santa Monica Mountains Fire Safe Alliance

The Santa Monica Mountains Fire Safe Alliance is a group of agencies, municipalities, communities, and private citizens who cooperate in creating solutions for the challenging multi-jurisdictional regulatory environment of the area. The Alliance provides anyone with concerns about fire safety with a forum to address each of the entities with fire safety responsibilities in a particular place. The following is the mission statement of the Alliance.

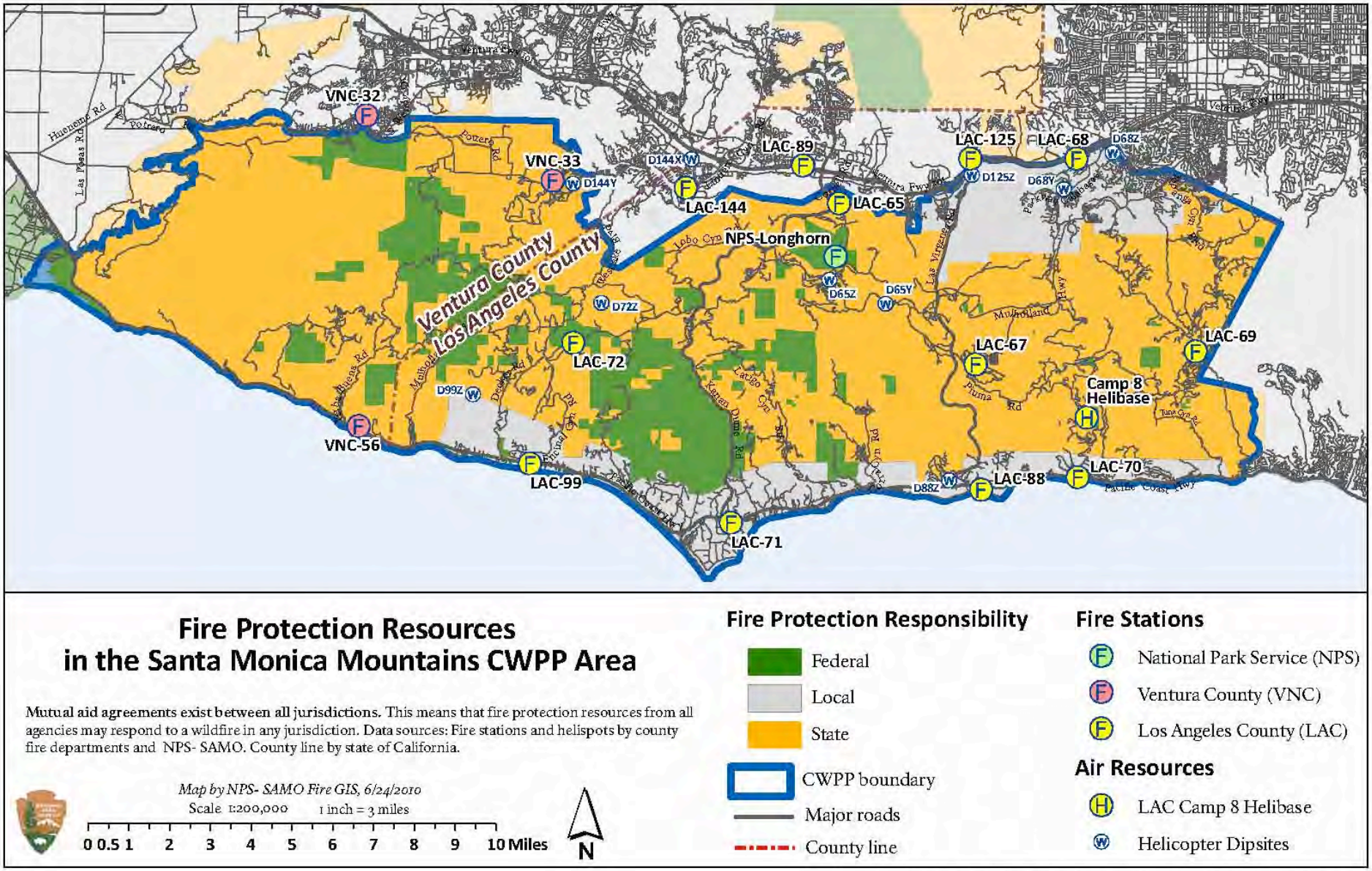
> "The mission of the Santa Monica Mountains Fire Safe Alliance, a collaboration of related public agencies, departments, and communities, is to find solutions and resources for property owners and land managers to improve stewardship in the wildland-urban interface. Integration of best management practices will create defensible space while protecting wildland. The Alliance will help create safer communities and protect natural areas by involving and educating stakeholders, sharing information, and locating and providing beneficial resources."[95]

SMMFSA member groups include:

- California Coastal Commission
- California Department of Parks and Recreation
- California Fair Plan
- California Fire Safe Council
- California State Parks
- City of Calabasas
- City of Malibu
- Congressman Brad Sherman
- Former State Senator Sheila Kuehl office
- Governor Schwarzenegger
- Grandview module–South Topanga FSC
- Las Virgenes Municipal Water District
- Las Virgenes/Malibu Council of Governments
- Los Angeles County Agriculture Commissioner
- Los Angeles County Fire Department
- Los Angeles County Supervisor Yaroslavsky office
- Los Angeles Pierce College Foundation
- Los Angeles Regional Water Quality Control Board
- Los Angeles San Gabriel Rivers Watershed Council
- Mountains Recreation & Conservation Authority
- Mountains Restoration Trust
- National Park Service
- Observation Medley module–South Topanga FSC
- Resource Conservation District of the SMM
- Santa Monica Mountains Conservancy
- Southern Callifornia Edison
- State Assembly member Julia Brownley
- State Farm Insurance
- State Senator Fran Pavley
- University of California Cooperative Extension
- USDA/Natural Resources Conservation Service

[95] The Santa Monica Mountains Fire Safe Alliance, www.fire.lacounty.gov/Forestry/RoadMaptoFireSafety.pdf

MAP 6-1. FIRE PROTECTION RESOURCES IN THE SANTA MONICA MOUNTAINS[96]



[96] This map prints best at 11x17. Visit to www.forevergreenforestry.com/smmcwpp_pub.html to download a print version.

Risk Assessment: Identifying and Evaluation Assets at Risk

This page is inserted to facilitate double-sided printing of the document.

7. Risk Assessment: Identifying and Evaluating Assets at Risk[1]

7.1. Assets at Risk in the Santa Monica Mountains

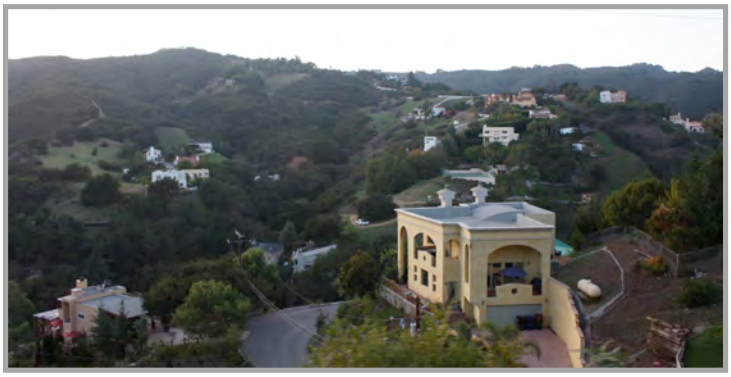
In addition to everything in the built environment, assets (or values) at risk include many non-quantifiable facets of what we call "quality of life"—natural beauty and clean air, for example—that can be threatened with degradation, destruction, or loss from wildfire. Assets at risk include homes, infrastructure, cultural sites, wildlife habitat, threatened and endangered flora and fauna, natural resources, air quality, recreational facilities and areas, historical structures, and every other important attribute that individual communities rely on for their well-being or appreciate in their surroundings.

Neither the term "assets" nor a dollar figure fully conveys the community value found in many of these attributes of the Santa Monica Mountains area. They are the precious elements that make up the quilted fabric of community life and our place in the natural world. Communities can suffer greatly if highly valued or essential infrastructure is damaged or destroyed during a wildfire or other disaster. Some communities contain infrastructure that is critical to the entire region (e.g. hospitals or utilities). When an area with a concentration of high-value assets comes into contact with hazardous fuels and a high fire threat, its risk of loss due to wildfire increases.

As part of the scoping and outreach effort of the Santa Monica Mountains Community Wildfire Protection Plan, community meetings were held throughout the Planning Area in October–November 2009 and January 2010 to identify community assets and discuss wildfire protection efforts. These meetings provided an opportunity for residents to identify areas and structures of value to their community. Attendees identified local assets such as essential infrastructure and/or areas that serve as important community centers. Some of the key community assets and values identified at these meetings included schools, churches, fire stations, hospitals, senior centers, commercial districts, golf courses, campgrounds, and neighborhoods. Detailed information for assets at risk in each of the twenty planning units can be found in Part II of this CWPP, the Community Fire Safety Action Plans.

7.1.1. Homes and Structures

The eastern section of the CWPP Planning Area, located in Los Angeles County, is more heavily populated than the western portion in Ventura County. Overall, the Planning Area is relatively unpopulated, especially compared to the rest of Los Angeles County, one of the most



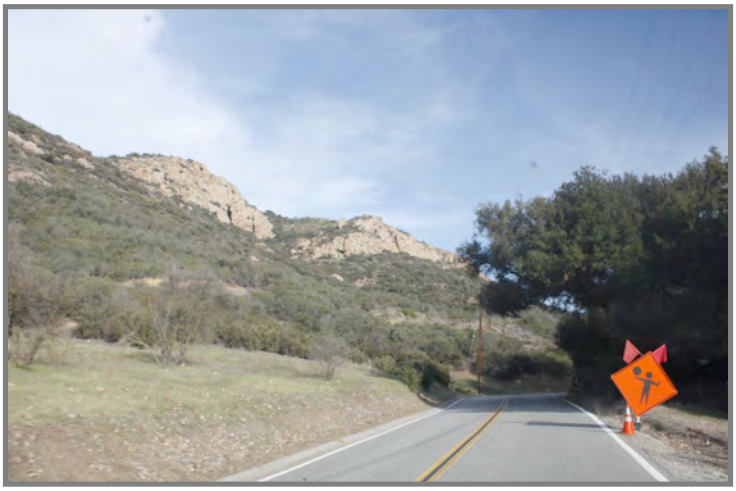
[1] Stephen Umbertis contributed to this document, with ForEverGreen Forestry.

heavily populated counties in the United States.[2] In the two cities within the Planning Area, Malibu and Calabasas, homes tend to be more concentrated, although the Planning Area's major thoroughfares all contain a relatively dense concentration of homes. Due to the varying densities of neighborhoods and the character of different communities, home values span a wide range, with some of the highest real estate values in the nation found here.

In the 90265 Malibu zip code, condominiums start at around $300,000, and the price of mansions reaches up to $65 million. Fifty percent of the homes in Malibu are worth over $1 million, while 12% cost less than $500,000.[3] In Topanga Canyon house prices range from $200,000 to $9 million. In Las Virgenes Canyon and Calabasas, house prices range from approximately $200,000 to upwards of $20 million. The 91301 zip code area, which includes Cornell, Liberty Canyon, and the Lost Hills area, has property values ranging from $150,000 to $6 million. Finally, the area around Hidden Valley and Lake Sherwood in Ventura County contains homes that range from approximately $200,000 to $5.2 million in value.[4]

7.1.2. General Infrastructure Assets

Infrastructure includes the roads, utilities, water, and all other services provided to the residents of the Santa Monica Mountains. Two highways border the Planning Area—Highway 101 to the north and the Pacific Coast Highway 1 along the south. Kanan Dume Road, Malibu Canyon/Las Virgenes Road, and Topanga Canyon Boulevard (Highway 27) are the major north-south roads in the area that connect these two highways. The major road systems within the Planning Area are considered essential assets. Fire-suppression efforts utilize roads to strategically place equipment and personnel during wildfires, and to provide evacuation routes for residents. Local fire agencies have stressed the need to connect county roads and other paved roads with the many fire access roads in the Planning Area; this would improve speed of access for firefighters and add to the number of safe evacuation routes for residents. Fire itself, as well as erosion and landslides following a wildfire event, can pose significant threats to this transportation infrastructure.



Airstrips are important infrastructure in any community. They provide emergency landing sites, potential evacuation sites, recreational opportunities, and an arrival point for visitors. King Gillette Ranch, managed by the Mountains Recreation and Conservation Authority (MRCA), used to have a private airstrip.[5] Adjacent to the southwestern border of the Planning Area the Naval Station Ventura County, Point Mugu, has airstrips, but they are not open to public use. However, the facility may be used in the event of a major firestorm.

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[2] http://en.wikipedia.org/wiki/Los_Angeles_County,_California

[3] US Census, http://factfinder.census.gov/servlet/QTTable?_bm=y&-geo_id=86000US90265&-qr_name=DEC_2000_SF3_U_DP4&-ds_name=DEC_2000_SF3_U&-_lang=en&-_sse=on. (This data is from 2000; housing values have since changed).

[4] http://losangeles.blockshopper.com, www.lakesherwood-hiddenvalley-realestate.com

[5] http://smmc.ca.gov/KGRP/guide.html

A number of potential helicopter landing sites have been identified throughout the Planning Area. These sites are identified based on the ability of rotary-winged aircraft to land on the site, engage in basic maintenance and refueling operations, and take on or offload personnel and supplies. While potential sites have been identified, they are not designated until needed for an operation.[6]

Los Angeles County Fire Department maintains Camp 8, which is located at the top of Las Flores Canyon Road and Rambla Pacifico. It contains a primary paramedic helicopter standby location. This landing site can be used during daylight hours only. It has a helicopter with water-dropping capabilities and a crew of seven to eight firefighters.[7]

The Santa Monica Airport, about 25 miles east of Malibu, is the closest airstrip to the southeastern sector of the Planning Area. Camarillo and Oxnard airports are approximately 10 miles to the north and northwest, respectively. Van Nuys Airport is located 34 road miles east from Malibu. It is sometimes used for logistical aircraft during wildfire incidents in the Santa Monica Mountains.

The public and private water purveyors within the Santa Monica Mountains are also important assets, providing water and wastewater services to residents as well as fire-fighting capacity to the communities at large. Local water supply is scarce in the Santa Monica Mountains. The Las Virgenes Municipal Water District (LVMWD) owns and operates a potable water system that serves Calabasas as well as unincorporated areas in the western portions of Los Angeles County, near Ventura County (as well as other cities not in the Planning Area). There are 22 potable water and four recycled water pressure zones within LVMWD that utilize 24 tanks and 24 pumping stations capable of providing 34 million gallons of water storage.

The LVMWD system is composed of more than 400 miles of pipeline and serves approximately 36,000 residents in the Planning Area.[8] Primary water storage is at the 9,500-acre-foot Las Virgenes Reservoir in Westlake Village. That reservoir, in conjunction with the adjacent Westlake Filtration Plant, allows LVMWD to produce up to 15 million gallons of water per day. LVMWD owns 360 acres of land immediately around the reservoir to protect water quality.

Los Angeles County Waterworks District No. 29 (District No. 29) provides water services to an estimated 20,000 people in Malibu, Topanga Canyon, and the area between Tuna Canyon and Upper Rambla Pacifico.[9] District No. 29 purchases its water from the West Basin Municipal Water District (West Basin), which gets its water from the Metropolitan Water District of Southern California. District No. 29 also has emergency connections with the City of Los Angeles Department of Water and Power and LVMWD. The water from West Basin is treated at the

[6] Dale Carnathan, Ventura County Office of Emergency Services, personal communication, April 7, 2010.

[7] www.fire.lacounty.gov/AirWildland/AirWildlandFireCamps.asp

[8] Las Virgenes Municipal Water District (2007), Integrated Water System Master Plan Update 2007, pp. 32, 39–41.

[9] http://dpw.lacounty.gov

Joseph Jensen Filtration Plant, which is outside the Planning Area.[10]

District No. 29's major system facilities include approximately 200 miles of water mains, 32 pump stations, and 52 tanks with a storage capacity of approximately 20 million gallons. A portion of the wastewater generated in the area is collected and treated by small private and publicly owned package wastewater treatment plants serving individual developments. The Los Angeles County Dept. of Public Works (Public Works) operates and maintains the collection and treatment systems of three publicly owned treatment plants (Malibu Mesa Water Reclamation Plant, Malibu Water Pollution Control Plant, and Trancas Water Pollution Control Plant).[11] Paradise View Estates on Ramírez Mesa Drive uses the Valencia Heights Water Company.

Residents in the Ventura County portion of the Planning Area receive water service from several sources. Navy Base Ventura County, Point Mugu, receives its supply from Port Hueneme Water Agency, which contracts with both Calleguas Municipal Water District and the California American Water Company. The latter also delivers water for Point Mugu State Park.[12] Yerba Buena Water Company supplies coastal residents in the Planning Area in Ventura County. Properties located in the inland areas of Deer Creek, Yerba Buena, and associated neighborhoods are dependent on individual wells.[13] Water for Lake Sherwood and Hidden Valley comes from the Lake Sherwood Community Services District, the Hidden Valley Municipal Water District, and private sources.

Southern California Edison provides power to the Planning Area through a number of transformers and transmission lines. There are no substations here. Transformers are at risk from fire, potentially knocking out power to areas when they burn or shut down as a result of overheating.[14]

Southern California Gas provides natural gas service through lines that surround the Planning Area. Natural gas lines follow the major roads on the perimeter of the Planning Area, connecting the cities of Calabasas and Thousand Oaks before returning to the coastal areas northwest of the Planning Area.[15]

There are numerous cell phone towers and antennas located throughout the Planning Area. In a four-mile radius of the City of Calabasas, for example, there are approximately 28 cell phone towers and 87 cell antennas.[16] These sites provide important communication infrastructure for the surrounding communities and for fire management. Cellular communication is becoming the primary communication form for many people, making it more important than ever to sustain functionality during an emergency. Keeping residents up to date with fire conditions or possible evacuations via their cell phones can be essential to protecting life and property.

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[10] Los Angeles County Waterworks Districts (2008), District No. 29, Malibu & Marina del Rey Water System Annual Water Quality Report, http://dpw.lacounty.gov/wwd/web/waterquality/2008/malibu.pdf.

[11] County of Los Angeles Department of Public Works (2005), Waterworks District No. 29, Malibu and The Marina del Rey Water System 2005 Urban Water Management Plan, pp. 7–8.

[12] Calleguas Municipal Water District, www.calleguas.com/district_history_description.htm

[13] Thomas White, resident, personal communication, May 2010.

[14] www.energy.ca.gov/maps/transmission_lines_lower.html

[15] www.energy.ca.gov/maps/natural_gas.html

[16] www.antennasearch.com

Key parts of the Planning Area without cell service include parts of Ventura County along the Yerba Buena Canyon corridor and areas within Corral Canyon. Residents who attended community outreach meetings identified Upper Rambla, Corral Canyon and Pepperdine, and areas of Calabasas as needing improvements in cellular service coverage. Additional towers in these areas would improve emergency preparedness and contribute to risk reduction for the affected communities.

7.1.3. Commercial Assets

The primary commercial assets in the Planning Area are located in the incorporated cities of Malibu and Calabasas. Malibu is known for its beaches and coastline, and there is a large amount of tourist-oriented development in the city. Calabasas is the most developed region in the Planning Area, with shopping centers and other typical commercial development.

The City of Malibu is home to HRL Laboratories LLC, formerly Hughes Research Laboratories. The 72-acre HRL facility on Malibu Canyon Road has been in Malibu since 1948, and it presently employs 450 people to do research and development for Boeing and General Motors, now members of the LLC.[17] Pepperdine University is located in the unincorporated area adjacent to the City of Malibu. The University's 830-acre campus was built in 1972 in Malibu Canyon and houses more than 7,000 students.[18]

Pepperdine University

The Santa Monica Mountains National Recreation Area, which encompasses the Planning Area, provides residents and tourists with multiple recreational opportunities. An iconic part of the southern California landscape, the SMMNRA is known for its large area of undeveloped wilderness in close proximity to the urban metropolis of Los Angeles. Recreational sites offer campgrounds and facilities, as well as passive recreational areas (wildlands). Fire and fire-management activities can impact scenic resources, camping facilities, and other infrastructure that contributes to the recreational experience.

The loss of vegetation from a fire, or bare earth as a result of fire-fighting activities, reduces the visual appeal and ambiance of the affected area, reducing its value for these purposes.[19]

The natural beauty of the SMMNRA makes it a popular filming location. Paramount Ranch and its "Western Town," located within the Planning Area, provides people the opportunity to see movie-making in action. The National Park Service provides a fire safety advisor and water truck during filming, which is included in the cost to use the facilities.

Paramount Ranch Western Town

[17] HRL Laboratories, LLC. www.hrl.com/pages/abt_main.html

[18] "Pepperdine At A Glance," www.pepperdine.edu/about/pepperdine

[19] www.nps.gov/samo/faqs.htm

7.1.4. Schools and Seasonal-Use Facilities

There are 29 schools and educational facilities in the CWPP Planning Area. These are in the Conejo Unified School District in Ventura County, the Las Virgenes Unified School District in Los Angeles County, the Los Angeles Unified School District, and the Santa Monica–Malibu Unified School District.[20] Schools are often used for emergency shelters when necessary. Various private schools, including Pepperdine University, are also located within the Planning Area.

A number of organized camp facilities, retreat centers, equine centers, and educational facilities are located in the Planning Area. They range from religious communities and retreat centers, such as the Serra Institute, to facilities serving as children's summer camps, business retreats, and ranches used for horseback-riding instruction. These camps present a potential evacuation challenge due to large numbers of occupants. Visitors to these facilities may not be as familiar with the area as are residents. Quite often, these persons do not have individual transportation. Vans and buses may be required to evacuate during a wildfire, necessitating some degree of coordination between the facilities and emergency services. In some cases, these facilities are not coordinated with existing emergency services. Emergency plans should be put in place for these facilities, outlining a coordinated response for fire and other natural disasters.

7.1.5. Medical Facilities

Three senior care centers, four urgent-care facilities, and a health center are in the Planning Area. In addition, a number of assisted-living centers for seniors are located in the unincorporated areas near Camarillo, Thousand Oaks, and Calabasas, and several drug and alcohol rehabilitation centers are found in the Malibu area.

FIGURE 7-1. SANTA MONICA MOUNTAINS MEDICAL FACILITIES AND SENIOR CENTERS

NAME	ADDRESS	EMERGENCY POWER SUPPLY
Urgent Care Medical Center	22241 Craft Court, Calabasas	No emergency power supply
Jack H. Skirball Health Center	23388 Mulholland Drive, Woodland Hills	Generator(s)
ResCare Home Care	23901 Calabasas Road, Calabasas	Business provides in-home care to clients and does not house people on site at this address.
Canyon Medical Center & Urgent Care	4937 Las Virgenes Rd #104, Calabasas	Generator(s)
Malibu Country Manor	6810 Wildlife Road, Malibu	No emergency power supply
Silverado at Home	25100 Calabasas Road, Calabasas	Generator(s)
Malibu Urgent Care	23656 Pacific Coast Highway, Malibu	Generator(s)

7.1.6. Correctional Facilities

In addition to the seasonal and educational facilities described above, there are a number of juvenile detention centers and fire camps used to house inmate fire crews. These facilities are mostly integrated into, or part of, the

[20] These districts were identified using the school locator from the California Dept. of Education and the zip code map of the state: www.cde.ca.gov/re/sd/index.asp, http://zipcodes.com/California.

emergency services system. Inmate crews provide fuel-reduction services and fight fire. There are three juvenile camps located in the Planning Area, one in Calabasas and two in Malibu.

FIGURE 7-2. CORRECTIONAL FACILITIES

NAME	ADDRESS	PHONE NUMBER
Camp David Gonzales	1301 N. Las Virgenes Rd., Calabasas 91302	818-222-1192
Camp Fred Miller	433 S. Encinal Canyon Rd., Malibu 90265	818-889-0260
Camp Vernon Kilpatrick	427 S. Encinal Canyon Rd., Malibu 90265	818-889-1353
Los Angeles County Department of Corrections, Camp 13	1250 S. Encinal Canyon Rd., Malibu 90265	

7.1.7. Cultural Assets

Cultural assets include pre-historic or archeological resources, historic buildings, and locations of current community importance such as parks, churches, and community centers. They can be a vital part of creating and strengthening a community. Attendees at each planning-unit meeting identified cultural assets for their communities; these included the Calabasas Agoura Hills Community Center, the Gillette Ranch, and some state parks, to name a few.[21]

Cultural assets also include archeological sites. In the Santa Monica Mountains, these sites are attributed to two Native American groups, the Chumash and the Gabrieliño/Tongva. There are more than 1,500 sites where artifacts have been found in the Santa Monica Mountains, including nine historic village sites, dating from as far back as 5000 BC.[22] Artifacts include hunting and camping tools, mortars and pestles, and post holes and depressions from house sites.

There are also hundreds of historic sites in the Santa Monica Mountains that have local importance. These include barns, ranches, homestead sites (nearly 1,300 recorded), and local works of renowned architects. There are two structures on the National Register of Historic Places (the Adamson House and Looff's Hippodrome), and fifteen structures on National Park Service land that are recorded in the SMMNRA's List of Classified Structures.

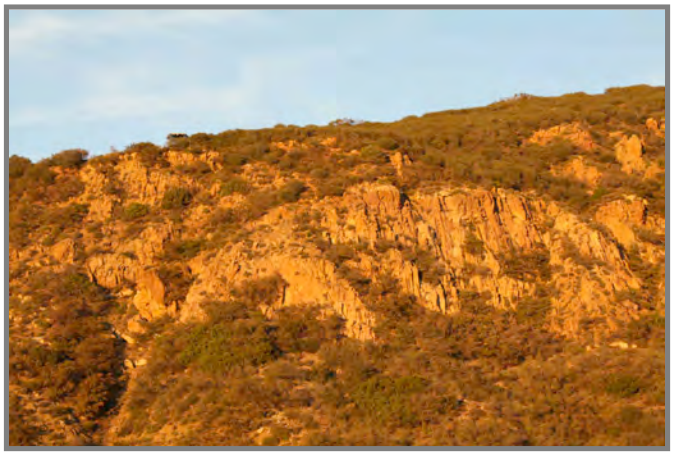
7.1.8. Natural Assets

A number of natural assets within the Planning Area are susceptible to wildfire, including 450 different species of vertebrates and five distinct vegetation communities. Wildfire not only damages or destroys habitat and threatens wildlife directly during an event, but vegetation succession after a burn changes habitat and species composition, sometimes for many years.[15] Burned areas are also susceptible to colonization by invasive plant species, which can crowd out native vegetation and prevent those species from growing back.

[21] "Assets identified by community.xls," Community meeting records, SMMCWPP planning process.
[22] National Park Service (2005), *Final Environmental Impact Statement for a Fire Management Plan*, Santa Monica Mountains National Recreation Area, Chapter 3.

In addition to damaging or destroying local habitats, wildfires can fragment habitat at a landscape level by destroying the linkages and corridors between different areas. This creates islands of habitat that are not able to support the same level of biodiversity on their own as a connected network of habitat can. Avoiding this "island effect" is increasingly important for wildlife as urban development and land conversions continue to occur throughout the Planning Area.

The SMM is an important stopover for migratory species using the Pacific Flyway, including many bird species and the monarch butterfly. Loss of diverse food sources or safe resting and nesting sites can overstress and result in death of tired, hungry fauna. They depend on the high level of biodiversity here to supply their needs.



Fire also damages air and water quality. Smoke from wildfires is known to be detrimental to those with respiratory ailments as well as the general public, and it can transport particulate matter for extremely long distances. Wildfire smoke is a major source of particulate matter, which damages lung tissue, irritates eyes and sinuses, and can have both long- and short-term health impacts.

Post-burn erosion severely impacts water quality in both the streams and the near-shore coastal waters. For example, many landslides occurred in and around the Angeles National Forest in the winter of 2009–2010 as a result of vegetation loss from fires in the same year. Many near-shore coastal resources, such as the kelp beds and their dependent fish and mammal species, are made vulnerable by degraded water quality as a result of fire-induced erosion.

Malibu Creek drains 109 square miles of the Santa Monica Mountains into Santa Monica Bay and is home to a number of threatened and endangered species. These include a native run of steelhead trout and lamprey eel, which are sensitive to increases in water temperature and stream sedimentation.[23] The latter affects steelhead trout by filling in pools and covering gravel with silt, which destroys feeding and breeding habitat. Fire contributes to increased erosion and degrades stream habitat by removing streamside (or riparian) vegetation; erosion then results from this loss of vegetation, destabilizing slopes and allowing rain to fall unimpeded to the ground, increasing run-off rates. Without riparian vegetation, streams receive more sunlight, which directly increases water temperature.

7.1.9. Conflicts Between Natural Assets and Human Occupation

Nearly all areas of the Santa Monica Mountains are aesthetically pleasing and provide an atmosphere in which many seek to live and recreate. Human encroachment into wildland areas creates a conflict that can threaten life and property, as well as the natural environment. Although wildfire can affect anyone and anything in the SMM, the greatest threat generally occurs where the wildland meets the human community, also known as the wildland-urban interface—which is found throughout the Planning Area.

Habitat loss as a result of human encroachment can seem inevitable in the face of continued population

23 g/2ndLevel/aboutws.html

growth and development activities. Fire, especially human-induced fire, is very dangerous to the remaining natural areas in the SMM. The ability of certain species and natural communities to survive is already compromised by habitat fragmentation and competition for resources. Preventing *leap-frog development,*[24] minimizing the risk that urban fires will spread to wild areas, and effective fire-fighting efforts will all help reduce future fire impacts to the SMM.

Many of the policies and regulations in existing planning documents, such as those discussed in Chapter 6, are helping to reduce the negative impact of humans on the natural environment. The proposed actions in this CWPP aim to advance those efforts, helping to preserve the natural beauty, ecological function, and overall health of the communities in the Santa Monica Mountains.

7.2. Assessing Risks in the Santa Monica Mountains

Throughout the Santa Monica Mountains the risk of wildfire is high. All residents who live here share this risk, and the responsibility to minimize it. The following factors were analyzed for this risk assessment. They are based on a qualitative scale from low to very high, with very high meaning the most risk. In the case of fire-protection support, a lower rating signifies higher risk.

Assets at Risk

Given the combination of very high land values and the high-quality, rare Mediterranean ecosystem, the entire Santa Monica Mountains area is given a ***high*** asset rating. All neighborhoods and population centers are assumed to be equally important local assets and values. *For more information on assets at risk, see section 7.1.*

Fire Hazard Severity

Fire hazard is a measure of the likelihood of an area burning and how it burns (e.g. intensity, speed, and embers produced). The entire Planning Area is classified as "Very High Fire Hazard Severity Zone" by CAL FIRE, a designation adopted by both Los Angeles and Ventura counties. The fire hazard zoning ratings are based only on fire hazard, without considering the value at risk.[25] Given this designation, the entire Planning Area was given a ***very high*** rating throughout. *For more information on Fire Hazard Severity ratings, see Chapter 3, section 3.4, "Fire Hazard."*

Risk of Wildfire Occurrence

"Risk of wildfire occurrence" refers to the possibility of a wildfire occurring. Based on the frequency and variety of human-caused ignitions, and the resultant extensive fire history of the Santa Monica Mountains, the risk of wildfire occurrence in the entire Planning Area is rated ***very high.*** *For more information on wildfire risk, see Chapter 3, section 3.1, "Fire History."*

Structural Ignitability

Structural ignitibility means the ability of structures, especially homes, to burn. It is generally tied to the age of a given development (or structure), with newer developments built to the current or recent WUI building codes receiving a "low" designation. Older wooden homes generally have higher structural ignitability than newer homes, unless they have been retrofitted to current WUI building standards. The complete range from ***low to very high*** structural ignitability is found throughout the Santa Monica Mountains, although most homes tend toward higher

[24] Where development skips over available land and instead focuses on larger or more desirable places. Development leaps to outlying and isolated areas because better land may be at a distance.

[25] www.fire.ca.gov/fire_prevention/fire_prevention_wildland_zones_development.php

structural ignitability. *For information on reducing structural ignitability, see Chapter 4, section 4.1.1, "Hardened Homes."*

Urban Fuels

"Urban fuels" in this risk assessment generally refers to anything that can burn—including ornamental vegetation—that is surrounding a structure, and often directly adjacent to and including homes. The presence of urban fuels in the home ignition zone within the Santa Monica Mountains is one of the most relevant factors determining whether or not a structure will burn, distinct from the structural ignitability of the house itself. There are individual homes where urban fuels are low; however, ***very high*** levels of urban fuels are generally found throughout the Santa Monica Mountains, and this threatens everyone. *For more information on urban fuels, please see Chapter 4, section 4.1.3, "Urban Fuels."*

Evacuation Vulnerability

A critical factor in the Santa Monica Mountains is the ability for residents and their animals to safely evacuate. Given the steep topography and high local population densities, the existing road infrastructure is marginally adequate under normal conditions. There are very few primary and secondary access routes; they are mostly narrow, winding roads. Hence, early evacuation significantly increases residents' ability to leave safely, while also reducing road congestion. Later evacuations limit travel routes and safe destinations. Therefore, evacuation vulnerability in the SMM is ***very high.*** *For more information on evacuation, please see Chapter 4, section 4.2.3, "Go: What to Do During Wildfire—Evacuating Safely."*

Fire Protection Support

Fire protection support is based on the ease of fire engine access to homes, and adequate water supply and pressure. It is dependent upon sufficient defensible space around structures and timely evacuations by local residents. Access is related to the fire codes at the time of development, the steep and windy terrain, and the high potential for road blockage. Water limitations are always present throughout the Santa Monica Mountains.

Adequate defensible space allows firefighters the ability to protect a home safely. Timely evacuation allows firefighters to focus solely on structure protection. Local fire agencies have a high capability of providing fire protection if access, water, defensible space, and timely evacuation are present. However, these four factors are highly challenging in the Santa Monica Mountains, making support for fire protection often ***low.*** *For more information on access, water supply,*

defensible space, and evacuation, see Chapter 4.

7.3. Furthering the Risk Assessment of the Santa Monica Mountains

The risk assessment undertaken for this CWPP was done at a very coarse scale. A more detailed assessment (home by home) of risks is needed at the local level. Residents can assess their own risk based on a qualitative analysis of the issues below and the assessment form in Appendix L. Fire Safe Councils, homeowner's associations, and other neighborhood organizations can do this at the neighborhood or community scale. Two methodologies are provided in the appendices. Appendix B describes the methodology used for the mapping exercise during the CWPP community meetings. Appendix L, Home Ignition Zone Structure Assessment Guide, is a risk assessment for analyzing a specific property. A localized risk assessment in the Santa Monica Mountains would include a parcel-level analysis of the following components:

- Hardened homes: local building materials, construction, and age of structures
- Community values at risk
- Urban fuels: home landscaping and defensible space
- Hazardous trees
- Topography and location in the landscape
- Santa Ana winds and Red Flag conditions
- Community education and awareness
- Community emergency preparedness
- Community preparedness plans provided to public safety agencies
- Sources of local ignitions
- Ingress and egress routes
- Water sources
- Existing fuel reduction
- Impact of surrounding wildlands/vegetation
- Post-fire effects (e.g. erosion, invasive species, etc.)

2003 Cedar Fire, Rancho Santa Fe. Source: Jon Keeley

Every home in the Santa Monica Mountains contributes to the resiliency of an entire neighborhood or community and the collective ability to withstand the damaging effects of wildfire. Residents can lower their own wildfire risk and that of their neighbors by implementing the best management practices for hardening homes, improving defensible space within the home ignition zone, and following the "Ready, Set, Go" guidelines, all described in Chapter 4.

In summary, this means residents should:

- Build homes in a safe location,
- of nonflammable materials consistent with the current WUI building standards,
- with fire-safe design features that strongly resist ignition by embers,
- surrounded by defensible space with fire-safe landscaping in the home ignition zone,
- in a whole community that was laid out with fire safety in mind,
- that includes adequate evacuation (ingress and egress) routes, and
- has good communication within and beyond the neighborhood.

All Santa Monica Mountains residents are in this together; and together it's possible to reduce wildfire occurrence and consequences with awareness and advance preparation.

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8. Santa Monica Mountains CWPP: Action Plan

This Community Wildfire Protection Plan (CWPP) is based on the collaboration of the participating stakeholders (Plan Partners) and the many Santa Monica Mountains residents who were part of this process[1] through attending a public meeting and/or commenting on drafts of the plan. Based on this collaboration, and the analysis reported in Chapters 3 through 7, the following action plan was developed for the Santa Monica Mountains CWPP Planning Area.

Each of the following topics is introduced, and a set of action steps identified, as well as the lead organizations and/or Plan Partners for implementation. The action items are then ranked in terms of short (1–2 years), medium (2–5 years), long (5–10 years), or ongoing implementation priority; ease of implementation is also indicated.

In an ideal world, everything recommended here would be implemented expeditiously. Although it is the intention of CWPP authors and signers that all action items in this document be implemented as appropriate, it will happen subject to the availability of funds and other resources.

➢ *Action items are identified with this arrow throughout this chapter. They are followed by the implementer(s) of the action item, and the implementation priority:* ***"S"*** *(short),* ***"M"*** *(medium),* ***"L"*** *(long), and/or* ***"O"*** *(ongoing). In addition, a "★" indicates those items that will be relatively easy to implement or have already been completed.*

8.1. Creating Fire Safe Communities: Empowering Residents to Take Responsibility

In the Santa Monica Mountains, the principal hazardous fuels threatening residents are urban fuels[2]—the vegetation and other flammable items found closest to homes. Contrary to popular belief, it is not the chaparral or woodlands of the Santa Monica Mountains National Recreation Area that threaten property, it's the dense vegetation directly adjacent to homes and outbuildings, and the homes themselves.[3] As shown in Chapters 3, 4, and 5 of this CWPP, the most effective wildfire survival strategy in the Santa Monica Mountains is to ensure that homes and the surrounding "home ignition zone" are adequately prepared to survive wildfire.

> "If homes are sufficiently resistant to ignition and do not ignite during the extreme wildfire exposure, then the homes survive without firefighter protection: we have an extreme wildfire

[1] See Chapter 2 for more information on the collaborative process.

[2] See Chapter 4, section 4.1.3, for a description of urban fuels.

[3] J.E. Keeley, H. Safford, C.J. Fotheringham, J. Franklin, and M. Moritz (2009), "The 2007 Southern California Fires: Lessons in Complexity," *Journal of Forestry* 107: pp. 287–296.

J.D. Cohen (2000). "Preventing Disaster: Home Ignitability in the Wildland-Urban Interface," *Journal of Forestry* 98: pp. 15–21.

Alexander Maranghides and William Mell (June 2009), "A Case Study of a Community Affected by the Witch and Guejuito Fires," National Institute of Standards and Technology Technical Note 1635, US Department of Commerce, 59 pages.

but not a WUI [Wildland-Urban Interface] fire disaster. Thus, WUI fire disasters principally depend on home ignition potential."[4]

"Preventing WUI fire disasters requires that the problem be framed in terms of home ignition potential. Because this principally involves the home ignition zone, and the home ignition zone primarily falls within private ownership, the responsibility for preventing home ignitions largely falls within the authority of the property owner. Preventing wildfire disasters thus means fire agencies helping property owners mitigate the vulnerability of their structures."[5]

- *Coordinate regional efforts to focus on a defensible-space "from the house out" strategy, empowering residents to create fire-safe communities in the Santa Monica Mountains.* — Plan Partners, Fire Safe Councils, homeowner's associations, and residents. **(S)**

8.1.1. Fire Safe Councils

The effective functioning of Fire Safe Councils (FSCs) and related community-based organizations in the Santa Monica Mountains is critical to creating and implementing fire-safe communities here. Through the FSC's collaborative processes, various partners have come to the table to implement fuel reduction and fire-safety projects. **It will be members of these FSCs and associated community organizations such as homeowner's associations who will ultimately determine the effectiveness and success of this CWPP**. **Hence, ongoing support for and participation in local Fire Safe Councils is fundamental both for their development and for the success of local fire-safety efforts.**

Horizon Hills Fire Safe Council project.
Source: Horizon Hills FSC, NPS/SMMNRA

As part of this CWPP, a brief Community Fire Safety Action Plan has been developed for each of the local communities of the Santa Monica Mountains, as divided into the CWPP planning units *(see Part II)*. These documents contain a background description of each area, including the local fire environment, and a set of proposed actions. They can function as the basis for an operating plan for FSCs and related groups. **These Fire Safety Action Plans identify a set of actions that community members can take themselves to make their homes and neighborhoods fire safe.**

Based on the very positive feedback from residents at the CWPP community meetings, there is a committed interest to organize locally to create fire-safe neighborhoods and communities in the Santa Monica Mountains. What is needed is a solid organizational structure with a strategic plan for these groups to be able to effectively function over the long term.

Chapter 1 summarizes the existing Fire Safe Councils in the Santa Monica Mountains that already provide community fire safety leadership. At the 2009–2010 community meetings, the

[4] Jack Cohen (Fall 2008), "The Wildland-Urban Interface Problem–A Consequence of the Fire Exclusion Paradigm," *Forest History Today*, p. 23, www.foresthistory.org/Publications/FHT/FHTFall2008/Cohen.pdf.

[5] Cohen (2008), p. 25.

following communities expressed interest creating a local FSC: Upper Rambla/Las Flores, Calabasas, Lower Decker/Encinal Canyons, and Malibu Park, as well as creating and/or expanding FSC efforts in the greater Malibou Lake/Lakeside, Lobo, Triunfo, Cornell, and Seminole Springs area.

- *Form Fire Safe Councils to coordinate community wildfire preparedness efforts.* — Neighborhood groups and homeowner's associations. **(S, O)**
- *Work with local Fire Safe Councils to develop ongoing financial and in-kind support—including organizational development, technical support, fundraising, and training—to ensure their long-term sustainability and autonomy.* — Public and private-sector organizations, agencies, and individuals. **(S, O)**
- *Lead community efforts to implement projects proposed in the Community Fire Safety Action Plans in Part II of this CWPP, using the Project Implementation Matrix*[6] *to track efforts from Plan Partners. Seek technical support from Plan Partners.* — Fire Safe Councils, homeowner's associations, and other community-based organizations. **(S, O)**
- *Work with community members and with local, state, and federal agency partners to evaluate existing and develop new local fire-safety strategic plans, using these Community Fire Safety Action Plans as a basis. More detailed plans should include identification of an appropriate long-term management structure, funding sources, a localized risk assessment,*[7] *and priority wildfire risk and hazard-reduction projects.* — Fire Safe Councils. **(M)**
- *Collaborate to foster new and support existing Fire Safe Councils in the Santa Monica Mountains.* — California Fire Safe Council, Los Angeles County Fire Department Forestry Division, National Park Service, Ventura County Fire Department, University of California Cooperative Extension, and other interested partners. **(O)**

8.2. Hardening Homes to Survive Wildfire—Reducing Structural Ignitability

As detailed throughout this CWPP, effective fire-safe communities begin by making homes and other structures ready for wildfire. Reducing the chance that structures (our homes, businesses, etc.) will burn is a fundamental component of any CWPP.

> "Research shows that a home's ignition potential during extreme wildfires is determined by the characteristics of its exterior materials and design and their response to burning objects within one hundred feet and firebrands (burning embers)."[8]

The following sections identify specific actions that can reduce structural ignitability in the Santa Monica Mountains region.

8.2.1. Implementing WUI Building Standards

The California State Fire Marshal's Office has developed state-of-the-art building standards[9] for use within the Wildland-Urban Interface zone (WUI). The current standards become effective on January 1, 2011. Homeowners in the Santa Monica Mountains need to become familiar with these standards so they can upgrade their homes to improve wildfire survivability. Section 4.1.1 in this CWPP summarizes standards.

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[6] See Chapter 9.

[7] See Chapter 7, section 7.3.

[8] Cohen (Fall 2008), "The Wildland-Urban Interface Problem," p. 23.

[9] See "California's Wildland-Urban Interface Code Information:" www.fire.ca.gov/fire_prevention/fire_prevention_wildland_codes.php

Single-family home values in the Santa Monica Mountains range from approximately $600,000 to $65,000,000. Expenses to "harden" homes here (to make them fire-resistant) are only a fraction of these home values, and may be much more effective in the long term than even the best insurance policy. This assumes that it is better for a home to survive a wildfire instead of having to rebuild. Local FSCs such as the Malibu West Fire Safe and Sustainability Council are exploring the options of neighborhood-wide, wholesale purchase and installation of WUI building materials such as fire-safe vents. This is an effective and efficient way to reduce costs and wildfire risk; it can reduce the chances of home-to-home ignition. Other creative financing options should be explored. For instance, state legislation is moving forward to provide financial incentives for improving home energy efficiency; these standards include upgrading to double-pane windows, which would also increase a house's structural integrity against wildfire.

Roofing: Research shows that homes with a non-combustible roof and defensible space of at least 30 to 60 feet around the structure have an 85–95% chance of survival in a wildfire.[10] Efforts should continue to eliminate all wood-shake roofs and to correctly cap tile roofs (i.e. to completely seal the open ends).

Gutters: There are several new, simple technologies available to cover gutters to keep them from accumulating hazardous fuels. Research has shown that a home with a gutter full of leaves has enough fuel to ignite a roof, especially if there is a path for the fire to reach any exposed flammable surfaces.

Windows: Double-pane windows with tempered glass for the outside pane are far more effective in their ability to survive a wildfire, as well as being a smart long-term solution for energy conservation within the home.

Siding: Walls need to resist heat and flames, as well as embers. Non-combustible material like stucco, concrete, and tile resist flames but don't always resist heat and embers. Therefore, all siding needs to have a sheet-rock barrier underneath the material, and any gaps along the bottom or top edges must be sealed or caulked. Wood siding on homes should be replaced or treated with non-toxic fire retardant.

Vents: Recent fires have shown that screened vents alone can fail to keep embers out of attics and other spaces. New technology that combines several features increases the effectiveness of a vent's ability to prevent embers from entering attics and other flammable spaces.

These fuels are too close to this wood-sided house. The open areas under the home should be sealed off.

Decks: With adequate defensible space in the home ignition zone, most solid wood decking is fire-resistant enough to withstand short-term heat loads. However, this requires minimal fuels both horizontally and vertically around and below decks.

Outbuildings, Wood Piles, and Other Fuel Sources: Outbuildings (e.g. storage, wood, and tool sheds) with less than 30 feet of separation from main structures place homes at a high risk of loss. If these structures catch fire, they can catch the home on fire as well. Many fuel sources are

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

found around homes, especially in the more rural areas of the Santa Monica Mountains. These include wood piles, fencing, decks, propane tanks, and other fuel-storage areas. Storing flammable items closer than 30 feet from homes and structures greatly increases risk of fire damage, and is illegal in many cases.

- *Educate Santa Monica Mountains residents on current WUI building standards and the products approved by the State Fire Marshal's office.* — SMM Fire Safe Alliance, Fire Safe Councils, homeowner's associations, and community development/planning and building departments. **(S, O)**
- *Create and implement educational programs on hardening homes in the Santa Monica Mountains, including the possibility of a WUI building products fair.* — Fire Safe Councils in coordination with Plan Partners. **(M)**
- *Utilize planned "Fire-Safe Demonstration Building" to showcase fire-safe building materials and retrofit products.* — Los Angeles County and Resource Conservation District of the Santa Monica Mountains. **(S)**
- *Work with State Fire Marshal-approved WUI building product vendors to create discounted wholesale purchases and installation of products to harden homes at the neighborhood scale.* — Fire Safe Councils and homeowner's associations. **(S, O)**
- *Explore parallel incentive programs that can also finance upgrading homes to current WUI building standards.* — SMM Fire Safe Alliance, counties, and cities. **(M)**

8.3. Reducing Urban Fuels

The most effective fuel-reduction action in Santa Monica Mountains communities takes place immediately within and adjacent to homes and other structures—the home ignition zone.[11] Hence, in the event of a wildfire, there will be limited fuels adjacent to a structure to carry the fire to it.

8.3.1. Reducing Fuels Around Homes and Other Structures

Residents have the primary responsibility for adequately reducing hazardous fuels around their homes and properties. As shown in Chapter 4, it makes sense and it's the law.

At the same time, few people who carry out fuel treatments, whether homeowners, gardeners, contractors, or land managers, are familiar with low-impact, sustainable methods to reduce fuels and their associated fire risk. Insurance inspectors, landscape architects, and landscape designers often do not understand the natural values and inherent risks in the WUI, and as a result they may require or design landscapes with too little or too much vegetation. Educational programs are needed to train these audiences in Best Management Practices (BMPs) for fuel-hazard reduction.

[11] See Chapter 4 for more information.

Chapters 4 and 5 include best management practices for creating homes and landscapes that can survive wildfire in the Santa Monica Mountains. These BMPs are based on the Conservation Principles found in Chapter 1. Chapter 4 also details specific actions that residents can take around their homes to create a fire-safe landscape while still conserving the surrounding environment. Best management practices in the Santa Monica Mountains do not currently include prescribed fire.

The University of California Cooperative Extension (UCCE) has proposed a series of educational workshops for homeowners, vegetation management contractors, land managers, landscape designers and architects, and insurance inspectors. Workshops for homeowners would cover the basics of area fire ecology and how to manage fuels in the home ignition zone. More in-depth workshops are proposed to address identification of native, endangered, and invasive plants, with an emphasis on specific species or specimens that pose high fire risk; techniques for measuring a treatment area, and for thinning and pruning trees and shrubs; and how to dispose of cut materials. The workshops would include a field component and reference materials, and be held in both English and Spanish. The information from these workshops would be beneficial to share with local fire department staff that conduct residential brush clearance inspections throughout the Santa Monica Mountains.

Property with heavy urban fuels.

Programs targeted at assisting residents to join together to reduce fuels can be very successful. This is especially important where parcels with absentee owners abut residential parcels. Statewide, neighbors are contacting absentee owners to get permission to clear adjacent properties in order to increase defensible space to their own homes and neighborhoods.

The City of Long Beach created a water-conservation incentive program to convert lawns to native plant gardens.[12] The program was so successful it quickly used all available funds. Los Angeles County Water District No. 29 is exploring a similar program for the Santa Monica Mountains. The Metropolitan Water District of Southern California offers rebates through their Be Water Wise[13] program. Such programs in the Santa Monica Mountains could be tied to fire-safe plants, as many native species are also fire safe.[14]

As discussed in Chapter 6, the Santa Monica Mountains Fire Safe Alliance is a cooperative group of agencies, municipalities, and communities who are dedicated to creating fire-safe solutions for the Santa Monica Mountains. As a collaborative group, they are well positioned to provide leadership for many of the efforts outlined in this CWPP, especially those concerning public-private communications and education. They recently

[12] www.lblawntogarden.com

[13] www.bewaterwise.com

[14] See Appendix J for more information on fire-safe plants.

produced *A Road Map to Fire Safety: How to Create Defensible Space in the Santa Monica Mountains.*[15] This document is a good basis for a community fire-safety educational program.

- *Implement best management practices to reduce urban fuels within the home ignition zone around all structures, and on all residential parcels.* — Santa Monica Mountains residents, resource professionals, landscape architects. **(S, O)**
- *Provide information and/or resources to help residents reduce urban fuels around their homes and in their neighborhoods.* — SMM Fire Safe Alliance and Fire Safe Councils. **(S, O, ★)**
- *Coordinate conservation and fire-safety objectives in educational programs, including promoting options for conserving water, and incentives to replace exotic plants with native species.* — Resource Conservation District of the Santa Monica Mountains, UCCE, water districts, and others providing community fire-safety education. **(O)**

- *Develop programs to reduce urban fuels for elderly and disabled residents who are not able to do this for themselves.* — Fire Safe Councils, homeowner's associations, senior centers, schools, and other community and social service organizations. **(S, O)**
- *Conduct workshops to train homeowners, fire department clearance inspectors, vegetation management contractors, land managers, landscape designers and architects, and insurance inspectors in techniques for low-impact, sustainable fire-risk reduction.* — UCCE and other Plan Partners. **(S)**
- *Identify and maintain public locations within the Santa Monica Mountains to be models for fuel reduction in the home ignition zone, based on the Conservation Principles and best management practices outlined in this CWPP.* — Public agencies. **(M, O)**
- *Work with the local insurance industry to provide education on appropriate local fuel-reduction practices, and materials for them to share with policyholders.* — SMM Fire Safe Alliance, Fire Safe Councils, and homeowner's associations, and community development and planning departments. **(S)**
- *Work to create an incentive program for drought-tolerant and fire-resistant landscaping, based on the Long Beach model.* — Water districts, Plan Partners. **(M)**

8.3.2. Hazard Tree Management Program

Throughout the Santa Monica Mountains, key ingress and egress routes are made vulnerable by the presence of hazardous trees along roadways. These trees could block access or threaten neighboring structures if they were to ignite. In many places throughout the Santa Monicas, for example, large eucalyptus and pine trees as well as unmaintained palm trees overhang roads and could quickly block access during a wildfire if they catch on fire or are downed.

Hazardous trees are also found scattered throughout SMM neighborhoods, in many instances directly adjacent to one or more

West Hillside Fire Safe Council project.
Source: Ken Wheeland

[15] www.fire.lacounty.gov/Forestry/RoadMaptoFireSafety.pdf

homes. Palm trees have been found to be especially hazardous because of the burning material and embers they can generate.

In many of these locations, hazardous trees will need to be removed, as was done with the successful project of the West Hillside Fire Safe Council. In other areas, the trees only need to be thinned or "limbed up." The Horizon Hills Fire Safe Council's hazardous tree thinning project is an excellent example of such efforts. Both of these local FSC efforts should be replicated in other SMM neighborhoods.

Note: As explained in Chapters 4 and 5, oak trees are protected throughout the Santa Monica Mountains, and permits are required even to prune them. Hence, oaks should not be included in any hazard tree management program. Hazardous trees were identified at each of the community meetings and their locations pinpointed on maps for each of the planning units *(see Part II)*. Details regarding priorities for removing or thinning hazardous trees within each planning unit are included in the Community Fire Safety Action Plans in Part II of this CWPP.

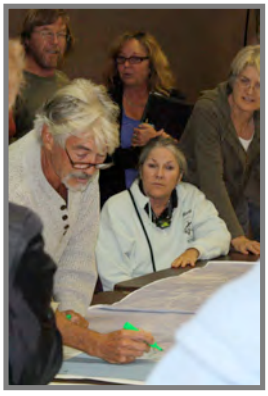
- *Develop and implement community-scale hazardous tree removal and thinning programs for all communities in the Santa Monica Mountains.* — Local Fire Safe Councils, homeowner's associations, and residents. **(M)**
- *Work with neighbors to pool resources to manage individual hazardous trees in neighborhoods or negotiate discounted rates to manage several in an area at a one time.* — Local Fire Safe Councils and homeowner's associations. **(S)**

8.3.3. Community Chipping Program

Community chipping programs are in place throughout California to allow residents to share in the use of a chipper to dispose of cut branches and such. A previous popular attempt in Topanga demonstrated that in order to be successful, a project should improve fuel reduction at a community scale. It must also include an associated educational program on reducing urban fuels in the home ignition zone. Fire Safe Councils and homeowner's associations can organize their neighborhoods to schedule chipping regularly, based on models developed by other Fire Safe Councils statewide.

- *Explore implementing a local chipper program.* — Fire Safe Councils, homeowner's associations, and neighborhood organizations. **(M)**

8.4. Assessing Risks at the Local Level



This CWPP focuses on wildfire prevention and community fire safety at the scale of the Santa Monica Mountains. More intensive analysis is needed at the local level for all the communities included in this CWPP. The Community Fire Safety Action Plans found in Part II of this CWPP are a beginning for that local analysis. Those plans can be used by local Fire Safe Councils and homeowner's associations to conduct a more detailed neighborhood or community-level risk assessment. A community mapping process similar to that used in the planning stages for this CWPP could be employed at that level; Appendix B has detailed instructions for the mapping exercise. Appendix L has a simple risk-assessment form that can be used by residents or neighborhood groups to evaluate homes and other structures.

A localized risk assessment for the high-risk communities in the Santa Monica Mountains should include an assessment of:

- Hardened homes: building materials, construction, and age of structures
- Community values at risk
- Urban fuels, home landscaping, and defensible space
- Hazardous trees
- Topography and location in the landscape
- Santa Ana winds and Red Flag conditions
- Community education and awareness
- Community emergency preparedness
- Community preparedness plans provided to public safety agencies
- Sources of local ignitions
- Ingress and egress routes
- Water sources
- Existing fuel reduction
- Impact of surrounding wildlands/vegetation
- Post-fire effects (e.g. floods, mudslides, soil erosion, invasive species, etc.)

➢ *Perform a basic risk assessment within individual neighborhoods and communities based on the CWPP mapping exercise*[16] *and/or the hazard assessment form.*[17] *Local emergency managers, fire agencies, state and federal land management agencies provide technical support.* — Fire Safe Councils, homeowner's associations, other neighborhood organizations. **(M)**

➢ *Use the results of these local risk assessments to prioritize fire-safety projects within communities.* — Fire Safe Councils, homeowner's associations, other neighborhood organizations. **(O)**

8.5. Reducing the Risk of Wildfire

Wildfires happen in the Santa Monica Mountains, and they are historically associated with human activity. The largest fires are tied to Santa Ana winds. Given this, fire-prevention steps should be taken to reduce the possibility of fires starting, and then spreading into a wildfire conflagration. However, this requires commitment and coordination from all residents and stakeholders in the Santa Monica Mountains.

For example, power lines blowing down in high winds is a known cause of wildfire here.[18] The cost to bury (or "underground") power lines is tremendous and the process is complex. It involves power companies and local, county, and state government.

> "The California Public Utilities Commission's (CPUC) Rule 20 sets policies and procedures for the conversion of overhead power lines and other equipment to underground facilities, a process called

[16] See Appendix B: Community Mapping Exercise.

[17] See Appendix L: Home Ignition Zone Structure Assessment Guide.

[18] See Chapter 3, section 3.1, Fire History, for statistics about fires started by power lines.

undergrounding… Under Rule 20, undergrounding projects are financed by utility rate money, combined rate funds and local tax proceeds, or private funds, depending on whether Rule 20A, Rule 20B or Rule 20C provisions apply."[19]

Local governments receive a portion of rates from utilities to use for this purpose. Rule 20A, which provides the most funding for undergrounding, is paid for by all ratepayers (in this case all Southern California Edison ratepayers), not just local ones. To qualify, the project must be submitted by local governments through a public process and meet the following criteria:

- "The location has an unusually heavy concentration of overhead facilities.
- The location is heavily traveled.
- The location qualifies as an arterial or major collector road in a local government's general plan.
- The overhead equipment must be located within or pass through a civic, recreational or scenic area."[20]

Many areas within the Santa Monica Mountains meet these criteria. Additionally, when compared to the value of a home in many neighborhoods, and the ability to share the cost of undergrounding over a long time period, the benefits become clearer.

As stated throughout this CWPP, there are many cost-effective ways to reduce the risks associated with power lines, one simpler example being to ensure that power lines are cleared of any vegetation below or around them. Another potential solution is to set up transformers with emergency disconnects and warning systems for the utilities.

There was widespread concern at community meetings regarding the possibility of illegal and/or legal campfires starting wildfires, mainly on public lands. Local fire history shows that legal campfires have not been a source of ignition in the Santa Monica Mountains *(see Fire History Data in Appendix E).*[21] Legal fire pits and camp stoves are regulated, and restricted during high fire-hazard conditions. Yet it is still important to enforce existing regulations to eliminate this potential risk. These enforcements include "cold camping" (e.g. no camp fires or barbeques) and stricter regulations during Red Flag conditions (e.g. no camping).[22] Additional concerns included locations of proposed new public campsites, which should be located in generally safer areas, such as areas that are easy to evacuate.

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[19] www.sce.com/PowerandEnvironment/EnvironmentalCommitment/Beautification/

[20] www.sce.com/PowerandEnvironment/EnvironmentalCommitment/Beautification/

[21] Robert Taylor, National Park Service, personal communication, April 27, 2010; and National Park Service (2005), *Final Environmental Impact Statement for a Fire Management Plan,* Santa Monica Mountains National Recreation Area; www.researchlearningcenter.org/samo/planning/FireEIS/.

[22] Mountains Recreation and Conservation Authority: http://mrca.ca.gov/DEIR-Vol-I-MRCA%20(D)/5.6%20Fire%20Hazards-DEIR-WithFigures.pdf, http://mrca.ca.gov/MRCA_Ordinance_3-3-10.pdf , http://documents.coastal.ca.gov/reports/2009/6/W16a-6-2009-a3.pdf;

Santa Monica Mountains Conservancy: http://www.smmc.ca.gov/rules.html, http://smmc.ca.gov/fire-prevention.html;

National Park Service: http://www.nps.gov/samo/parkmgmt/lawsandpolicies.htm#CP_JUMP_191766;

State Parks: http://www.stateparks.com/santa_monica_mountains.html

Ironically, another source of wildfire in the Santa Monica Mountains is the equipment used during fuel-reduction activities. For this reason there are guidelines in terms of when and how to clear fuels, such as early in the morning and well before fire season. This is one reason why fuels must be cleared by the annual fuel-hazard reduction deadline of May 1st inland and June 1st on the coast. However, extra care must be taken when reducing fuels in the spring, as this is when ground-nesting birds are in their nests, and many native perennials are blooming. *See Chapters 4 and 5 for protecting native species while undertaking fuel-reduction activities and Chapter 4 for details regarding how to safely reduce fuels.*

Finally, community Arson Watch was started in the Santa Monica Mountains in 1982. Currently there are six teams in place throughout the area. Every community—especially those bordering wildlands—should have an active Arson Watch program. For more information, visit www.arsonwatch.com or call 310-455-4244. Several known "party spots" were identified on the community meeting maps throughout the Planning Area. Patrolling these known sites should be a part of any Arson Watch program.

- *Ensure there is an active Arson Watch program for all neighborhoods.* — Homeowner's associations, Fire Safe Councils, and other community-based organizations. **(S)**
- *Coordinate with National Park Service to get copies of CWPP maps identifying local wildfire risk and hazard areas.* — Arson Watch. **(S, ★)**
- *Enhance public education efforts regarding fire danger on public lands, including closures during Red Flag conditions.* — Public land managers. **(M, O)**
- *Explore options to prioritize and bury power lines wherever possible, including local assessment fee to share costs with neighboring residents.* — Local, county, and state governments and utilities. **(L)**

8.6. Enhancing Fire Protection

8.6.1. Resources for Fire Protection

Very few wildland Type III fire engines are stationed in the Santa Monica Mountains, yet these would function well in many of the remote and geographically challenging locations found here.

Ventura County Fire Station #33 is located in Lake Sherwood. It is one of the oldest Ventura County stations and provides protection to the neighborhoods in the northern part of the Santa Monica Mountains there. This is a strategically important station for Lake Sherwood and Hidden Valley, and hence should not be relocated.

Wildfire incidents create the need for emergency-support facilities, such as incident command centers and staging areas. There are many pre-established locations, although circumstances may prevent their use. Therefore, an ongoing search for suitable sites is needed.

Information gathered at the CWPP community meetings will augment existing data that fire departments now use to locate resources for fire protection. Locations of pools and gates, warnings about known road issues, as well as high-risk and hazard areas can help local and out-of-town firefighters to protect residents. Organized neighborhoods, through Fire Safe Councils or homeowner's associations, can assist fire protection agencies in these efforts.

- *Support National Park Service to analyze procurement of additional Type III wildland fire engines for the Santa Monica Mountains.* — Plan Partners. **(M)**
- *Maintain or enhance existing staffing levels and stations throughout the Santa Monica Mountains.* — Ventura and Los Angeles County Fire Departments. **(S, O)**

- *Identify additional incident command centers and staging areas.* — Plan Partners. **(M)**
- *Coordinate with National Park Service to procure data generated from community meetings.* — Fire protection agencies. **(S, ★)**
- *Seasonally work with local fire stations to develop detailed pre-fire deployment plans and structure protection plans for use by both local and out-of-area firefighters.* — Fire Safe Councils. **(S, O)**

8.6.2. Water

Water is critical for successful fire suppression. Ventura County's current minimum fire-fighting water requirement for small homes that are on a private system is approximately 5,000 gallons of accessible water. Larger homes require more storage. As described in Chapter 4, similar standards are in place in Los Angeles County. Rural residents ideally would have up to 10,000 gallons of available water exclusively for structural fire protection. Chapter 4 identifies several options for water storage. More water storage and local water conservation measures are critical to ensure that residents and firefighters have adequate water to suppress a fire.

The water systems in the Santa Monica Mountains are designed to provide adequate water for structural fire fighting. During wildland fires, domestic water supplies are used for structure protection (i.e. meaning protecting multiple structures) as well as for wildfire suppression. This combination stresses local systems. Additional water resources are needed for wildland fire fighting. Augmenting water storage that is not for domestic use will help wildfire suppression efforts. *See the Wildfire Environment section for each Fire Safety Action Plan for more localized information on water resources in the communities of the Santa Monica Mountains.*

- *Educate residents on the needs and benefits of water storage.* — Fire Safe Councils, Resource Conservation District, water purveyors, watershed councils, and other interested partners. **(S, O)**
- *Educate residents on how to conserve water, especially during wildfire events.* — Fire Safe Councils, homeowner's associations, and fire agencies. **(S, O)**

- *Equip swimming pools with generators and pumps for emergency use, and put up a pool sign near property address sign.*[23] — Santa Monica Mountains residents. **(S)**
- *Collaborate with Fire Safe Councils, homeowner's associations, and other community groups to clearly mark fire hydrants throughout the Santa Monica Mountains, and educate residents on keeping them cleared.* — Fire departments, water providers, and local government. **(M, O)**
- *Educate Fire Safe Councils, homeowner's associations, and neighborhood associations about existing water district back-up power generation at water pump locations throughout the Santa Monica Mountains. Cooperate with water districts to explore augmenting the system where needed through local parcel assessments or other financing options.* — Water purveyors, Plan Partners. **(M)**
- *Implement educational programs for local residents on water supply issues, capabilities, and history in the Santa Monica Mountains, and how this relates to wildfire protection.* — Water purveyors. **(M)**
- *Review water supply issues identified in the community meetings.*[24] — Water purveyors. **(S)**

8.6.3. Roads

Roads provide emergency response access in addition to ingress and egress for residents. Fire trucks and other emergency vehicles are slowed in their response when narrow roads and/or unstable, undersized bridges are encountered, or at times when landslide/flood debris results in limited passage. Several areas were identified in the community meetings as needing bridge or road repair work. These are shown on the meeting maps for each planning unit in Part II.

Throughout the Santa Monicas, trash cans, cars, and other items often impede effective ingress and egress. In Los Angeles County, the law states that trash cans are only allowed on the street after 5 pm on the day preceding and until 8 pm on the day of waste collection.[25] Roadside vegetation fuel reduction is the responsibility of the adjacent homeowner.

Policies and associated enforcement are needed to address the crowding of critical evacuation routes. Key evacuation routes should always be kept clear of parked vehicles, and obstructions such as trash cans should not be left on the road beyond those hours allowed by law. Strict standards need to be identified and enforced to ensure that evacuation routes are kept clear at all times. Incentives should be explored for creating off-street parking. One tool for homeowner's associations and neighborhood organizations is to request that key access roads be posted as "Fire Lanes," and key turnaround

[23] See Chapter 4 for details.

[24] See Part II.

[25] Los Angeles County Code, Waste Collector Permits, Containers--Hours for placement: Chapter 20.72.110. http://search.municode.com/html/16274/index.htm.

areas posted as "Tow-Away Zones." This would require community cooperation to ensure that neighbors comply to facilitate safe ingress and egress for all.

- *Cooperate to remove trash cans and other road obstructions from streets in a timely and legal manner.* — Santa Monica Mountains residents. **(S, O)**
- *Maintain (trim back) vegetation on roads along private properties. Remove all dead and dying vegetation, and mow fuels along driveways and roads to county and city codes. Prune all branches that are hanging over private roads and driveways to a height of at least 16 feet above the ground (13'6" for oaks).*[26] — SMM residents. **(S, O)**
- *Identify access roads to post as "Fire Lanes" and key areas as "Tow-Away Zones" at the neighborhood level.* — Homeowner's associations and neighborhood organizations in cooperation with local fire departments, public works departments, and Caltrans. **(M)**

- *Work with fire departments, law enforcement, and California Highway Patrol to identify potential problems with road ingress and egress that increase emergency response times.* — Counties' and cities' Public Works departments and/or Caltrans, and Fire safe Councils. **(S)**
- *Develop, implement, and enforce strict policies governing maintenance of evacuation routes to ensure that they are free of obstructions.* — Local governments. **(M)**

Gates

Gates can pose a serious obstacle to safe and effective evacuation. Automatic gates that do not open during power outages are especially dangerous, and may be illegal. Ventura County requires battery backup for gates serving five or more homes, and recommends it for gates serving one to four homes.

- *Initiate informational programs to educate residents about the importance of easily passable gates during emergencies.* — Law enforcement, fire departments, Fire Safe Councils, and homeowner's associations. **(S, O)**

8.6.4. Signage of Roads and Structures (Addressing)

Throughout the Planning Area, firefighters and other emergency personnel are faced with the challenge of finding homes quickly and safely during an emergency. At a minimum, existing city and county standards must be enforced that require streets and homes to be visibly addressed. These standards mandate that signs be 4 inches high, with a contrasting backing, and in accordance with the California Building Code.

- *Collaborate to enforce existing signage requirements for streets and residences.* — Law enforcement, fire departments, counties, and cities. **(M, O)**
- *Explore incentives for private road and address signage conformance, including public education.* — Law enforcement, SMM Fire Safe Alliance, Fire Safe Councils, and homeowner's associations. **(M)**

[26] See Chapter 4 for specifications.

Internet-based road maps are incorrect for several areas in the Santa Monica Mountains. For example, many fire roads are shown as public access roads. Many of these locations were identified in the community meetings and are listed in the Fire Safety Action Plans in Part II.

Both Google (http://maps.google.com/support/bin/answer.py?hl=en&answer=98014) and MapQuest (www.mapquesthelp.com/app/answers/detail/a_id/911 - rn:sesssion%23*)* have online options for editing incorrect data. Fire Safe Councils and other neighborhood groups can contact theses companies to correct the information, and to offer alternative routes. (Yahoo and Thomas Brothers will not accept data corrections.) In some cases, public safety agencies may need to support these community efforts when incorrect data could compromise safe and effective evacuation.

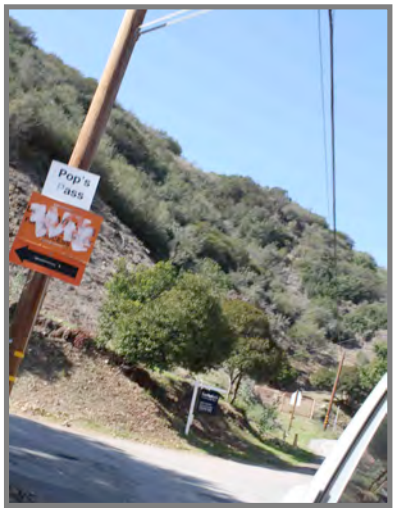
- *Contact Google, MapQuest, and others to correct errors in Internet-based road and address information in the Santa Monica Mountains, for areas identified at community meetings.* — Fire Safe Councils, homeowner's associations, neighborhood organizations in conjunction with public safety agencies. **(S, O)**

8.7. Ensuring Safe and Effective Evacuation

8.7.1. Developing Evacuation Routes and Sites

Many neighborhoods in the Santa Monica Mountains have limited evacuation options. All evacuation sites and routes are driven by the specific incident. Community members used their local knowledge to identify potential evacuation routes and safe areas on the maps at the 2009–2010 community CWPP meetings. This information is being passed on to local law enforcement and fire agencies to review for potential use.

If residents are trapped because their escape is cut off and the fire is already at their location, there are steps to take to increase the chance of survival. These steps are outlined in "Ready, Set, Go."[27] This differs tremendously from sheltering in place, which is not recommended and is only feasible on the advice of public safety officials. Residents must understand that the consequences associated with sheltering in place extend beyond the individual and could threaten firefighter safety and overall suppression effectiveness.



Participating residents generated several ideas regarding the most effective ways to communicate evacuation information to the public. These are included in the community-identified project sections of each Community Fire Safety Action Plan *(see Part II).* An example is to GPS the locations and elevations of approved safe areas and put them and instructions on a "pocket card" to distribute to local residents, as well as posting the information on the Internet. There are several gathering places

[27] Los Angeles County: www.fire.lacounty.gov/safetypreparedness/ReadySetGo/pdf/Ready Set Go 09.pdf, Ventura County: http://fire.countyofventura.org/LinkClick.aspx?fileticket=9hQO1rR_ezw=&tabid=231

in the SMM such as camps and retreat enters, that may be occupied during fire season. Occupants may not have their own transportation. These sites need to be surveyed and included in local evacuation planning.

- *Collaborate to develop local evacuation plans and update them as needed, with input from local fire departments and law enforcement.* — Fire Safe Councils, homeowner's associations, and neighborhood groups. **(S, O)**
- *Develop and distribute local safety information in the event that citizens are unable to evacuate.* — Fire agencies and law enforcement. **(M)**
- *Review the community-identified information generated through this planning process for development as incident-specific evacuation areas and routes.* — Fire departments and law enforcement. **(S)**
- *Review community-identified alternate evacuation options with local fire departments.* — Counties' and cities' Public Works departments, Caltrans, and Fire Safe Councils. **(M)**
- *Develop and/or upgrade appropriate sites (including those identified at community meetings) to function as evacuation sites and/or disaster centers during emergency situations.* — Fire departments and Red Cross **(M)**
- *Develop and distribute* "Ready, Set, Go" *evacuation-planning materials for all areas within the Santa Monica Mountains to educate residents on evacuation in their community.* — Counties and cities, law enforcement, Red Cross, fire departments, and Fire Safe Councils. **(S, O)**
- *Identify leadership and resources to develop evacuation procedures and information for vulnerable populations.* — Counties and cities, social services agencies, senior centers, law enforcement, fire departments, Red Cross, Fire Safe Councils, and other interested local, state, and federal agencies. **(M)**
- *Survey gathering places in each neighborhood and include in local evacuation planning.* — Fire Safe Councils and homeowners associations, with fire departments and law enforcement. **(S)**

8.7.2. Evacuation Plans for Pets and Large Animals

Many residents in the Santa Monica Mountains have pets, large animals (especially horses), or both. A system of evacuation sites for pets and livestock needs to be developed. Many shelters will not allow animals other than assistance or service dogs. The Red Cross and Humane Society are two good resources. The newly released Los Angeles County "Emergency Survival Guide" contains excellent information for dealing with horses in an emergency.[28] In Ventura County, the Animal Regulation Department offers a website[29] with information on animal evacuation, another website specific for horses,[30] and a brochure entitled "Disaster Planning for Livestock Owners."[31]

The Los Angeles County Department of Animal Care and Control, Equine Response Team[32] (LACDACCERT), and the Topanga Canyon Equine Education Team currently provide leadership on working

[28] County of Los Angeles, "Emergency Survival Guide," http://lacoa.org/PDF/EmergencySurvivalGuide-LowRes.pdf

[29] http://portal.countyofventura.org/portal/page/portal/animalreg/EVAC/

[30] http://fire.countyofventura.org/Prevention/FireLifeSafety/HorseSafety/tabid/190/Default.aspx

[31] County of Ventura, Animal Regulation Department, *Disaster Planning for Livestock Owners,* http://portal.countyofventura.org/portal/page/portal/animalreg/Documents/livestock.pdf

[32] Los Angeles County Department of Animal Care & Control Volunteer Equine Response Team (LACDACCERT), Mary Lukins, 818-991-8065.

with horse owners to safely evacuate horses, or to provide shelter locations in Los Angeles County. A similar program exists in Ventura County called the Emergency Volunteer Rescue Team (EVRT).[33]

- *Work with Plan Partners, Red Cross, Humane Society, counties, and local veterinarians to identify existing options for local pet and livestock emergency evacuation. Work through local feed stores, veterinarians, boarding facilities, and animal associations to educate residents on options.* — Fire Safe Councils. **(M, O)**
- *Collaborate to develop local horse evacuation plans, in conjunction with LACDACCERT and EVRT.* — Horse owners. **(S, O)**
- *Trailer-train horses to safely evacuate. — Horse owners.* **(S, O)**

8.8. Community Emergency Preparedness

The difference between being prepared for emergencies or not can literally be the difference between life and death. It's to everyone's advantage to be ready for the inevitable natural disasters that face us, as wildfire and other emergencies will continue to be a reality for Santa Monica Mountains residents. Actions can be taken at the neighborhood and community level to help ensure that all local residents and property are as safe as possible.

Community Emergency Response Teams (CERT) are "an organization of volunteer emergency workers who have received specific training in basic disaster response skills, and who agree to supplement existing emergency responders in the event of a major disaster."[34] CERT trainings build disaster response skills in fire safety, search and rescue, team organizing, and medical operations pertaining to disasters. Such skills become extremely valuable in situations where professional responders cannot act immediately. All four local governments (Los Angeles and Ventura counties, Malibu, and Calabasas) offer CERT trainings. CERT teams are in place throughout the Santa Monica Mountains. Every neighborhood or homeowner's association should have at least one functioning CERT team.

- *Work with local fire department and interested communities to develop new or enhance existing CERT programs.* — Counties' and cities' emergency planning departments. **(M, O)**
- *Contact local emergency planning departments to learn how to participate in local CERT programs.* — Homeowner's associations and Fire Safe Councils. **(S)**
- *Ensure that each neighborhood has a functioning CERT team.* — Homeowner's associations, Fire Safe Councils, and residents. **(S)**

8.8.1. Emergency Notification and Communications

Law enforcement, fire departments, and related agencies have a well-rehearsed process for communication among first responders. Difficulties remain regarding how to effectively and rapidly alert residents in the most remote areas. Options need to be explored to improve emergency communication in these areas. Social networking options such as Facebook and Twitter, while not infallible, are proving their usefulness in rapid and

[33] Ventura EVRT: http://portal.countyofventura.org/portal/page/portal/animalreg/EVRT/

[34] http://en.wikipedia.org/wiki/Community_Emergency_Response_Team

effective communication when normal networks may not be functioning. Using these communication tools should be fully explored.

There are mass notification systems available for all residents in the Santa Monica Mountains. This is a service provided by local governments to call residents in the case of an emergency in their community. Residents are encouraged to register both their home and cellular phone numbers at the following websites:

- Unincorporated Los Angeles County—www.alert.lacounty.gov
- Unincorporated Ventura County—http://portal.countyofventura.org/portal/page/portal/cov/emergencies/reverse911/reverse911register
- City of Malibu—www.ci.malibu.ca.us/index.cfm/fuseaction/DetailGroup/navid/471/cid/11670/
- City of Calabasas—www.cityofcalabasas.com/departments/PublicSafety/AEN.html

Several areas were identified that have problems with cellular service. Improvements to those areas would facilitate emergency communications. These include areas of Corral Canyon, lower Mulholland Drive, Decker Canyon Road, Encinal Canyon Road, Yerba Buena and Mipoloma Roads, and upper Rambla.

- *Collaborate to explore additional measures for alerting residents to pending emergencies.* — SMM Fire Safe Alliance, law enforcement, fire agencies, Fire Safe Councils, and homeowner's associations. **(S, O)**
- *Register cellular phones and/or email addresses with a local emergency mass-notification system.* — Santa Monica Mountains residents. **(S, ★)**
- *Contact cellular providers to explore additional cellular tower locations.* — Homeowner's associations, Fire Safe Councils, and neighborhood organizations. **(M)**

8.8.2. Residential Emergency Preparedness

Effective evacuation planning depends on residents being prepared. This is especially important for families with small children, elderly and disabled citizens, and other vulnerable populations. Residents in remote areas of the Santa Monica Mountains must be especially prepared for evacuation. To this end, all residents should create a Family Disaster and Evacuation Plan. Information is available from the American Red Cross at: *www.redcross.org/preparedness/cdc_english/evac-plan.html* regarding how to do family disaster planning, and *www.redcross.org/preparedness/cdc_english/evac-1.html* for how to create a family evacuation plan. Additional information is available from the Department of Homeland Security at: *www.ready.gov/america/index.html*.

In both Los Angeles and Ventura counties, the "Ready, Set, Go" programs provide basic information on emergency preparedness. See footnote 27 in this chapter for links to online versions of those documents.

In remote rural neighborhoods or communities, phone trees can be an effective local strategy for disseminating information quickly, as long as they are maintained. Homeowner's associations, road associations, and local schools are all good venues for setting up a phone tree. Simple steps regarding how to establish a phone tree can

be found at: www.ehow.com/how_4325_set-emergency-phone.html. Commercial options for doing this on a larger scale are available through One Call Now[35] and Call-Em-All.[36]

- *Prepare for wildfire and other emergencies by creating family disaster and evacuation plans.* — Santa Monica Mountains residents. **(S, O, ★)**
- *Consider storing valuable items in a fire-safe urban area during extreme fire weather conditions.* — SMM residents in remote rural areas. **(S, O)**
- *Organize emergency phone trees in each neighborhood and keep them up to date. Make sure everyone in the neighborhood is on someone's call list, and that deaf residents get contacted in person.* — Fire Safe Councils and homeowner's associations. **(S)**
- *Conduct disaster preparedness and emergency response drills, throughout the Santa Monica Mountains*. — Counties and cities, law enforcement, fire departments, Fire Safe Councils, Red Cross, and senior centers. **(S, O)**

8.9. Promoting Fire-Safe Education

Many people are enthusiastic to create a fire-safe home once they understand why it is to their advantage. To this end, educational programs targeted at local residents can be very successful.

A number of educational/informational program ideas were proposed by community members through this CWPP process. Some of these are:

- Awareness campaign: fuel reduction and preparedness (on TV etc.).
- Community education on pool pumps, generators, and home fire-preparedness equipment.
- Education in schools, in coordination with school/agency fire prevention.
- Education on how to survive if caught in a fire.
- Education program on "house out," and a home ignition zone resource list.
- Local news articles relative to current fire activity.
- Make magnet with emergency radio stations and phone numbers, and mail to residents.
- Training program for residential home defense from wildfire/CERT training.

- *Review and evaluate community ideas regarding fire safety education and develop a strategic plan for most effectively educating Santa Monica Mountains residents.* — SMM Fire Safe Alliance. **(M)**
- *Unify the area-wide community fire-safety education message, including public service announcements in all local media.* — Fire Safe Councils, SMM Fire Safe Alliance members, local businesses, local media outlets, and other interested participants. **(S, O)**

8.9.1. Fire-Safety Education in Schools

Educational programs in the local schools are a great way to get the word out about fire safety and emergency preparedness. The National Park Service has developed a local curriculum, "Studies of Wildland Fire

[35] www.onecallnow.com

[36] www.callemall.com

Ecology."[37] Community projects such as fire-safety education signs created by local schoolchildren are very effective. These informative signs can be placed in highly trafficked hazard areas throughout the community to educate residents and visitors regarding the potential fire risks associated with their activities and encourage them to be fire safe.

- *Implement fire-safety curricula in all grade levels throughout the area, in conjunction with community educational projects.* — School districts, land management agencies, and Fire Safe Councils. **(M, O)**

8.9.2. Fire-Safety Education for New Residents and Tourists

The Santa Monica Mountains experience large influxes of tourists visiting the area each year, especially during fire season. These visitors often do not have experience with fire in the wildland-urban interface.

Social science research shows that 60% of new residents move within their county, and they tend to be among the most active and willing participants in fire-safety activities.[38] Educational programs to provide local information for new residents who may be unfamiliar with living in the canyons and ridges of the Santa Monica Mountains are important. It may be these new residents who can most effectively carry the fire-safe message to their new neighborhoods.

Fire safety education programs are needed targeting the tourism, development, and real estate industries, as well as their clients.

- *Develop fire-safety educational programs for local tourism industries.* — Fire Safe Councils, visitor information centers, SMM Fire Safe Alliance, Chamber of Commerce, and local governments. **(M)**
- *Develop fire-safety educational programs targeted at educating new residents to be distributed through water districts, other utilities, chambers of commerce, insurance industry, and other interested partners.* — Fire Safe Councils, SMM Fire Safe Alliance, and local governments. **(M)**

8.10. Integrating Community Fire Safety into Local Policies

The Santa Monica Mountains Fire Safe Alliance has established itself as a clearinghouse for fire safety in the region:

> "Complying with defensible space, brush clearance, and fuel modification regulations in the Santa Monica Mountains can raise issues of property ownership, regulatory jurisdiction, environmental preservation, and watershed management. Managing wildfire safety involves a myriad of stakeholders in the Santa Monica Mountains and requires a collaborative effort to protect private and public property. The Santa Monica Mountains Fire Safe Alliance is committed to creating solutions to this challenging situation. When a property owner or community group raises a concern or question impacting multiple jurisdictions with any

[37] National Parks Labs (July 2001), Studies of Wildland Fire Ecology High School Program, Santa Monica Mountains National Recreation Area. www.nps.gov/samo/forteachers/upload/FireEcologyManualsm.pdf. Note: some sections of this curriculum are out of date, such as Section 11.

[38] Sarah McCaffrey, "Talking Fire Without Getting Burned: Selected Findings from Social Science Research," Talking Fire Webinar, February 23, 2010. www.nifc.gov/fire_info/PIO_bb/Background/ResearchSays.pdf. USDA Forest Service, Northern Research Station, smccaffrey@fs.fed.us.

member of the Alliance, it can be brought to the Fire Safe Alliance where all affected agencies can be informed and involved in coordinating a solution."[39]

Therefore, the Alliance is a logical place to explore new or changed policies to further local fire safety. Citizens at the community meetings raised several policy issues. Many were focused on improving enforcement of "brush clearance"(or more appropriately called "fuel reduction" since a cleared landscape is not the aim) and discouraging the use of hazardous trees in the landscape.

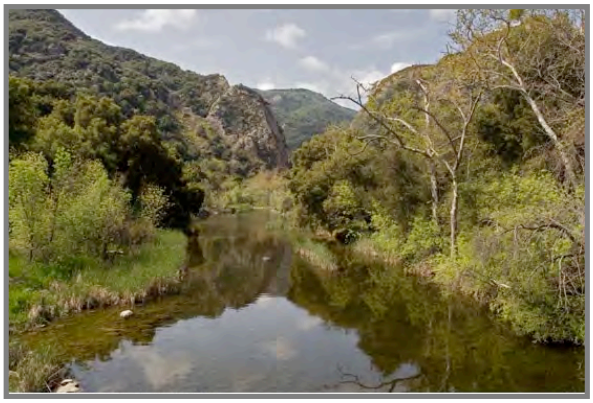
- *Work together to ensure integration among planning efforts in the Santa Monica Mountains that could affect the area's long-term fire safety, including at the community planning and public information levels.* — SMM Fire Safe Alliance and other relevant partners. **(S, O)**
- *Explore stricter enforcement standards for reduction of urban fuels, including dedicated departments for educating residents and implementing defensible space around all structures.* — Local governments and agencies. **(L)**

- *Discourage planting of non-native hazardous trees and develop incentive programs for removal of existing ones.* — Local governments and agencies, local plant nurseries. **(M)**
- *Support implementation of mandatory, enforceable disclosure regulations for all local real estate transactions regarding the wildfire risks and hazards identified in this CWPP.* — Counties. **(M)**

8.11. Integrating Fire Safety and Conservation Efforts

The Santa Monica Mountains National Recreation Area is a world-class locale for Mediterranean-type vegetation. This coupled with its proximity to one of the largest urban areas in the world make it especially important wildlife habitat.

Malibu Creek is home to one of the last remaining runs of endangered southern steelhead and lamprey eel in southern California. Wildfire and its associated prevention and suppression activities can quickly threaten the viability of these populations. Therefore, these activities need to be done with an awareness of their potential impact on threatened populations.



Source: http://zev.lacounty.gov

Fish and other aquatic species are especially sensitive to sediment and changes in water chemistry when flame-retardant substances get washed into streams. These both tend to come in pulses, usually of short duration. Canopy cover changes associated with riparian vegetation losses can increase water temperatures during already warm,

[39] Santa Monica Mountains Fire Safe Alliance (February 2010), "A Road Map to Fire Safety, How to Create Defensible Space in the Santa Monica Mountains," www.fire.lacounty.gov/Forestry/RoadMaptoFireSafety.pdf.

stressful summer conditions. The combination of nutrient input from fire retardant and water temperature increase from canopy loss can result in spikes in algae production which can cause lowered dissolved oxygen, putting fish at survival risk. In addition, loss of shrub and tree canopy to fire increases erosion by subsequent rainfall, which increases stream sedimentation. Such sedimentation can cover gravel beds necessary for successful steelhead spawning. Thus, fire and its suppression efforts can put a stress on already compromised steelhead reproduction and survival.

The Santa Monica Mountains are also home to populations of bobcats and mountain lions who may be limited in their ability to leave a burning area because of fragmented habitat and movement barriers.

Finally, native oak trees are a proven heat and ember sink during wildfire, and provide many important benefits to the local ecosystems. Planting of oaks throughout the Santa Monica Mountains in appropriate places would provide multiple benefits.[40] Oaks do not grow in coastal bluff habitats, in dry chaparral habitats, or high on hot, dry, west-facing or south-facing slopes. The most fire-resistant oaks (coast live oaks) need deep soil or fractured rocks with accessible groundwater.

Residents should work with existing native species that are on site. Many chaparral shrub species are fairly fire-resistant. Properly managed coastal sage scrub habitat is not a hazard if fuels are pruned to 18 inches during fire season (after flowering).

- *Collaborate to remove arundo and other invasive species along riparian corridors to reduce impacts to stream banks during wildfire.* — Land managers and residents. **(M)**
- *Collaborate with state and federal land managers to keep flame-retardant substances out of critical watersheds as much as possible.* — Fire agencies. **(M)**
- *Work with fire agencies after fires to minimize erosion potential to local streams. Bulldozed and hand crew-built fuelbreaks should be rehabilitated in watersheds with endangered fish species, as sediment can smother critical spawning areas.* — Land managers. **(S, O)**

- *Explore options for wildlife corridors, especially in the Malibu Canyon area.* — Land managers. **(M)**
- *Plant native oak trees where appropriate to serve as heat and ember sinks, while providing their myriad ecosystem functions.* — Residents and land managers. **(O)**
- *Manage existing native habitat within the home ignition zone for fire safety and sustainability.* — Residents, resource professionals, and land-management agencies. **(O)**

[40] If coast live oaks are desired, plant with acorns, not nursery-grown seedlings in pots or boxes.

8.12. Designation of Wildland-Urban Interface Areas

Referred to throughout this CWPP, 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."[41] It is within the WUI that specific federal management actions take place in order to reduce fuel risks, based on guidelines established by the Healthy Forests Restoration Act (HFRA).

> "The HFRA provides administrative procedures for hazardous-fuel-reduction projects on [federal] 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."[42]

Concurrently, federal agencies are charged with developing WUI designations for the properties they manage.

Given that the SMMNRA is the most urban national recreation area in the nation, the WUI for the Santa Monica Mountains is designated as the entire CWPP Planning Area.

➢ *Accept the entire Planning Area as the WUI designation in this CWPP*. — Federal agencies. **(S, ★)**

8.13. Designation of Communities at Risk

As described in Chapter 1, many eligible communities in the Santa Monica Mountains have already been listed as a Community At Risk (CAR), either by federal or state designation. A community designated as "At Risk" theoretically will receive more fuel-reduction projects on adjacent federal lands, and be more competitive when competing for National Fire Plan and other state or federal funds. However, some insurance companies are said to use this listing to raise rates for listed areas. For a time, listed communities were required to meet stricter building codes in California, but that has since been replaced with the Fire Hazard Severity Zone ratings.

Existing designated Communities at Risk in the Santa Monica Mountains Planning Area are:

- Calabasas
- El Nido
- Glenview
- Malibu Bowl
- Monte Nido
- Point Dume
- Topanga
- Cornell
- Fernwood
- Malibu
- Malibu Vista
- Seminole Springs
- Sylvia Park
- Topanga Park

There are other communities in the Planning Area not included in this list. Technically, any community in the Santa Monica Mountains would qualify as a Community At Risk. Many communities not on the list could make

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[41] *Federal Register* (January 4, 2001), "Implementation Direction for Identifying and Prioritizing Hazardous Fuel Reduction in Wildland-Urban Interface/Intermix." Region 5. Vol. 66, No. 3: pp. 751–754.

[42] 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: p. 15. www.fs.fed.us/projects/hfi/field-guide/web/page15.php.

the argument that they fit within one of those already listed (e.g. "Malibu"). In Los Angeles County, it is believed that unlisted communities should decide themselves if they want to be listed. If so, they can work with their local fire department to be added to the statewide list. The California Fire Alliance has a process for adding new communities to this list, which is found on its website: www.cafirealliance.org/communities_at_risk/communities_at_risk_addtolist.

- *Add relevant communities to the Communities At Risk list as so desired.* — Additional Santa Monica Mountains communities in Los Angeles County. **(S, ★)**

In Ventura County, the Ventura County Fire Department proposes adding the following communities to the Communities at Risk list:

- Hidden Valley/Lake Sherwood/Carlisle Canyon
- Yerba Buena Canyon Area (including Pacific View, Cotharin, Yellow Hill)

- *Add the above-listed Santa Monica Mountains communities to the Communities At Risk list.* — Ventura County Fire Department. **(S, ★)**

8.14. Facilitating Santa Monica Mountains Fire Safety in the Long Term

As described in Chapter 9, project and plan monitoring is an integral element to the long-term success of this plan. Monitoring strategies need to be developed early in the process to ensure useful data collection.

- *Work with National Park Service, Resource Conservation Districts, Natural Resources Conservation Service, and others to develop a long-term ecological monitoring program to track the effects of project activities on ecological processes and functions.* — Fire Safe Councils, community-based organizations, interested residents. **(M)**

Finally, no plan is ever permanent. This plan is written in 2010 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 coming years. Therefore, it will be important to review this plan at least every five years and update it as needed. This can be done as an Appendix to this document.

- *Use the Community Fire Safety Action Plans and the Project Implementation Matrix from this CWPP to prioritize and track existing and future projects at the local level, and update local information in this CWPP.* — Fire Safe Councils. **(M)**

- *Review the Santa Monica Mountains CWPP at least every five years and update it as needed, using a collaborative public process.* — All Plan Partners (signatories). **(M)**

Facilitating Fire Safety in the Santa Monica Mountains over the Long Term

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9. Facilitating Fire Safety in the Santa Monica Mountains over the Long Term[1]

A Community Wildfire Protection Plan (CWPP) is only as effective as the community committed to implementing it over time. People in the Santa Monica Mountains region are fortunate to have multiple resources committed to fire safety over the long term and many aware citizens willing to contribute to this common cause. A federal publication on community actions to reduce wildfire risk sums up the ongoing task for citizens and governmental agencies:

> "Communities across the country have invested countless hours and significant funds to develop CWPPs. Communities now have an opportunity to consider how these plans have helped reduce their wildfire risk, while also meeting state and national goals for wildfire risk reduction. Effective monitoring and evaluation of wildfire planning efforts at the local, state, and national level will provide important opportunities to evaluate the overall strategy of CWPPs in reducing wildfire risk and improving planning processes…
>
> "A CWPP does not end when it is adopted; a thorough process should involve a continuous cycle of collaborative planning, implementation, monitoring, and adapting strategies based on lessons learned. As communities learn from successes and challenges during the development and implementation of their CWPP, stakeholders may identify new actions, propose a shift in how decisions are made or actions are accomplished, and evaluate the resources necessary for successful CWPP implementation."[2]

9.1. Monitoring

Monitoring the results, i.e., evaluating project effectiveness, of CWPP-identified actions is vital to the ongoing success of these fire safety and prevention efforts. This process of monitoring or follow-up is how citizen groups and government agencies learn collectively if actions have been successful. If they are not, then strategies need to be readjusted moving forward. Some believe that monitoring is better left in the hands of government scientists. However, countless community-based organizations throughout the nation are demonstrating that the people who live in a place can be excellent local observers of that place. This is the concept of *community-based monitoring* that this CWPP promotes.

This CWPP was developed on the foundation of the collective experience of multiple resident and stakeholder participants, local data about the Santa Monica Mountains, lessons learned from Fire Safe Councils and CWPPs statewide, and the best available science. Given that community-level fuel reduction and fire safety is an evolving field—and learning to live with wildfire a long-term process—the necessity for adaptive management becomes apparent. Simply put, adaptive management is learning from mistakes and benefiting from successful efforts. It's the reason for monitoring, which forms part of the database for future decisions.

Monitoring collective successes and failures thus will provide a better understanding of the effectiveness of actions proposed in this CWPP. It will also enhance residents' ability to be responsible stewards of the native ecosystems in which they live. Evaluation of individual projects should bear in mind the main objectives of this CWPP to:

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[1] For information regarding what to do after a fire, please see section 4.3.3 in Chapter 4, "Make a Plan to Be Better Prepared Next Time."

[2] Community Wildfire Protection Plan (CWPP) Task Force and Wildland Fire Leadership Council, *Community Guide to Preparing and Implementing a Community Wildfire Protection Plan* (August 2008): p. 18. www.forestsandrangelands.gov/communities/documents/CWPP_Report_Aug2008.pdf.

- minimize ignitions,
- decrease fire intensity around homes and structures,
- decrease damage to natural and human assets,
- increase permeability (allowing fire to move through an area without destroying it), and
- increase resiliency.

Santa Monica Mountains residents have access to monitoring expertise throughout the ranks of local agencies, including the National Park Service, California State Parks, Santa Monica Mountains Conservancy, the University of California, the Resource Conservation District of the Santa Monica Mountains, and the Forestry Division of Los Angeles County Fire Department. These organizations can help Fire Safe Councils and others develop a monitoring strategy to track the long-term success of the projects identified herein, and ultimately this CWPP as a whole.

Additional resources and suggested frameworks for evaluation can be found online. One good example is the Ecosystem Management Initiative of the University of Michigan: www.snre.umich.edu/ecomgt/evaluation/tools.htm.

Resources are becoming increasingly available for community-scale monitoring. A valuable online source can be found at the Partnership Resource Center: www.partnershipresourcecenter.org/resources/monitoring-evaluation. This website explains some of the actions and data collection that local groups can undertake to monitor the effectiveness of both their neighborhood-level and larger community-scale fire-safety efforts.

As stated in the quote on page 9-1, CWPPs are monitored on a national scale to evaluate their effectiveness in addressing the challenges of wildfire. A standardized format for participating in the national-level evaluation can be found at http://ri.uoregon.edu/documents%20and%20pdfs/eval_9-8-08_web.pdf. Fire Safe Councils, homeowner's associations, and other community-based organizations in the Santa Monica Mountains are encouraged to participate in this national-level monitoring program.

Ultimately, the true test of fire-safety projects is how they affect wildfire behavior, and how well local communities survive fire. When wildfire occurs, residents and agency partners will need to come together to evaluate which strategies were effective and which were not. From there, everyone can move forward together.

9.1.1. Project Monitoring

Project monitoring involves tracking all the stages of a project through completion, and often years later. To quote the national CWPP task force again:

> "What Goes into Monitoring and Evaluating a CWPP Locally?
> - Only monitor what matters! (Communities may lack resources to engage in a long or complex monitoring process.) Community partners should identify key goals and objectives, and make decisions to monitor what is most important to the long-term sustainability of their CWPP.
> - Track accomplishments and identify the extent to which CWPP goals have been met.

- Examine collaborative relationships and their contributions to CWPP implementation, including existing participants and potential new partners.[3]
- Identify actions and priority fuel reduction projects that have not been implemented, and why; set a course for future actions and update the plan."[4]

FIGURE 9-1. PROJECT TRACKING MATRIX at the end of this chapter provides a format for local groups to track project progress. It is based on a matrix developed by the El Dorado Fire Safe Council, and it can be reproduced in Excel to effectively track fire-safety projects over time.

Photo Point Monitoring

A simple monitoring method for fuel-reduction projects is photo point monitoring. This is a requirement for most California Fire Safe Council Clearinghouse grants. Photos are taken of a given place before, during, and after treatments, providing a basic physical comparison. An excellent guide to photo point monitoring methodology can be found at www.dep.wv.gov/WWE/getinvolved/sos/Documents/More/PhotoDocumentation.pdf.[5]

West Hillside Hazard Tree Project, Before.
Source: Ken Wheeland

West Hillside Hazard Tree Project, After.
Source: Ken Wheeland

Photo points are also an excellent visual method to help record changes and facilitate comparisons of areas before and after fire. It is useful to take photos as soon as possible following any fire event, then at successive, regular intervals, such as every six months or annually.

9.1.2. Ecological Monitoring

In addition to measuring the success of projects in reducing fuels and the negative impacts of fire, monitoring reveals how projects affect ecological processes and natural functions. From the outset, projects need to be designed to have minimal adverse ecological impact.[6] The Conservation Principles identified in Chapter 1 provide guidance in minimizing such impacts. The Precautionary Principle is a basis for all actions in this CWPP: One can always do more, remove more, change more later. However, once an action is done, it is difficult—if not impossible—to undo it. Therefore, err on the side of caution, and take small steps.

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[3] For more information on collaboration resources, see the Red Lodge Clearinghouse, http://rlch.org/content/section/4/27.

[4] CWPP Task Force et al. (2008), p. 18.

[5] TAC Visual Assessments Work Group, The Clean Water Team Guidance Compendium for Watershed Monitoring and Assessment, State Water Resources Control Board (2001), "Standard Operating Procedure 4.2.1.4, Stream Photo Documentation Procedure."

[6] In addition to the Conservation Principles in Chapter 1, good information is available from several communities that are now developing best management practices for fuel treatments. For more information see www.myfirecommunity.net/Neighborhood.aspx?ID=666.

It's always important to be aware of potential negative environmental impacts from projects. For example, when the shrub cover around a property is opened up, exposing more soil to sun, invasive weeds will likely enter areas where they had not been previously.

Most *ground-disturbing* projects promoted in this CWPP are focused on the areas immediately adjacent to homes. Therefore, providing procedures for landscape-level ecological monitoring is beyond the scope of this CWPP. Partnering agencies are conducting ecological monitoring throughout the Santa Monica Mountains to understand these impacts and determine if they are occurring. Interested residents can contact these agencies to learn about volunteer opportunities to assist in monitoring their local watersheds and beyond, or contact their local watershed groups to find out about community-based efforts.

9.2. Project Maintenance

Monitoring and follow-up evaluation of many similar efforts nationwide have shown that fuel-reduction projects require maintenance. Over time vegetation will grow back in fuel-reduction areas, infrastructure will change, and residents will move to and from local communities. Monitoring can inform our awareness of how much and what type of maintenance is needed.

At the homeowner level, maintenance often means walking around one's property and weeding and pruning. Remove all invasive weeds as soon as they appear, well before they develop a seed head that will allow them to spread. Look for any dead or dying leaves, branches, or other dead plant material and continually remove them, including cleaning plant debris from the roof and gutters. Ensure that any irrigation is directed specifically to desired plants and that it is not watering areas where invasive weeds could prosper. The more water provided to weeds, the more work is needed to remove them.

For larger-scale projects—such as at the neighborhood or community level—project maintenance strategies are most effective when designed into initiatives from the beginning. This is true for both the maintenance activities themselves and the continuing flow of resources (e.g. dollars and materials) to support them. Therefore, it is recommended that all projects undertaken from this CWPP include a maintenance component from the start. It will be the responsibility of landowners (including land management agencies) and/or local Fire Safe Councils and others leading a project to ensure that long-term project maintenance is included (and budgeted for) in all project implementation. As with any ground-disturbing project, environmental compliance and all other regulations must be met before undertaking a project and its necessary maintenance. *See Appendix G for more information on Environmental Compliance.*

9.3. Updating This Plan

No plan is ever permanent, especially in a rapidly changing field such as fire safety. This CWPP is based on current conditions in 2010 and best available information. New information will become available; there will be physical changes in the SMM communities in coming years. Therefore, it is vital to review this CWPP at least every five years and update it as needed.

This CWPP was created in a binder format with MS Word documents to facilitate updating. Using this 2010 version as a basis, and the community meeting process described in Chapter 2, the plan could be updated relatively simply by partnering stakeholders. Updates would include monitoring reports and advances made by the community groups implementing this plan in their respective areas.

The Community Fire Safety Action Plans in Part II of this CWPP summarize recommended actions for each of the 20 planning units. As local groups (FSCs, homeowner's associations, and other community organizations) implement, monitor, and update CWPP activities in their neighborhoods, they can use the Project Tracking Matrix in this chapter to document their progress and the changes in their communities. When the CWPP is ready for updating, community groups can bring forward these changes to be incorporated into the revised Community Wildfire Protection Plan. This will facilitate an efficient collaborative review process.

Copies of this CWPP will be permanently available for public review at partnering agency offices, local fire stations, public libraries, and other locations throughout the Santa Monica Mountains region to facilitate increased resident participation over time.

9.4. Resources Needed to Support Ongoing Efforts

There are ample resources within the neighborhoods of the Santa Monica Mountains to implement many of the projects identified in this CWPP. What is missing in many cases is the community infrastructure to carry out the projects. The most effective way to implement a CWPP is through locally based organizations, i.e., residents who have a long-term vested interest in making their communities fire safe. Fire Safe Councils are a proven organizational structure for community members to join with agency partners to prepare their communities for wildfire.

As described in Chapter 1, there are several existing and/or new Fire Safe Councils (FSC) in the Santa Monica Mountains. These councils need to be strong, resilient, community-led efforts that will endure changes in politics and personalities. In other words, communities need to come together and develop the *social capital* to implement the changes they want to see for where they live. Expertise in wildfire and prevention is needed, and citizens can obtain assistance from agency partners, who can provide both knowledge of the fire-safety field and organizational development. Some of this is available through the California Fire Safe Council, Los Angeles County Fire Department, Ventura County Fire Department, and the National Park Service, which are leading efforts to build strong Fire Safe Councils in the Santa Monica Mountains. All stakeholder organizations are encouraged to assist these efforts. Support could also come in terms of training, education, and fundraising.

The planning units created for this CWPP may be logical geographical areas for creating a community Fire Safe Council. In some cases, existing homeowner's associations or other community organizations can become a FSC. In whatever form local residents decide to organize, the text in Part II of this CWPP and the Project Tracking Matrix at the end of this chapter can function as the basis or initial structure of a strategic plan. This can be further fleshed out by participating residents for individual neighborhoods and larger parts of the community. With a strong local base and a coherent plan for taking action, neighbors throughout the Santa Monica Mountains can use this CWPP to learn how to better coexist with wildfire, making their neighborhoods and the surrounding wild landscapes a healthy, resilient place now and into the future.

FIGURE 9-1. PROJECT TRACKING MATRIX[7]

PROJECT # OR CODE	START YEAR	PROJECT TITLE & DESCRIPTION	ESTIMATED RESOURCES REQUIRED	PROPOSED FUNDING SOURCE	CURRENT STATUS (DATE)	CURRENT FUNDING REQUIRED & POTENTIAL SOURCE	YEAR 1 PROJECT STATUS & UPDATE	YEAR 2 PROJECT STATUS & UPDATE	PROJECT COMPLETED DATE	LONG-TERM MAINTENANCE REQUIRED? RESPONSIBLE PARTY	FUNDING SOURCE(S)

[7] Adopted from El Dorado County Fire Safe Council Strategic Planning Project Matrix, www.edcfiresafe.org/documents/edc_wpp_appendix_m_2006-08-23.pdf.

Part II

COMMUNITY FIRE SAFETY ACTION PLANS

CONTENTS

Community Fire Safety Action Plans

SMM CWPP
Community Map Legend

Community Assets & Values at Risk

- Community Values At Risk
- Community Values At Risk
- Community Values At Risk

Wildfires Causes, Risks and Hazards

- Risks/Hazards
- Transportation System Issue
- Existing Fuel Reduction
- Risks/Hazards
- Risk - Road/Structural
- Existing Fuel Reduction
- Risks/Hazards
- Risk - Road/Structural
- Existing Fuel Reduction

Protection Capabilities

- Resources - Water
- Resources - Fire Protection
- Resources - Water
- Resources - Potential Evacuation Area

Community Identified Proposed Actions

- Education
- Fire Protection
- Fire Protection/Equipment
- Water/Fire Protection
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- Fire Protection
- Fuel Reduction
- Water/Fire Protection
- Fuel Reduction
- Water/Fire Protection

Base Layers

- **Planning Area Boundary**
- **Assessor Parcels**
- **Bodies of Water**
- **Major Collector Roads**
- **Minor Collector Roads**
- **Highways**

0 1 2 3 4 5 Miles

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1. Malibu Beaches Community Fire Safety Action Plan[1]

This document covers the four planning units spanning the Malibu beaches.

1.1. Malibu Beaches Community Description

1.1.1. West Beaches: Encinal Bluffs to Broad Beach[2]

The West Beaches Planning Unit is situated within the City of Malibu south of Pacific Coast Highway (PCH) between and including Zuma County Beach to the east and Leo Carrillo State Beach to the west. It is 6.1 square miles in area. The assets at risk in the *built environment* (man-made structures as opposed to the natural environment) include more than 200 single-family homes, three Los Angeles County beaches (Zuma, El Sol, and Nicholas Canyon), four state beaches (El Matador, La Piedra, El Pescador, and Leo Carrillo), and Los Angeles County Fire Station #99. Estate sizes expand increasingly west of Broad Beach as bluff formations extend southward from PCH. Homes located on the bluffs are larger, more densely vegetated, and tend to host more structures. Average residential lot size from Broad Beach to Victoria Point (aka Lechuza Point) is one-quarter acre. Most of the properties on Encinal Bluffs are zoned 2 acres.[3] Real estate values range from $4 million to $18 million.[4]

Two coastal access easements are found along Broad Beach Road. They are public walkways situated between homes. Allowed use of all public easements is for passive recreation. Public beach access in the bluffs area is through three state and two county beaches. The western beach area offers tidepools, scuba diving, dolphin watching, surf fishing, surfing, and swimming. These beaches are not utilized as much as the neighboring public beaches of Zuma and Leo Carrillo.[5]

At least nine *Environmentally Sensitive Habitat Areas* (ESHAs) are identified within private parcels on Encinal Bluffs. Two beach areas here are known to be frequently used for basking by California sea lions.[6] Zuma Beach has

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[1] This document was written by Julie Clark De Blasio, Principal of Sweetgrass Environmental Consulting, in conjunction with ForEverGreen Forestry.

[1] Bob Pool (February 2, 2010), "Residents seek narrow escape for Broad Beach," *Los Angeles Times.*

[3] California Coastal Commission Technical Services, San Francisco, CA (Revised 2002), *Land Use Map 1: Nicholas Canyon to Trancas Beach.* Local Coastal Program – City of Malibu. www.ci.malibu.ca.us/download/index.cfm/fuseaction/download/cid/1603/.

[4] The Levin Group, *Malibu Real Estate,* www.malibu-real-estate.com (accessed February 18, 2010).

[5] As is the case with the entire California coastline, except for publicly owned beaches, all beaches here are private above the mean high tide line and public below that line to the water.

[6] California Coastal Commission Technical Services, San Francisco, CA (Revised 2002), *ESHA and Marine Resources Map 1: Nicholas Canyon to Trancas Beach.* Local Coastal Program – City of Malibu. www.ci.malibu.ca.us/download/index.cfm/fuseaction/download/cid/1603/.

6 acres of wetlands that serve as part of an important wildlife corridor and bird nesting site. This area is located at the eastern edge of the beach next to Point Dume.[7]

Ingress and egress for beachfront homes is along Broad Beach Road to PCH. Access to development on the bluffs is by lateral non-connecting roads extending south from PCH. Evacuation from Broad Beach homes is feasible because there are two access points to PCH and the road accommodates two lanes. Most of the drives on Encinal Bluffs are privately maintained. Many are only one lane wide. All are cul-de-sacs with entrances from PCH. Some are behind locked gates.

1.1.2. Point Dume to Paradise Cove

The Point Dume–Paradise Cove Planning Unit is situated within the City of Malibu south of Pacific Coast Highway (PCH). Its area is 1.8 square miles. The assets at risk include at least 900 single-family homes, condominiums, a state beach and preserve, Los Angeles County Fire Station #71, an elementary school, two gated mobile home parks, a shopping center, business center, post office, gas station, post-rehabilitation center, youth summer day camp, community center, and two private beaches, one with a pier and restaurant. Many single-family homes are gated. Property values in both mobile home communities can exceed $1 million. Condominium prices start around $525,000. Homes at Point Dume range from $1.8 million to $11.8 million.[8]

The area is heavily vegetated, mostly with flammable ornamental species such as eucalyptus and pine. Much of the *urban forest* was established as early as the mid-1940s.[9] Average single-family home lot size at Point Dume is 1 acre.[10]

Beach access includes Point Dume State Beach, private access at Point Dume Cove, and private pay at Paradise Cove Beach. The beaches and 32-acre Point Dume Nature Preserve offer passive recreation including hikes, land-side whale-watching, and tidepool exploration. This area does not experience the high rate of public use that the neighboring Zuma County Beach does.

At least six ESHAs are identified within private parcels at Point Dume and Paradise Cove. Ancient sycamore trees, willows, riparian habitat, and coastal sage scrub, along with wildlife, are common at Paradise Cove. These ESHAs encompass many acres and approximately 20% of the planning unit area. Most of the native vegetation surrounding Paradise Cove is part of an ESHA. Point Dume Beach is commonly used for basking by California sea lions.[11] The entire planning unit has high significance with regard to cultural, historical, and archeological resources.[12]

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[7] Santa Monica Bay Restoration Commission (2010), Habitats - wetlands and riparian corridors.
[8] The Levin Group, *Malibu Real Estate.* www.malibu-real-estate.com (accessed February 18, 2010).
[9] Point Dume Community Association (2010), Point Dume Community Association website. www.pointdume.org.
[10] California Coastal Commission Technical Services, San Francisco, CA (Revised 2002), *Land Use Map 2: Zuma Beach to Escondido Beach.* Local Coastal Program – City of Malibu. www.ci.malibu.ca.us/download/index.cfm/fuseaction/download/cid/1603/.

Ingress and egress for the two gated mobile home communities, Point Dume Club and Paradise Cove, are private roads off PCH. The roads in Paradise Cove are narrow. Two unpaved fire roads at Paradise Cove are used primarily for beach access. Approximately two-thirds of the roads in Point Dume are interconnected. The remaining one-third are cul-de-sacs. Primary arterial access to these neighborhoods is from PCH.

1.1.3. Central Beaches: Escondido Beach to Malibu Colony

The central beaches are located within the City of Malibu south of Pacific Coast Highway (PCH), between Malibu Lagoon to the east and up to and not including Paradise Cove on the west. They include the neighborhoods of lower Ramírez Canyon, Escondido Beach and Bluffs, Tivoli Cove, Latigo Shores, Malibu Cove Colony (including Bayshore), Malibu Road, Crummer subdivision, and Malibu Colony. Total area is 1 square mile. The built environment encompasses more than 700 structures, including single-family homes, condominiums with one complex gated and guarded, two gated and guarded neighborhoods, a state beach, state recreation area, city park and community center, Los Angeles County Fire Station #88, a retail center, two business, medical and personal services centers, several eateries, and a gas station. Many single-family homes are gated. Condominium prices currently start at $525,000. Single-family homes range from $3 million to $19.5 million.[13] Owner-occupied beachfront properties are estimated to comprise 25% of all homes in this planning unit. The remaining 75% of homes are either rentals or one of multiple homes belonging to the owner.[14]

Most neighborhoods of the central beaches have tall mature ornamental landscaping. Beachfront home lot size averages one-quarter acre. Bluff lots along Malibu Road, PCH, Bayshore, and Escondido mostly range from 2 to 5 acres. A few of these are subdivided.

Public beach access includes Malibu Lagoon State Beach and Dan Blocker State Beach. Access easements include five along Malibu Road, one near the intersection of Corral Canyon Road and PCH, and two along Escondido Beach.[15] The beaches, Malibu Bluffs State Recreation Area, and Malibu Bluffs City Park offer passive and developed recreation including hikes, land-side whale-watching, tidepool exploration, swimming, surfing, baseball, and soccer.

Three ESHAs are identified for this planning unit. Two are located on private parcels of Escondido Bluffs. The third is in the bluffs area above Malibu Road and extends from due west of Malibu Colony Plaza to the west perimeter of the state recreation area.[16]

Ingress and egress varies for each neighborhood. Malibu and Malibu Cove Colonies are gated with narrow cul-de-sacs.[17] Tivoli Cove is gated. Many larger estates on the bluffs are gated and located on narrow cul-de-sac drives that

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[11] California Coastal Commission Technical Services, San Francisco, CA (Revised 2002), *ESHA and Marine Resources Map 2: Zuma Beach to Escondido Beach.* Local Coastal Program – City of Malibu. www.ci.malibu.ca.us/download/index.cfm/fuseaction/download/cid/1603/.

[12] City of Malibu (1995), *General Plan: Land Use Element – Appendix A – Neighborhood Descriptions.* www.ci.malibu.ca.us/download/index.cfm/fuseaction/download/cid/2155/.

[13] Blockshopper, Los Angeles Real Estate News, www.losangeles.blockshopper.com/cities/Malibu (accessed February 18, 2010).

[14] M. Willens (November 4, 2004), "Flashback: They were the kids of Malibu Colony," *Los Angeles Times.*

[15] California Coastal Commission Technical Services, San Francisco, CA (Revised 2002), *Public Access Map 3: Dan Blocker to Malibu Pier.* Local Coastal Program – City of Malibu. www.ci.malibu.ca.us/download/index.cfm/fuseaction/download/cid/1603/.

[16] California Coastal Commission Technical Services, San Francisco, CA (Revised 2002), *ESHA and Marine Resources Map 3: Dan Blocker to Malibu Pier.* Local Coastal Program – City of Malibu. www.ci.malibu.ca.us/download/index.cfm/fuseaction/download/cid/1603/.

are lateral to either PCH or Malibu Road. Latigo Shore Drive and adjoining short streets are very narrow cul-de-sacs. Escondido Beach Drive is a narrow cul-de-sac.

This planning unit has four active landslides. Latigo Shore Drive routinely collapses from *subsidence* (continual erosion undercutting the cliff and road base). Hillside landslides are located at Puerco Beach, Malibu Cove Colony Drive, and Malibu Road.[18]

1.1.4. East Beaches: Malibu Point to Topanga Beach

The east beaches are located within the City of Malibu south of PCH and between Topanga State Beach to the east and Malibu Lagoon to the west. They include the beach neighborhoods of Topanga, Las Tunas, Big Rock, Las Flores, La Costa, and Carbon. Its area is 0.4 square mile. This is the narrowest coastal unit in the CWPP Planning Area because private property is limited on either side by the Pacific Ocean and PCH. There are no bluffs or open space in this part of the coast.

The built environment has more than 450 structures including single-family homes, condominiums, townhouses, duplexes, triplexes, lodging, eateries, stores, a gas station, private beach club, public pier, state historic landmark (Adamson House), and four state beaches (Malibu Lagoon, Surfrider, Las Tunas, and Topanga). Carbon Beach is locally known as "Billionaires Beach," as it has the highest property values in Malibu.[19] Single-family home prices range from $10 to $20 million.[20] Beachfront home lot sizes range from one-sixth acre to three-quarter acre.[21] Most lots are built-out, meaning the structure takes most of the land area and severely limits available soil for landscaping.

Public beach access includes four state beaches. There are four public access easements: two on Carbon and two on Big Rock beaches.[22,23] The beaches offer opportunities for passive recreation including tidepool exploration, swimming, surfing, and scuba diving. There are no ESHAs identified for the East Beaches Planning Unit.[24]

All neighborhoods are located along PCH, which is the main arterial conduit for Malibu. Landslides, congestion, and traffic collisions can impede ingress and egress. Topanga Beach is the only neighborhood located off PCH. The roadway is a narrow cul-de-sac.

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[17] Chuck Chriss (January 2010), *Malibu Complete: Getting Around Malibu – Malibu Colony, Malibu Cove Colony, Malibu Road, Latigo Shore.* www.malibucomplete.com

[18] City of Malibu (1995), *General Plan – Safety and Health Element.*

[19] Chuck Chriss (2010, January), *Malibu Complete: Getting Around Malibu – Carbon Beach, Las Flores Beach,* www.malibucomplete.com.

[20] Blockshopper, Los Angeles Real Estate News, www.losangeles.blockshopper.com/cities/Malibu (accessed February 18, 2010).

[21] California Coastal Commission Technical Services, San Francisco, CA (Revised 2002). *Land Use Map 4: Carbon Beach to Topanga Beach.* Local Coastal Program – City of Malibu. www.ci.malibu.ca.us/download/index.cfm/fuseaction/download/cid/1603/.

[22] California Coastal Commission Technical Services, San Francisco, CA (Revised 2002), *Public Access Map 4: Carbon Beach to Topanga Beach.* Local Coastal Program – City of Malibu. www.ci.malibu.ca.us/download/index.cfm/fuseaction/download/cid/1603/.

[23] B. Pool (May 27, 2005), "And now the coast is here," *Los Angeles Times.*

[24] California Coastal Commission Technical Services, San Francisco, CA (Revised 2002), *ESHA and Marine Resources Map 4: Carbon Beach to Topanga Beach.* Local Coastal Program – City of Malibu. www.ci.malibu.ca.us/download/index.cfm/fuseaction/download/cid/1603/.

1.2. Malibu Beaches Current Fire Environment

The entire Santa Monica Mountains region is designated by CAL FIRE as a Very High Fire Hazard Severity Zone. This determination by the state is based on factors such as fire weather, slope, and fuel loading, among others. The beach areas in Malibu are all within this zone.

1.2.1. West Beaches: Encinal Bluffs to Broad Beach

The West Beaches area of Malibu experienced wildfire in the 30,000-acre Malibu-Latigo complex (October 23, 1935), 16,400-acre Sherwood/Zuma/Newton complex (December 28, 1956) with 100 homes lost in the burn area; Trancas (September 23, 1978); 25,586-acre Kanan (September 23, 1978); and Green Meadow (October 26, 1993) fires.[25] Other wildland fire incidents that burned to the north side of PCH and threatened the west beaches include the Decker (October 14, 1985), Decker (November 13, 2002), and Pacific fires (January 6, 2003). These fires burned wide swaths of the Santa Monica Mountains and were not limited to the beach area.[26] The Kanan fire burned 200 homes, including several on Broad Beach, and there were two fatalities. The Green Meadow fire destroyed 24 homes across the burn area.[27]

Parcels are vegetated with mature, highly flammable urban fuels. Vegetation encroaches upon many power lines. View Protection Ordinances are a vegetation management tool that could dually serve to ameliorate fire threat in the neighborhood. A task force has assembled to study the issue in Trancas Beach.[28] Most structures are not retrofitted to 2010 California Fire and Building Standards.[29]

Municipal water supply is through Los Angeles County Waterworks District No. 29 in Malibu. Conveyance is along a transmission main along PCH, with water stored in tanks located on the upland side of the highway. The 6-inch water main for Broad Beach was recently replaced with a 12-inch pipe. The county adopted mandatory water conservation measures in 2009. Threats to the water supply include age and lack of capital funds to upgrade, increased demand from new development, and emergency use such as during wildfire events.[30,31]

Los Angeles County Fire Station #99 is located at 32550 Pacific Coast Highway, roughly one-quarter mile from Encinal Canyon Road on the seaward side of PCH.

1.2.2. Point Dume to Paradise Cove

Several wildfires are recorded in this unit. The Calabasas fire of 1903 reached Point Dume. The 30,000-acre Malibu-Latigo complex (October 23, 1935) burned 70 acres of what is now Paradise Cove as well as approximately one-third of Point Dume. The Woodland Hills #65 (November 6, 1943) crossed PCH at Point Dume. The Dume (July 29, 1946) and Latigo (October 30, 1967) fires both crossed PCH east of Kanan Road. The 28,201-acre Wright (September 9, 1970) jumped PCH as well. The 43,090-acre Dayton Fire (October 9, 1982) burned 47 homes in lower Ramírez Canyon and Paradise Cove.[32] The Woodland Hills #65 burned 150 structures in its path. The expansive

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[25] Mike Davis (1998), "The Case for Letting Malibu Burn." In *Ecology of Fear* (New York: Henry Holt), pp. 93-147.
[26] Robert S. Taylor, Biogeographer/Fire GIS Specialist, National Parks Service, personal communication, February 12, 2010.
[27] Mike Davis (1998), "The Case for Letting Malibu Burn."
[28] O. Damavandi (June 3, 2009), "View protection task force at odds over plan," *Malibu Times.*
[29] Building Standards Commission, State of California, www.bsc.ca.gov (accessed February 8, 2010).
[30] Santa Monica Mountains Conservancy/Mountains Recreation and Conservation Authority (September 2, 2009), *Malibu Parks Public Access Enhancement Plan – Public Works Plan Draft Environmental Impact Report – Water Supply.*
[31] Arthur Schimke, Department of Public Works (April-June 2010), personal communication.
[32] City of Malibu (1995), *General Plan: Land Use Element – Appendix A – Neighborhood Descriptions.*

burn of the Wright fire took 403 homes and ten lives.[33] Other wildland fires on the north side of PCH that threatened the Point Dume and Paradise Cove neighborhoods include the following incidents: unnamed (December 1953), 16,400-acre Sherwood-Zuma-Newton complex (December 28, 1956), unnamed (December 2, 1958), and Latigo (December 8, 1994).[34]

Impediments to emergency ingress and egress in Paradise Cove include downed power lines and trees, locked gates, narrow steep roadways, and only one maintained road out to PCH. There is a locked maintenance gate for the mobile home park located adjacent to PCH. Mobility constraints to Point Dume could include downed power lines and trees, locked gates, and cul-de-sacs.

Parcels throughout Point Dume and Paradise Cove are densely vegetated with mature, tall, highly flammable urban fuels. Many power lines are encroached upon by vegetation. Older lower sections of Paradise Cove are served by external propane tanks.[35] Many older structures are wooden with wooden decks and fences. Newer homes located outside the mobile home community are often constructed of plaster, stucco, or cement. Several original structures dating to the mid-1940s remain. At least three "party spots" were identified by local residents in Point Dume. Most structures and mobile homes are not retrofitted to 2010 California Fire and Building Standards.[36]

Municipal water supply is through Los Angeles County Waterworks District No. 29 in Malibu. Conveyance is along a transmission main along PCH, with water stored in tanks located on the upland side of the highway. The county adopted mandatory water conservation measures in 2009. Threats to the water supply include age and lack of capital funds to upgrade, increased demand from new development, and emergency use such as during wildfire events.[37,38]

Los Angeles County Fire Station #71 is located at the intersection of PCH and Zumírez Road.

1.2.3. Central Beaches: Escondido Beach to Malibu Colony

This planning unit has experienced many wildfires. The frequency of incidents increased significantly since the 1980s. Fires recorded in this area include: Calabasas/Rindge (1903), unnamed (1929), 30,000-acre Malibu-Latigo complex (December 23, 1935),Woodland Hills #65 (November 6, 1943), 28,201-acre Wright (September 25, 1970),

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www.ci.malibu.ca.us/download/index.cfm/fuseaction/download/cid/2155/

[33] Mike Davis (1998), "The Case for Letting Malibu Burn."

[34] Robert S. Taylor, Biogeographer/Fire GIS Specialist, National Park Service, personal communication, February 12, 2010.

[35] City of Malibu (1995), *General Plan: Land Use Element – Appendix A – Neighborhood Descriptions*.

[36] Building Standards Commission, State of California, www.bsc.ca.gov (accessed February 8, 2010).

[37] Santa Monica Mountains Conservancy/Mountains Recreation and Conservation Authority (September 2, 2009), *Malibu Parks Public Access Enhancement Plan – Public Works Plan Draft Environmental Impact Report – Water Supply.*

[38] Arthur Schimke, Department of Public Works (April-June 2010), personal communication.

43,090-acre Dayton Canyon (October 9, 1982), 5,197-acre Piuma (October 14, 1985), Malibu (November 20, 1992), Latigo (December 8, 1994), Malibu Road (January 8, 2007), Canyon (October 21, 2007), Corral (November 24, 2007), and Bluffs (July 16, 2008).[39] The 1929 fire burned 13 homes in the Colony. The Wright Fire destroyed 37 homes in the east and central beaches areas.[40] The Malibu Road Fire destroyed five homes and damaged six, causing an estimated $60 million in losses.[41] The Malibu Road Fire began on the bluffs near PCH. Beachfront homes were ablaze within 11 minutes.[42] The Canyon Fire destroyed a trailer and damaged seven businesses in Malibu Colony Plaza.[43] Las Flores #47 (October 20, 1942) encroached upon the central beaches from Malibu Canyon Road westward 1.4 miles and did not cross PCH.[44]

Many parcels throughout the central beaches are vegetated with mature, tall, highly flammable urban fuels such as palms and eucalyptus. Vegetation encroaches upon many power lines. Malibu Colony considered development of a View Protection Overlay District.[45] This would have been a component of the Underground Utility District described below.

Utilities in this planning unit are aboveground. The City created the Malibu Colony Underground Utility District and plans to start the project when it is fiscally feasible.[46] These two formerly proposed districts could have dually served to accomplish their goals of view protection and undergrounding of utilities while also ameliorating the fire threat in the neighborhood.

Several original structures dating to the 1930s are identified in the Malibu Colony and along Malibu Road. Most structures in this planning unit are not retrofitted to 2010 California WUI Fire and Building Standards.[47]

Municipal water supply is through Los Angeles County Waterworks District No. 29 in Malibu. Conveyance is along a transmission main along PCH and stored in tanks located on the upland side of the highway. The county adopted mandatory water conservation measures in 2009. Threats to the water supply include age and lack of capital funds to upgrade, increased demand from new development, and emergency use such as during wildfire events.[48,49]

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[39] Robert S. Taylor, NPS, personal communication, February 12, 2010.
[40] Mike Davis (1998), "The Case for Letting Malibu Burn."
[41] M. Magruder (January 17, 2007), "Malibu Road Fire: The aftermath," *Malibu Times*.
[42] Maria Grycan, Community Services Representative, Los Angeles County Fire Department, personal communication, January 2010.
[43] J. Friedman (October 31, 2007), "Malibu fire damages run the gamut," *Malibu Times*.
[44] Robert S. Taylor, NPS, personal communication, February 12, 2010.
[45] O. Damavandi (June 3, 2009), "View protection task force at odds over plan," *Malibu Times*.
[46] R. Morgan (January 18, 2002), *Council Agenda Report: Second Quarter Fiscal Year 2001–2002*, City of Malibu.
[47] Building Standards Commission, State of California, www.bsc.ca.gov (accessed February 8, 2010).
[48] Santa Monica Mountains Conservancy/Mountains Recreation and Conservation Authority (September 2, 2009), *Malibu*

Los Angeles County Fire Station #88 is located on Malibu Road across from Malibu Colony Plaza.

1.2.4. East Beaches: Malibu Point to Topanga Beach

The 1938 Topanga Fire burned nearly all the homes from Topanga Beach to Big Rock Beach. The 28,201-acre Wright Fire (September 25, 1970) jumped PCH and destroyed 37 homes in the east and central beaches areas.[50] Wildfires that encroached upon the east beaches include: Las Flores *#59* (November 17, 1928), unnamed (July 13, 1953), Hume (December 27, 1956), Trippet (October 30, 1973), and Big Rock (September 10, 1992).[51]

Impediments to emergency ingress and egress of this planning unit include downed power lines, a narrow cul-de-sac at Topanga Beach, landslides or traffic collisions on PCH, and highway congestion. The Las Tunas Beach Slide is active in this area.[52]

Many original structures dating to the 1930s are identified, especially from Las Flores Beach eastward. Ornamental vegetation planted next to homes is common, especially on larger parcels. Large stands of eucalyptus grow in the Topanga Beach Drive neighborhood. Most structures in this planning unit are not retrofitted to 2010 California WUI Fire and Building Standards.[53]

Municipal water supply is through Los Angeles County Waterworks District No. 29 in Malibu. Conveyance is along a transmission main along PCH and stored in tanks located on the upland side of the highway. Mandatory water conservation measures were adopted by the county in 2009. Threats to the water supply include age and lack of capital funds to upgrade, increased demand from new development, and emergency use such as during wildfire events.[54,55]

Los Angeles County Fire Station #70 is located at 3970 Carbon Canyon Road, the intersection with PCH.

1.3. Malibu Beaches Evacuations

1.3.1. West Beaches: Encinal Bluffs to Broad Beach

Evacuation from west beaches will travel either eastward or westward along PCH, depending on law enforcement recommendations based on fire behavior, wind pattern, traffic, and ingress of emergency vehicles. In some cases, and only on the advice of the sheriff, Kanan Dume Road might become an option. Possible impediments to emergency ingress and egress along Broad Beach include downed power lines or trees. Encinal Bluffs hosts many challenges. There are several locked gates. Many drives are narrow and all lack lateral connection if blocked. Local law enforcement and fire departments should investigate the possible safe zones within this unit, including the county, state, and private beaches.

Parks Public Access Enhancement Plan – Public Works Plan Draft Environmental Impact Report – Water Supply.

[49] Arthur Schimke, Department of Public Works (April-June 2010), personal communication.

[50] Mike Davis (1998), "The Case for Letting Malibu Burn."

[51] Robert S. Taylor, NPS, personal communication, February 12, 2010.

[52] City of Malibu (1995), *General Plan – Safety and Health Element.*

[53] Building Standards Commission, State of California, www.bsc.ca.gov (accessed February 8, 2010).

[54] Santa Monica Mountains Conservancy/Mountains Recreation and Conservation Authority (September 2, 2009), *Malibu Parks Public Access Enhancement Plan – Public Works Plan Draft Environmental Impact Report – Water Supply.*

[55] Arthur Schimke, Department of Public Works (April-June 2010), personal communication.

1.3.2. Point Dume to Paradise Cove

Evacuation from most Point Dume homes is feasible because streets generally accommodate two lanes and are interconnected, although many are heavily vegetated with urban fuels. Potential impediments to evacuation in this area include downed power lines and trees, gated and locked residences and communities, and cul-de-sacs. Evacuation from Point Dume and Paradise Cove will travel either eastward or westward along PCH, depending on law enforcement recommendations based on fire behavior, wind pattern, traffic, and ingress of emergency vehicles. In some cases, and only on the advice of the sheriff, Kanan Dume Road might become an option. The possible safe zones within this unit that should be investigated by local law enforcement and fire departments include the county, state, and private beaches, the parking lot of the Point Dume Village shopping center, and open disced lots at Point Dume.

1.3.3. Central Beaches: Escondido Beach to Malibu Colony

Primary arterial access to all these neighborhoods is from PCH. Evacuation from the central beaches area will travel either eastward or westward along PCH, depending on law enforcement recommendations based on fire behavior, wind pattern, traffic, and ingress of emergency vehicles. In some cases, and only on the advice of the sheriff, Malibu Canyon Road and Kanan Dume Road might become options. Impediments to emergency ingress and egress exist in all neighborhoods of this planning unit and would include downed power lines and trees, locked gates, narrow roadways, cul-de-sacs, landslides at Puerco Beach, Malibu Cove Colony, or Malibu Road, subsidence on Latigo Shore Drive, and power outage affecting the three-story Tivoli Cove complex. Possible safe areas such as the county and private beaches and parking lot of Malibu Colony Plaza should be investigated by local law enforcement and fire departments.

1.3.4. East Beaches: Malibu Point to Topanga Beach

Evacuation from east beaches will travel either eastward or westward along PCH, depending on law enforcement recommendations based on fire behavior, wind pattern, traffic, and ingress of emergency vehicles. In some cases, and only on the advice of the sheriff, Malibu Canyon Road and Topanga Canyon Road might become options. Possible safe zones for this unit that should be investigated by local law enforcement and fire departments include the state and private beaches and parking lots of Dukes, east of Casa Malibu Inn (22278 Pacific Coast Highway), and the Malibu Pier.

1.4. Malibu Beaches Community Meetings Summary

The West Beaches meeting was held in the City of Malibu Council Chambers on January 7, 2010. Two residents attended and did not sign the roster.

The Paradise Cove–Point Dume meeting was held in the City of Malibu Council Chambers on January 8,

2010. Four residents attended. The Central Beaches meeting was held in the City of Malibu Council Chambers on January 10, 2010. Six residents attended. The East Beaches meeting was held in the City of Malibu Council Chambers on January 10, 2010. No residents attended.

The following assets at risk were identified at these four community meetings. These can be seen on Map II.1-1 at the end of this document.

FIGURE II.1-1. COMMUNITY-IDENTIFIED ASSETS AT RISK

- Adamson House
- Bluffs Park
- Commercial District
- Dukes
- Malibu Urgent Care
- La Costa Beach Club
- Los Angeles County Fire Department Station #71
- Los Angeles County Fir
- e Department Station #88
- Malibu Colony Plaza
- Michael Landon Community Center
- Malibu Lagoon State Park
- Malibu Pier
- Mobile Home Community Centers
- Private wine vineyards
- Paradise Cove Mobile Home Park
- Paradise Cove Restaurant
- Post Offices
- Tivoli Cove Beach
- Urgent Care Facility

1.4.1. Community-Identified Potential Projects

The following items are community-identified projects from the community meetings. Residents were encouraged to "think big" and not be concerned about project cost or property ownership for the project brainstorming process. Following the brainstorming, residents prioritized projects based on which were most realistic and most important. These projects can be seen on Map II.1-1 at the end of this document.

FIGURE II.1-2. MALIBU BEACHES COMMUNITY-IDENTIFIED PROPOSED PROJECTS

COMMUNITY MEETING	IDENTIFIED ITEM DESCRIPTION	PROPOSED PROJECT CATEGORY	PRIORITY RANK
Central Beaches	Community education on pool pumps, generators, and home fire prep equip	Education	1
Point Dume	Education and community organizing for stay and defend	Education / Evacuation	1
Central Beaches	Caches of emergency supplies for residents (food, water, etc.)	Emergency Preparedness	1
Point Dume	Community evacuation plan: motorist, pedestrian, including gates and signage, agency collaboration including sheriff	Evacuation	1
Central Beaches	No Smoking campaign in Santa Monica Mountains	Education / Policy	2
Central Beaches	Support CERT Program; identify community leaders	Emergency Preparedness	2
Central Beaches	Program for evacuation and safety of handicapped residents (senior, disabled, vulnerable)	Evacuation	2
Point Dume	Establish Volunteer Fire Department	Fire Protection	2
Point Dume	Hazard tree removal program	Fuel Reduction	2
East Beaches	Plant oak trees as fuelbreak/buffer 1 acre wide	Fuel Reduction	2

COMMUNITY MEETING	IDENTIFIED ITEM DESCRIPTION	PROPOSED PROJECT CATEGORY	PRIORITY RANK
East Beaches	Enforcement capacity for fire department, brush clearance units and fines, including ability to control urban fuels	Policy	2
Central Beaches	Awareness Campaign: "Brush Clearance" and Preparedness (on TV, etc.)	Education	3
Central Beaches	Education in schools; coordinate with school and fire prevention agency	Education	3
East Beaches	Organize "brush clearance" program for City of Malibu	Fuel Reduction / Policy	3
Central Beaches	Parcel-level structure, landscape, and vegetation inspection, in detail, for fire safety; and identify where to purchase Wildland-Urban Interface (WUI) materials and implementation program	Risk Assessment	3
Central Beaches	Provide local organizations with fire equipment (hoses) to access hydrants, pools, pumps	Water	3
Central Beaches	Expand getting information out about grants (keep easy to use/apply), fire safety	Education	
Central Beaches	Local news articles relative to current fire activity	Education	
Central Beaches	Malibu Lagoon, Colony, and Park tour; educate and cooperate on defensible space	Education	
Central Beaches	Malibu resident education re: existing emergency notification	Education / Evacuation	
Point Dume	Signage project – pools, access, animals	Education / Preparedness	
Point Dume	Fire access to homes – Knox locks	Evacuation / Fire Protection	
Point Dume	Paradise Cove: Hazardous fuels and mobile homes	Fuel Reduction	
Point Dume	Analyze fuels starting with public lands at Bonsall Drive thru Point Dume for impacts to Point Dume	Risk Assessment	
Central Beaches	Firefighters clear/check "brush" and be familiar with different areas of Los Angeles County and be visible throughout Malibu to prevent arson	Risk Assessment	
Central Beaches	Citizen Brush Watch to report	Risk Reduction	
Central Beaches	Protect water mains and hydrants along Pacific Coast Highway from collisions and damage	Water	

1.5. Malibu Beaches Action Plan

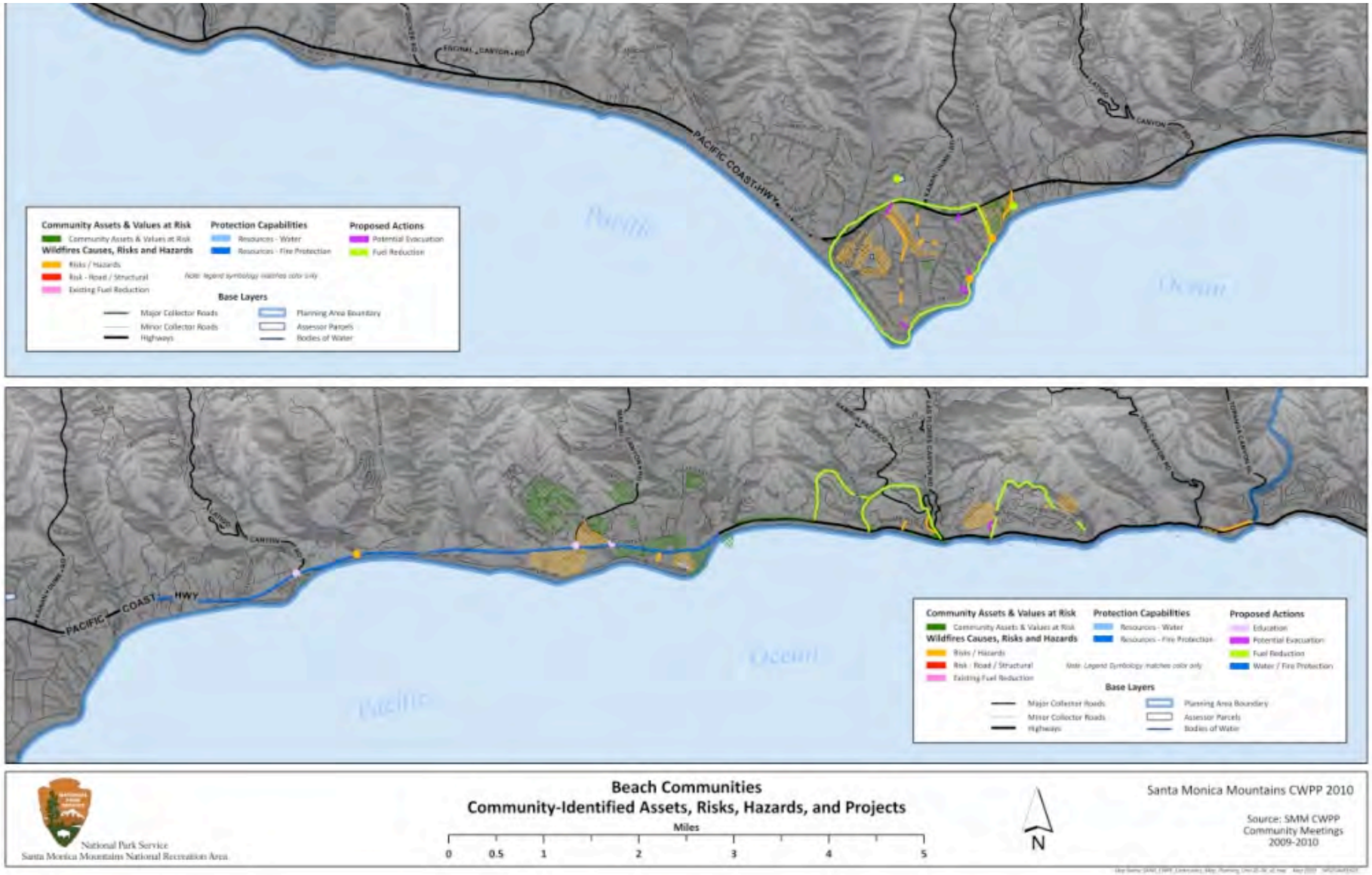
The following projects are the initial priorities for community action for the Malibu Beaches Planning Units.

- Form a local Fire Safe Council (FSC). This structure can facilitate community preparedness for wildfire throughout the beach communities. Work with the California Fire Safe Council to create a FSC that will work best for the beach neighborhoods. One option is a larger Malibu-wide FSC that could have representatives from each of the different neighborhoods and homeowner's associations (HOAs).
- Work with law enforcement and Los Angeles County Fire Department through a FSC, HOA, or other neighborhood-level association to develop a local evacuation plan. Efforts should be made to ensure that local gates are open or accessible during Red Flag conditions.

- Work through a new FSC, existing HOA, or other community organization to begin a local community education and preparedness campaign. Beach residents are less likely to believe their homes are vulnerable to wildfire, yet at the state scale, they live in a very high fire hazard area. The Malibu Bluffs fire is a good reminder of this. Include community education on pool pumps, generators, and home fire preparedness equipment.
- Implement a hazard tree removal/thinning program through a FSC, HOA, or other community organization, starting at Point Dume, and in priority order:
    - Along main evacuation routes,
    - Along the spur roads to main evacuation roads,
    - Near homes, especially trees that threaten more than one home,
    - Trees in or near power lines.
- Work through HOAs to educate residents on the need to keep ingress and egress/evacuation routes clear. Residents need to understand the dangers involved in imprudent parking or long-term street storage of unused vehicles. Because natural disasters can strike at any time, key evacuation ingress/egress routes must be kept free of parked vehicles, especially trailers and other large objects that are difficult to move quickly. Trash cans and other items should be kept off the roadway and out of key turnout/passing areas.[56] A neighborhood-organizing project would include creating off-street parking where it is limited. Neighbors can work together to help each other stay in compliance.
- Ensure that a team of residents from each HOA or neighborhood undergoes Malibu Community Emergency Response Team (CERT) training Paradise Cove residents have done significant emergency response preparedness and can serve as a local model to other Malibu beach communities. This is the vehicle to begin organizing locally for evacuation planning, in cooperation with local law enforcement and the fire department.
- Residents reduce urban fuels in the home ignition zone based on the Conservation Principles and Best Management Practices outlined in Chapters 1, 4 , and 5 of this CWPP. Fuels maintenance should be a routine and ongoing practice throughout the year for all homes and landscapes in the Santa Monica Mountains. This includes: ensure structures are resistant to heat and embers, maintain all vegetation “from the house out,” and remove anything in this zone that might ignite and spread fire.
- Explore community purchase and installation of Wildland-Urban Interface (WUI) building products to upgrade homes to current WUI building standards.
- All residents upgrade homes to current California WUI fire and building standards.

[56] The law in Los Angeles County states that trash cans can only be on the street after 5 pm of the day preceding, and until 8 pm on the day of waste collection.

MAP II.1-1. MALIBU BEACHES: COMMUNITY-IDENTIFIED ASSETS, RISKS, HAZARDS, AND PROJECTS[57]



[57] This map prints best at 11x17. Visit to www.forevergreenforestry.com/smmcwpp_pub.html to download a print version.

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5. Decker Canyon – Encinal Canyon Community Fire Safety Action Plan[1]

5.1. Decker Canyon – Encinal Canyon Community Description

The Decker Canyon–Encinal Canyon Planning Unit is situated north of Pacific Coast Highway (PCH) in the City of Malibu from the neighborhood of Bailard-Lunita to the east and the eastern border of Leo Carrillo State Park to the west. It includes the neighborhoods of Bailard-Lunita, Steep Hill Canyon, La Chusa Highlands, Lower Encinal Canyon, Lower Decker Canyon, Decker-Edison Road, and several properties located along PCH.

There are also several large estates located along PCH in between these neighborhoods extending to Leo Carrillo State Beach. Properties north of this planning unit include national park, state park, and private lands. This unit is 3.9 square miles in area.

The assets at risk in the built environment include nearly 200 single-family homes, triplexes, duplexes, condominiums, equine properties, a church, nature preserve with conference grounds, riding and tennis club, small animal boarding facilities, horse stables, city park (Charmlee Wilderness Park), and a state park (Leo Carrillo State Beach). A national park open-space property with public access easement is also located in this unit.[2]

Parcel sizes range from six units per acre in some parts of Bailard-Lunita to 40-acre lots in the western part of the planning unit.[3] The larger parcels generally host multiple outbuildings in addition to homes. Real estate values currently range from $900,000 for condominiums to $14.8 million for single-family homes.[4]

The entire non-built environment is listed as an Environmentally Sensitive Habitat Area (ESHA) and includes riparian, wetland, coastal sage scrub, and chaparral habitat.[5] This planning unit also hosts significant cultural resources.[6]

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[1] This document was written by Julie Clark De Blasio, Principal of Sweetgrass Environmental Consulting, in conjunction with ForEverGreen Forestry.

[2] Chuck Chriss (2010), *Malibu Complete: Getting Around Malibu – Bailard-Lunita Neighborhood.* http://www.malibucomplete.com/mc_around_bailard-lunita.php (accessed February 2010).

[3] California Coastal Commission Technical Services, San Francisco, CA (Revised 2002), *Land Use Map 1: Nicholas Canyon to Trancas Beach.* Local Coastal Program – City of Malibu [Data file], www.ci.malibu.ca.us/download/index.cfm/fuseaction/download/cid/1603/.

[4] PublishHomes.com, *Luxury Homes in Malibu.* http://www.publishhomes.com (accessed 2010).

[5] California Coastal Commission Technical Services, San Francisco, CA (Revised 2002), *ESHA and Marine Resources Map 1: Nicholas Canyon to Trancas Beach.* Local Coastal Program – City of Malibu [Data file], www.ci.malibu.ca.us/download/index.cfm/fuseaction/download/cid/1603/.

[6] City of Malibu (1995), *General Plan: Land Use Element – Appendix A – Neighborhood Descriptions.* http://www.ci.malibu.ca.us/download/index.cfm/fuseaction/download/cid/2155/.

Ingress and egress is from PCH, Encinal Road, or Decker Canyon Road. Many roads off these three arteries are narrow cul-de-sacs. Streets in Bailard-Lunita, Steep Hill Canyon, and La Chusa Highlands are privately maintained.

5.1.1. Decker Canyon – Encinal Canyon Current Fire Environment

The entire Santa Monica Mountains region is designated by CAL FIRE as a Very High Fire Hazard Severity Zone. This determination by the state is based on factors such as fire weather, slope, and fuel loading, among others. The Decker Canyon–Encinal Canyon Planning Unit is within this zone.

This area has been affected by large historic and increasingly frequent wildfires. The following wildfires are recorded for the planning unit: Potrero #42 (November 1930), 30,000-acre Malibu-Latigo complex (October 23, 1935), Sequit #54 (July 13, 1940), 16,400-acre Sherwood/Zuma/Newton complex (December 28, 1956), Trancas (September 23, 1978), 25,286-acre Kanan (October 23, 1978), Decker (October 14, 1985), Charmlee (July 1, 1996), Decker (April 21, 1997), Encinal (August 22, 1998), West PCH (April 10, 2002), Decker (November 13, 2002), and Pacific (January 6, 2003).[7] The 1978 Kanan fire destroyed nearly 200 homes and there were two fatalities. Some of the losses were incurred in this planning unit area.[8]

There are two active slides in the planning unit. The La Chusa Highlands Slide and Lower Encinal Canyon Slide require ongoing engineering efforts to support the surrounding hillsides and roads.[9]

Homes in the area feature many different types of construction and age-class. Older structures tend to be wooden ranch-style homes. Newer construction is often plaster, stucco, or cement. Nearly all homes in the unit have wooden decks or fences. Most structures are not retrofitted to current California Fire and Building Standards.[10]

Older neighborhoods generally have dense, mature urban fuels such as eucalyptus and pine that are not maintained. Newer homes tend to be landscaped with tropical flammable exotics such as palms. Utilities are aboveground. It is common for vegetation in this planning unit to encroach upon power lines here.

A large, disced 100-acre open field is located due east of Bailard-Lunita. This lot has been used as an informal helipad and emergency response staging area for many years.[11]

Municipal water supply is through Los Angeles County Waterworks District No. 29 in Malibu. Conveyance is along a transmission main that follows PCH. Water is stored in tanks located on the upland side of the highway, which must be pumped up to uphill parcels. Mandatory water conservation measures were adopted by Los Angeles County in 2009. Threats to the water supply include infrastructural age and lack of capital funds to upgrade,

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[7] Robert S. Taylor, Biogeographer/Fire GIS Specialist, National Park Service, personal communication, February 2010.
[8] Mike Davis (1998), "The Case for Letting Malibu Burn," In *Ecology of Fear* (New York: Henry Holt): pp. 93–147.
[9] City of Malibu (1995), *General Plan – Safety and Health Element.*
[10] Building Standards Commission, State of California (2010), www.bsc.ca.gov.
[11] City of Malibu (1995), *General Plan: Land Use Element – Appendix A – Neighborhood Descriptions.* http://www.ci.malibu.ca.us/download/index.cfm/fuseaction/download/cid/2155/.

increased demand from new development, and emergency use or power outages, such as during wildfire events.[12] This unit is at the western extremity for water deliveries in District 29.[13]

Los Angeles County Fire Station #99 is located on the Encinal bluffs.

5.2. Decker Canyon – Encinal Canyon Evacuations

Impediments to emergency ingress and egress in this area may include downed power lines or trees and landslides on Encinal and La Chusa Highlands. All neighborhoods located off PCH, Decker Canyon, and Encinal Canyon host many additional challenges. There are several locked gates. Most drives are narrow cul-de-sacs. All lack lateral connection if blocked. The Decker-Edison neighborhood is a high-risk area for evacuation because it is located above winding and steep Decker Canyon Road.

Evacuation from Decker Canyon–Encinal Canyon will travel either eastward or westward along PCH, depending on law enforcement recommendations based on fire behavior, wind pattern, traffic, and ingress of emergency vehicles. Decker winds northward into Westlake Village in Ventura County. Encinal abuts Kanan Dume Road at its northeastern end. In some cases, and only on the advice of the sheriff, Encinal Canyon Road or Kanan Dume Road might become optional routes for evacuation.

Potential evacuation areas within this unit that should be investigated by local law enforcement and fire departments include the 100-acre lot located east of Bailard-Lunita and a few other disced lots along PCH.

5.3. Decker Canyon – Encinal Canyon Community Meeting Summary

The Decker Canyon–Encinal Canyon community meeting was held in the City of Malibu Council Chambers on January 10, 2010. Three residents attended.

The following assets at risk were identified at this community meeting. These can be located on Map II.5-1 at the end of this document.

FIGURE II.5-1. COMMUNITY-IDENTIFIED ASSETS AT RISK

- Charmlee Park
- Los Angeles County Fire Department Station #99
- Leo Carrillo State Beach
- Malibu Nature Preserve Tennis and Riding Club

5.3.1. Community-Identified Potential Projects

The following items are community-identified projects from the community meeting. Residents were encouraged to “think big” and not be concerned about project cost or property ownership for the project brainstorming process. Following the brainstorming, residents prioritized projects based on which were most realistic and most important. These projects can be seen on Map II.5-1 at the end of this document.

[12] Santa Monica Mountains Conservancy/Mountains Recreation and Conservation Authority (September 2, 2009), *Malibu Parks Public Access Enhancement Plan – Public Works Plan Draft Environmental Impact Report – Water Supply.*
[13] Arthur Schimke, Regional Water Service Superintendent, Waterworks and Sewer Maintenance Division, County of Los Angeles, Department of Public Works (April-June 2010), personal communication.

FIGURE II.5-2. DECKER – ENCINAL CANYONS COMMUNITY-IDENTIFIED PROJECTS

IDENTIFIED ITEM DESCRIPTION	PROPOSED PROJECT CATEGORY	PRIORITY RANK
Clear trees from power lines	Fuel Reduction	1
No overnight camping with campfires; monitoring and enforcement	Risk Reduction	1
Air surveillance on Red Flag days	Risk Reduction	2
Program for hardening homes with team for installing at the neighborhood/community level. Seek group rates/incentives.	Hardening Homes	2
Close parks on Red Flag days	Policy	2
Funds for vehicles and communication equipment for Arson Watch	Fire Protection / Equipment	2
Educate home buyers on living in high fire hazard area	Education	
Create local Fire Safe Council with neighborhood education	Fire Safe Council	
Clear brush, plant grass, graze cattle	Fuel Reduction	
Reduce urban fuels around upper Avenida de la Encinal	Fuel Reduction	
Create more stringent guidelines for fuel management around homes	Policy / Fuel Reduction	
Surveillance cameras for problem fire spots	Risk Reduction	

5.4. Decker Canyon – Encinal Canyon Action Plan

The following projects are the initial priorities for community action for the Decker–Encinal Canyons area.

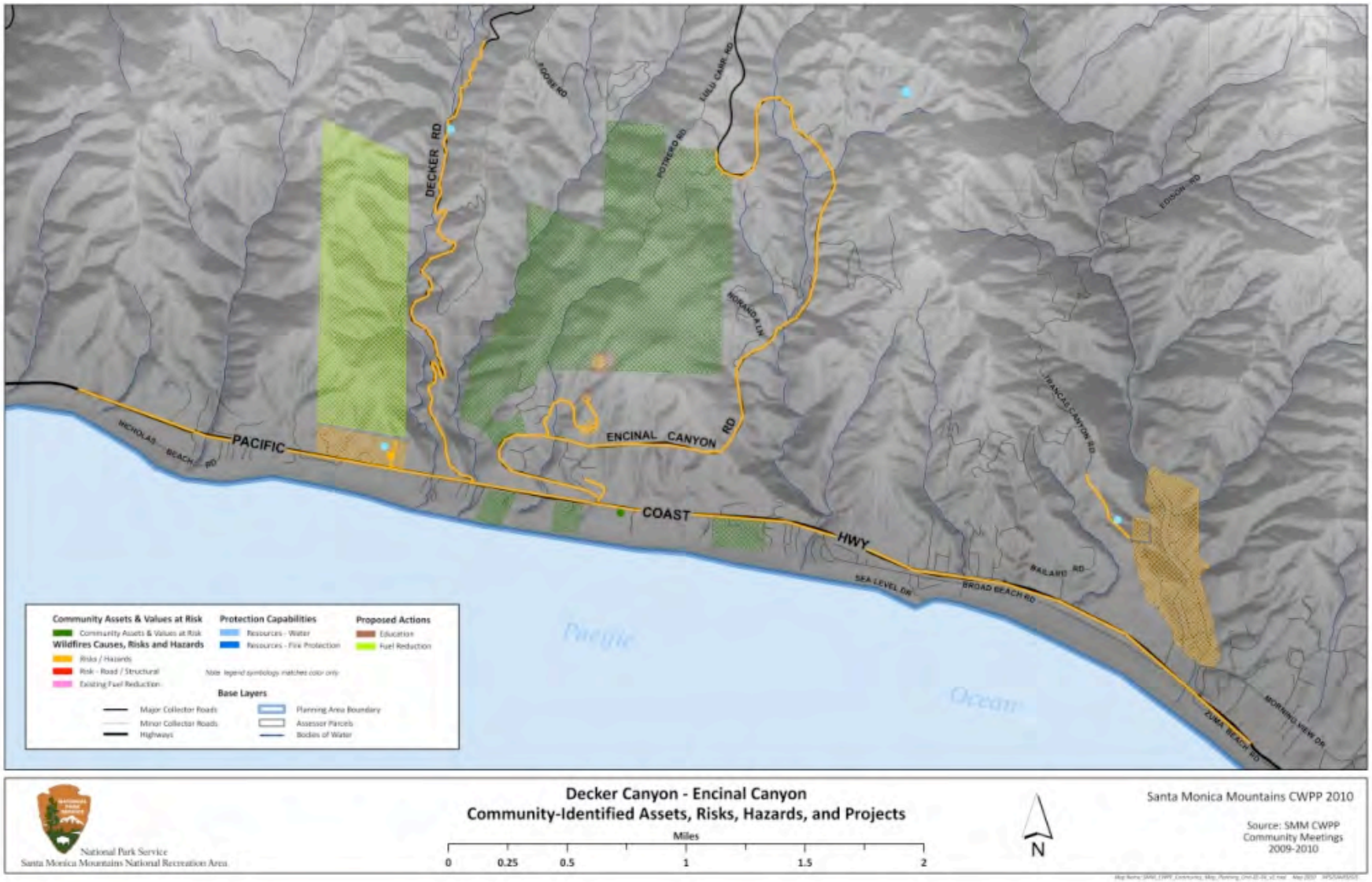
- A hazard tree removal/thinning program should be instituted through a local homeowner's association (HOA) or Fire Safe Council (FSC). Replace hazardous trees with native oaks wherever possible. Priority implementation order is:
    - Along Decker and Encinal roads as evacuation routes,
    - Along the spur roads to Decker and Encinal for evacuation,
    - Near homes, especially those that threaten more than one home,
    - Trees in or near power lines.
- Residents reduce urban fuels in the home ignition zone based on the Conservation Principles and Best Management Practices outlined in Chapters 1, 4, and 5 of this CWPP. Fuels maintenance should be a routine and ongoing practice throughout the year for all homes and landscapes in the Santa Monica Mountains. This includes: ensure structures are resistant to heat and embers, maintain all vegetation "from the house out," and remove anything in this zone that might ignite and spread fire.
- Form a local Fire Safe Council (FSC) or join with other nearby FSCs. This structure will facilitate community wildfire preparedness. Work with the California Fire Safe Council to create a FSC that will work best for this area. One option is a larger Malibu-wide FSC that could have representatives from each of the different neighborhoods and HOAs.
- Work through HOAs or FSC to educate residents on the need to keep ingress and egress/evacuation routes clear. Residents need to understand the dangers involved in imprudent parking or long-term street storage of unused vehicles. Because natural disasters can strike at any time, key evacuation ingress/egress routes must be kept free of parked vehicles, especially trailers and other large objects that are difficult to move quickly. Trash cans and other items should be kept off the roadway and out of key turnout/passing areas.[14] A

[14] The law in Los Angeles County states that trash cans can only be on the street after 5 pm of the day preceding, and until 8 pm on the day of waste collection.

neighborhood-organizing project would include creating off-street parking where it is limited. Neighbors can work together to help each other stay in compliance.

- Work with law enforcement and Los Angeles County Fire Department through a FSC, HOA, or other neighborhood-level association to develop a local evacuation plan. Efforts should be made to ensure that local gates are open or accessible during Red Flag conditions.
- Develop a neighborhood Arson Watch program. This could be integrated into the above-mentioned FSC. Work with the City to help with Arson Watch in Charmlee and Leo Carrillo parks during Red Flag weather.
- Ensure that at least one team from each of the Decker and Encinal roads undergoes Malibu Community Emergency Response Team (CERT) training. This is the vehicle to begin organizing locally for evacuation planning, in cooperation with local law enforcement and the fire department.
- Work through a new FSC, existing HOA, or other neighborhood structure to begin a local community education and preparedness campaign. This can be done in cooperation with other area FSCs and/or the City of Malibu, Los Angeles County Fire Department, and the National Park Service.
- Explore community purchase and installation of WUI building products to upgrade homes to current WUI building standards.
- All residents upgrade homes to current California WUI fire and building standards.

MAP II.5-1. DECKER CANYON – ENCINAL CANYON: COMMUNITY-IDENTIFIED ASSETS, RISKS, HAZARDS, AND PROJECTS[15]



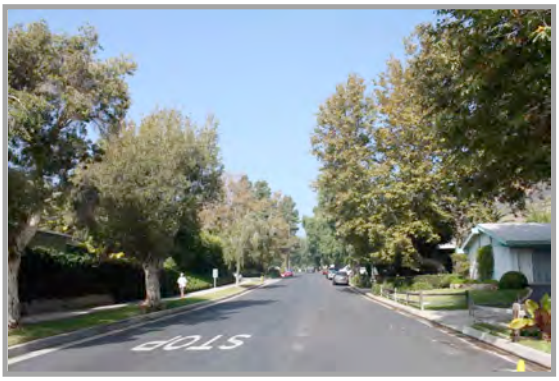
[15] This map prints best at 11x17. Visit to www.forevergreenforestry.com/smmcwpp_pub.html to download a print version.

6. West Malibu Community Fire Safety Action Plan[1]

This planning unit includes the neighborhoods of Bonsall Canyon, Zuma Canyon, Horizon Hills, Malibu Park, Malibu West, and Trancas Canyon.

6.1. West Malibu Community Description

The West Malibu Planning Unit is situated in the City of Malibu north of Pacific Coast Highway (PCH) between Kanan Dume Road to the east and Trancas Canyon to the west. PCH is south and Santa Monica Mountains National Recreation Area open space is north. The West Malibu unit is 3.7 square miles in area.



Assets at risk in the built environment include nearly 700 single-family homes, condominiums, apartments, a city equestrian park, riding club, public school complex and sports compound, four private sports/recreation facilities, stage theater company, business complex, two commercial centers, one church with a childcare facility, wastewater treatment plant, and numerous agricultural operations including greenhouses, orchards, row crops, poultry, small farm animals, and equine facilities. Properties and homes vary in size. Villa Malibu Apartments on Cavalleri Road and Malibu West Condominiums are zoned six units per acre. Malibu Gardens condominiums on lower Cavalleri Road are zoned six units per acre. Single-family homes at Malibu West and along the PCH bluffs of Malibu Park have 2-acre parcels. The remaining home properties in the Cavalleri, Bonsall Canyon, Zuma Canyon, Malibu Park, Horizon Hills, and Trancas Canyon areas are generally 1 to 5 acres.[2,3] Current real estate values range from $345,000 for condominiums to $15 million for larger estates.[4]

6.1.1. West Malibu Current Wildfire Environment

Most of the *intermittent* and *blue-line* riparian areas in the West Malibu unit are considered Environmentally Sensitive Habitat Areas (ESHAs). All National Park land is an ESHA.[5,6] Old-growth sycamore woodlands thrive in

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[1] This document was written by Julie Clark De Blasio, Principal of Sweetgrass Environmental Consulting, in conjunction with ForEverGreen Forestry.

[2] California Coastal Commission Technical Services, San Francisco, CA (Revised 2002), *Land Use Map 1: Nicholas Canyon to Trancas Beach.* Local Coastal Program – City of Malibu [Data file]. www.ci.malibu.ca.us/download/index.cfm/fuseaction/download/cid/1603/

[3] California Coastal Commission Technical Services, San Francisco, CA (Revised 2002), *Land Use Map 2: Zuma Beach to Escondido Beach.* Local Coastal Program – City of Malibu [Data file]. www.ci.malibu.ca.us/download/index.cfm/fuseaction/download/cid/1603/

[4] National Association of Realtors, "Real estate and homes – Malibu." http://www.realtor.com/realestateandhomes-search/Malibu_CA, accessed February 2010.

[5] California Coastal Commission Technical Services, San Francisco, CA (Revised 2002), *ESHA and Marine Resources Map 1: Nicholas Canyon to Trancas Beach.* Local Coastal Program – City of Malibu [Data file]. www.ci.malibu.ca.us/download/index.cfm/fuseaction/download/cid/1603/

[6] California Coastal Commission Technical Services, San Francisco, CA (Revised 2002), *ESHA and Marine Resources Map 2: Zuma Beach to Escondido Beach.* Local Coastal Program – City of Malibu [Data file]. www.ci.malibu.ca.us/download/index.cfm/fuseaction/download/cid/1603/

some of these areas.[7] The federally and state-protected peregrine falcon nests in the northernmost areas of this planning unit.[8]

The community offers many opportunities for recreation. Developed types include swimming, tennis, and *dressage*. Passive recreation includes walking, running, hiking, bicycling, mountain biking, wildlife viewing, and bird watching. These latter activities are popular in neighborhoods and along park trails in the area.[9,10]

Ingress and egress is from Kanan Dume Road, PCH, or Trancas Canyon Road. Many but not all roads are interconnected. Many other roads and private drives are cul-de-sacs. Several newer homes are gated.

The Santa Monica Mountains area is zoned Very High Fire Hazard Severity. This determination by CAL FIRE is based on factors such as fire weather, slope, and fuel loading, among others. The entire West Malibu Planning Unit is within this zone.

Homes in the West Malibu area have a wide *age-class*. Some date to the 1940s. Others, such as the suburban tract type of Malibu West, were constructed in the 1960s and 1970s. Many of the large estates were built in the last ten to fifteen years (post-1995). Older structures are often wooden type. Newer construction tends to be plaster, stucco, or cement. Wooden decks and fences are common in this area.

Mature, lush, ornamental vegetation is common in this area. Many trees were planted as privacy screens. It is estimated that 90% of the *viewscape* in West Malibu is currently blocked due to the presence of dense, mature, tall trees.[11] Many of the larger newer homes appear to not utilize dense, flammable landscaping. At closer inspection, plant materials are often immature and not appropriate for use in the Wildland-Urban Interface (WUI). Most structures in the West Malibu Planning Unit are not retrofitted to current California WUI Fire and Building Standards.[12]

West Malibu experienced the following wildfires in the last century: the 30,000-acre Malibu-Latigo complex (October 23, 1935); Woodland Hills #65 (October 6, 1943) with 150 homes lost between Corral Canyon and Point Dume; the 16,000-acre Newton/Sherwood/Zuma complex (December 28, 1950) with more than 100 homes lost between Zuma Canyon and Bailard/Lunita; Latigo (October 30, 1967), the 28,201-acre Wright (October 23, 1978) with 403 homes lost and ten fatalities over the burn area; Brush (May 31, 1982); 43,090-acre Dayton Canyon (October 9, 1982) with 74 homes lost over the burn area; 6,567-acre Decker (October 14, 1985); Charmlee (November 24, 1991); Green Meadow (October 26, 1993) with 24 homes lost in the burn area; and Encinal (August 22, 1998).

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[7] Chuck Chriss (2010), *Malibu Complete: Getting Around Malibu – Malibu West Neighborhood.* http://www.malibucomplete.com, accessed February 17, 2010.

[8] Chriss (2010), *Malibu Complete*, accessed February 17, 2010.

[9] Chriss (2010), *Malibu Complete*, accessed February 17, 2010.

[10] Chriss (2010), *Malibu Complete*, accessed February 17, 2010.

[11] Chriss (2010), *Malibu Complete*, accessed February 17, 2010.

[12] State of California, Building Standards Commission (2010), www.bsc.ca.gov, accessed February 17, 2010.

Two Fire Safe Councils (FSCs) are active in the West Malibu Planning Unit. Horizon Hills FSC was established in 2005. Its area of influence includes the 50 homes within the 66-acre neighborhood located upslope from Malibu Park. Community members organized to address the wildfire threat and fuels management. A local CWPP was drafted for this community. They received two grants and completed two vegetation management projects to date.[13] The second FSC, Malibu West Fire Safe and Sustainability Council, represents 237 homeowners and tenants. It organized to address structural protection and the wildfire threat in their neighborhood.[14] Malibu West FSC is currently working one vegetation management project. They also the administered the National Fire Plan grant that funded this CWPP through the California Fire Safe Council Grants Clearinghouse.

Municipal water supply is through Los Angeles County Waterworks District No. 29 in Malibu. Conveyance is along a transmission main that follows PCH. Water is stored in tanks located on the upland side of the highway. The county adopted mandatory water conservation measures in 2009. Threats to the water supply include infrastructural age and lack of capital funds for upgrade, increased demand from new development, and emergency use.[15,16]

Los Angeles County Fire Stations #71 at Point Dume and #99 on Encinal Bluffs are located due east and west of the planning unit, respectively.

6.2. West Malibu Evacuations

Evacuation from the West Malibu area will travel either eastward or westward along PCH, depending on law enforcement recommendations based on fire behavior, wind pattern, traffic, and ingress of emergency vehicles. In some cases, and only by the advice of the sheriff, Kanan Dume Road might become an optional route.

Possible impediments to emergency ingress and egress include downed power lines and trees as well as traffic. There are several cul-de-sacs and gated homes in this unit. Cavalleri Road at Kanan Dume Road has locked gates. Some parcels have mature, highly flammable, and unmaintained urban fuels. Utilities at Malibu West are underground. The other neighborhoods in the West Malibu unit have aboveground power lines, many of which are encroached upon by vegetation. This planning unit has many large educational, recreational, business, commercial, and agricultural facilities, which often host large numbers of people and animals; thus planning is required for emergency situations.

Potential evacuation areas that should be investigated by law enforcement and the fire department include: open disced fields on Morning View and Guernsey Drives and at the intersection of Trancas and PCH; the parking lot at Trancas Country Mart; Zuma Beach; the double-wide tennis courts at the southeast corner of Cavalleri Drive; and the school complex on Morning View Drive.

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[13] Santa Monica Mountains National Recreation Area (December 3, 2008), *Horizon Hills, Malibu, California: Community Wildfire Protection Plan.*

[14] SMMNRA (December 3, 2008), *Horizon Hills, Malibu, California: Community Wildfire Protection Plan.*

[15] Santa Monica Mountains Conservancy/Mountains Recreation and Conservation Authority (September 2, 2009), *Malibu Parks Public Access Enhancement Plan – Public Works Plan Draft Environmental Impact Report – Water Supply.*

[16] Arthur Schimke, Regional Water Service Superintendent, Waterworks and Sewer Maintenance Division, County of Los Angeles, Department of Public Works (April-June 2010), personal communication.

6.3. West Malibu Community Meeting Summary

The West Malibu meeting was held in the City of Malibu Council Chambers on October 25, 2009. Eleven residents and three non-residents attended.

The following assets at risk were identified at this community meeting. These can be seen on Map II.6-1 at the end of this document.

FIGURE II.6-1. COMMUNITY-IDENTIFIED ASSETS AT RISK

- Bonsall Canyon Trailhead
- Busch shopping center
- Commercial vineyards and wineries (two of them)
- Juan Cabrillo Elementary School
- Malibu Park Junior High
- Malibu High School
- Equestrian Center
- Malibu United Methodist Church and Childcare Center
- Gas station
- Los Angeles County Fire Department Station #71
- Malibu Stage Company
- Malibu West Community Club
- Malibu West Public Works Treatment Center
- Trancas Park
- Trancas Country Market Center
- Zuma Canyon Trailhead

6.3.1. Community-Identified Potential Projects

The following items are community-identified projects from the community meeting. Residents were encouraged to "think big" and not be concerned about project cost or property ownership for the project brainstorming process. Following the brainstorming, residents prioritized projects based on which were most realistic and most important. These projects can be seen on Map II.6-1 at the end of this document.

FIGURE II.6-2. WEST MALIBU COMMUNITY-IDENTIFIED POTENTIAL PROJECTS

IDENTIFIED ITEM DESCRIPTION	PROPOSED PROJECT CATEGORY	PRIORITY RANK
Dedicated Los Angeles County Fire Department unit for clearance inspection instead of local fire station	Policy	1
Establish City of Malibu ordinance to prevent future planting of non-native plants, and allow removal of flammable non-native trees	Policy	2
Annual "brush clearing" – Horizon Hills	Fuel Reduction	3
Clear trees in power lines	Fuel Reduction	3
Santa Monica Mountains Conservancy transparency highly regulated	Policy	3
Create Malibu Park Fire Safe Council	Fire Safe Council	4
Remove eucalyptus trees – Trancas	Fuel Reduction	4
Emergency radio transmission program	Evacuation / Fire Protection	
Cavalleri gates open during fire	Evacuation	
Connective evacuation route from Ramírez Park to Kanan	Evacuation / Fire Protection	
Escape routes clearance program	Evacuation / Fuel Reduction	
Landscaping collective – to help lower costs	Fuel Reduction	
Prune trees – Guernsey Avenue (problematic in high winds)	Fuel Reduction	
Water storage	Water Resources	
Mark pools, water sources for firefighters	Water Resources	

6.4. West Malibu Action Plan

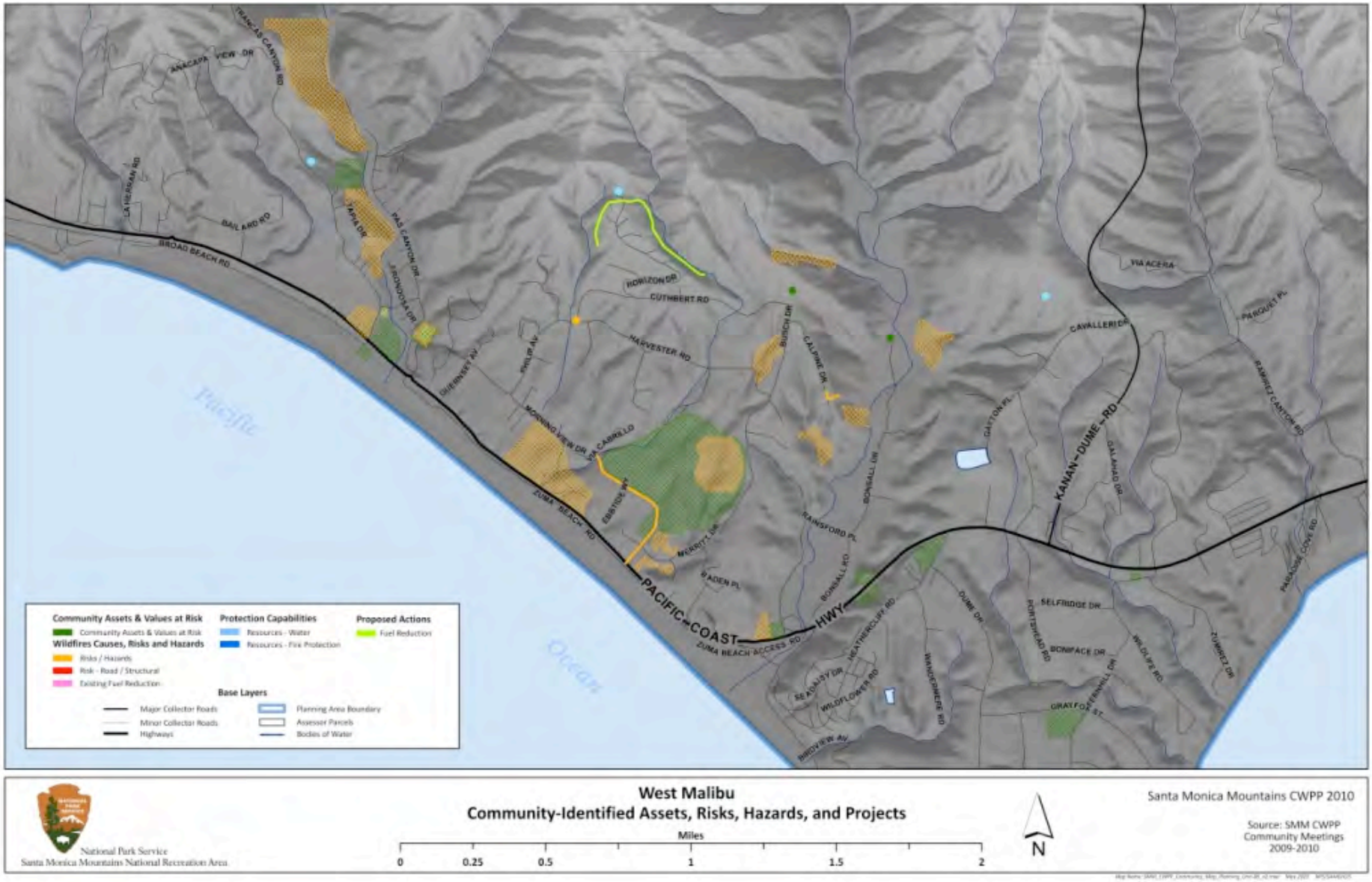
The following projects are the initial priorities for community action for the West Malibu Planning Unit.

- Work with law enforcement and Los Angeles County Fire Department through a FSC, homeowners association (HOA), or other neighborhood-level association to develop a local evacuation plan. Efforts should be made to ensure that local gates are open or accessible during Red Flag conditions.
- Ensure that at least one team from each homeowner's association or neighborhood undergo Malibu Community Emergency Response Team (CERT) training. This is the vehicle to begin organizing locally for evacuation planning in cooperation with local law enforcement and the fire department.
- Horizon Hills Fire Safe Council (FSC) established a successful model hazardous tree removal/thinning program. Malibu West FSC has begun a similar project. Hazardous tree removal/thinning should continue to be a priority in these and the other neighborhoods in this planning unit, with priority removal per the list below:
    - Along main evacuation routes,
    - Along the spur roads to main evacuation roads,
    - Near homes, especially trees that threaten more than one home,
    - Trees in or near power lines.

- The Malibu West Fire Safe and Sustainability Council has begun exploring community purchase and installation of Wildland-Urban Interface (WUI) building products to upgrade homes to current WUI building standards. This is an important project to help residents harden their homes (make them more fire-resistant). Other HOAs in the area should explore similar programs or cooperate with MWFSSC.
- Residents reduce and maintain urban fuels in the home ignition zone. Local FSCs can lead these efforts in Horizon Hills and Malibu West and help neighboring HOAs or FSCs with similar projects. This work should be based on the Conservation Principles and Best Management Practices outlined in Chapters 1, 4, and 5 of this CWPP.
  Fuels maintenance should be a routine and ongoing practice throughout the year for all homes and landscapes in the Santa Monica Mountains. This includes: ensuring structures are resistant to heat and embers, maintaining all vegetation "from the house out," and removing anything in this zone that might ignite and spread fire.
- All residents upgrade homes to current California WUI Fire and Building Standards.
- Work through FSCs and HOAs to educate residents on the need to keep ingress and egress/evacuation routes clear. Residents need to understand the dangers involved in imprudent parking or long-term street storage of unused vehicles. Because natural disasters can strike at any time, key evacuation ingress/egress routes must be kept free of parked vehicles, especially trailers and other large objects that are difficult to move quickly. Trash cans and other items should be kept off the roadway and out of key turnout/passing areas.[17] A neighborhood-organizing project would include creating off-street parking where it is limited. Neighbors can work together to help each other stay in compliance.
- This area is fortunate to have two functioning local Fire Safe Councils: the Malibu West Fire Safe and Sustainability Council and the Horizon Hills FSC. Efforts should be made to support other neighborhoods here in forming FSCs, joining with the existing Councils, or becoming part of a Malibu FSC.

[17] The law in Los Angeles County states that trash cans can only be on the street after 5 pm of the day preceding, and until 8 pm on the day of waste collection.

MAP II.6-1. WEST MALIBU: COMMUNITY-IDENTIFIED ASSETS, RISKS, HAZARDS, AND PROJECTS[18]



[18] This map prints best at 11x17. Visit to www.forevergreenforestry.com/smmcwpp_pub.html to download a print version.

7. Zumírez Canyon Road – Puerco Canyon Community Fire Safety Action Plan[1]

7.1. Zumírez Canyon Road – Puerco Canyon Description

This planning unit includes the neighborhoods of Zumírez Canyon Road, Upper Ramírez Canyon, Ramírez Mesa, Winding Way Knolls, Paradise View Estates, Murphy Road, Escondido Canyon, Sycamore Park, Lower Latigo Canyon, Malibu Colony Ranch Estates, and Puerco Canyon.

The Zumírez Canyon Road–Puerco Canyon unit is situated in the City of Malibu north of Pacific Coast Highway (PCH) between Puerco Canyon Road to the east and Kanan Dume Road to the west. Pacific Coast Highway is south, and north is a combination of Santa Monica Mountains National Recreation Area open space and private land. The Zumírez Canyon Road–Puerco Canyon Planning Unit is 3.9 square miles in area.

Assets at risk in the built environment include nearly 400 single-family homes and condominiums, two churches, two preschools, two boarding kennels, two eateries, a small retail complex, gas station, winery, residential treatment center, equine show stables, private tennis club, private recreational vehicle park, plant nursery, aesthetic services, a certified organic retail farm, Santa Monica Mountains National Recreation Area open space, and four state parks or open spaces (Corral Canyon, Latigo Canyon Creek, Escondido Canyon, Ramírez Canyon). Properties and homes vary in size. Condominiums at Rey de Copas and Zuma View Place are zoned six units per acre. Single-family homes located near the corner of Kanan Dume Road and PCH are two per acre. Sizes of other parcels range from 1 to 20 acres per home.[2,3] Real estate values start at $89,000 for undeveloped lots and $459,000 for condominiums, and range from $1.4 million to $15 million for single-family homes.[4]

7.1.1. Zumírez Canyon Road – Puerco Canyon Wildfire Environment

Most of the riparian corridors and open space in the Zumírez Canyon Road–Puerco Canyon Planning Unit are considered Environmentally Sensitive Habitat Areas (ESHAs). All of the national and state park lands are ESHAs.[5,6] Trails development is limited by the sensitive habitat despite the proximity to large tracts of public lands in the area.

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[1] This document was written by Julie Clark De Blasio, Principal of Sweetgrass Environmental Consulting, in conjunction with ForEverGreen Forestry.

[2] California Coastal Commission Technical Services, San Francisco, CA (Revised 2002), *Land Use Map 2: Zuma Beach to Escondido Beach*. Local Coastal Program – City of Malibu [Data file]. www.ci.malibu.ca.us/download/index.cfm/fuseaction/download/cid/1603

[3] California Coastal Commission Technical Services, San Francisco, CA (Revised 2002), *Land Use Map 3: Dan Blocker to Malibu Pier*. Local Coastal Program – City of Malibu [Data file]. www.ci.malibu.ca.us/download/index.cfm/fuseaction/download/cid/1603

[4] Homes and Land.com, Homesandland.com/real_estate/CA/city/Malibu, accessed February 2010.

[5] California Coastal Commission Technical Services, San Francisco, CA (Revised 2002), *ESHA and Marine Resources Map 2: Zuma Beach to Escondido Beach.* Local Coastal Program – City of Malibu [Data file]. www.ci.malibu.ca.us/download/index.cfm/fuseaction/download/cid/1603

[6] California Coastal Commission Technical Services, San Francisco, CA (Revised 2002), *ESHA and Marine Resources Map 3: Dan Blocker to Malibu Pier.* Local Coastal Program – City of Malibu [Data file]. www.ci.malibu.ca.us/download/index.cfm/fuseaction/download/cid/1603

Pristine chaparral and coastal sage scrub habitat is abundant on undeveloped land in this unit. Large areas of native grass stands and old-growth oak and sycamore woodlands are found here. Wildlife is abundant. Significant cultural resources are present and extend inland to this unit from coastal village sites.[7]

The community offers many opportunities for recreation. Developed types include swimming, tennis, dressage, off-road vehicle riding, and motorbike touring. Passive recreation types include walking, running, hiking, bicycling, mountain biking, wildlife viewing, bird watching, horseback trails riding, and landscape painting. The passive types of activities are popular in neighborhoods and along state lands trails and open space in the area.[8]

Ingress and egress is from the thoroughfares of Kanan Dume Road or PCH. Few roads are interconnected. Many roads and private drives are cul-de-sacs. Several homes or neighborhoods are gated. Streets in Ramírez Canyon and Sycamore Park are privately maintained. Ramírez Canyon roads have speed bumps.[9]

There are two active landslides in the Zumírez Canyon Road–Puerco Canyon area. One is the RV Park Slide adjacent to Malibu Beach RV Park. The second is the Latigo Canyon Slide.

CAL FIRE designated the entire Santa Monica Mountains region as a Very High Fire Hazard Severity Zone. The Zumírez Canyon Road–Puerco Canyon unit is included.

Homes in the Zumírez Canyon Road–Puerco Canyon area have a variable age-class. The densely developed neighborhood of Sycamore Park dates to the 1950s. Ramírez Mesa was developed in the 1990s. Older structures are often wooden type. Newer homes are mostly constructed of plaster, stucco, or cement. Many homes, regardless of age, have wooden decks and/or fences. It is common for properties in this planning unit to have swimming pools, tennis courts, or horse stables. Mature ornamental landscaping is found throughout the area. Vegetation often encroaches upon power lines here. Many of the larger, newer homes appear to not utilize dense flammable landscaping. At closer inspection, plant materials are often immature and not appropriate for use in the wildland-urban interface zone. Many older homes have been remodeled. Most structures in the Zumírez Canyon Road–Puerco Canyon unit, including remodels, are not retrofitted to current California WUI Fire and Building Standards.[10] Ramírez Canyon is a densely vegetated canyon with older homes and a narrow winding road with a one-lane bridge.

The Zumírez Canyon Road–Puerco Canyon Planning Unit experienced the following wildfires during the last century: Calabasas (1903); Topanga/Escondido (1913); the 30,000-acre Malibu-Latigo complex (1935); Woodland Hills #65 (October 6, 1943) with 150 homes lost between Corral Canyon and Point Dume; 16,400-acre Newton/Sherwood/Zuma complex (December 28, 1956) with more than 100 homes lost between Zuma Canyon and Bailard/Lunita; 18,000-acre Liberty (November 28, 1958) with more than 100 homes lost between US 101 and

[7] City of Malibu (1995), *General Plan – Land Use Element – Appendix A. Neighborhood Descriptions.*

[8] City of Malibu (1995), *General Plan – Land Use Element – Appendix A. Neighborhood Descriptions.*

[9] City of Malibu (1995), *General Plan – Land Use Element – Appendix A. Neighborhood Descriptions.*

[10] Building Standards Commission, State of California (2010), www.bsc.ca.gov, accessed February 2010.

Ramírez Canyon; Latigo (October 30, 1967); unnamed (July 25, 1972); unnamed (August 26, 1978); 28,201-acre Wright (October 23, 1978) with 403 homes lost and ten fatalities from US 101 to the beach; 43,090-acre Dayton Canyon (October 9, 1982) with 74 homes lost between Agoura and the beach; 5,197-acre Piuma (October 14, 1985); Archery (October 18, 1991); Malibu (September 18, 1993); Kanan (August 5, 1994); Latigo (December 8, 1994); Corral (October 26, 2003); Latigo (January 5, 2003); Corral (November 24, 2007) with over 50 homes lost in the burn area; and Latigo (November 28, 2007).

Municipal water supply is through Los Angeles County Waterworks District No. 29 in Malibu except for a gated 18-home subdivision in Paradise View Estates. Conveyance is along a transmission main that follows PCH. Water is stored in tanks located on the upland side of the highway. The county adopted mandatory water conservation measures in 2009. The service provider for the 18 gated homes in Paradise View Estates on Ramírez Mesa Drive is Valencia Heights Water Company. It provides billing and infrastructural maintenance for the homes. Water is from Los Angeles County Waterworks District No. 29.[11,12] Threats to the water supply in the Zumírez Canyon Road–Puerco Canyon area include infrastructural age and lack of capital funds to upgrade, increased demand from new development, and emergency use such as during wildfire events; note that electrical failure during wildfire event may inhibit access to water.[13,14] Water availability has always been a limiting factor in Malibu.

A metered line was constructed in the 1990s to Ramírez Mesa after the district increased its supply, allowing this area to be developed.[15] The 40-year-old water delivery infrastructure is slowly being upgraded. Portions of the existing 8-inch main line along Ramírez Canyon Road were recently replaced with another of the same size. An 8-inch lateral connection line between Zumírez Drive and Ramírez Canyon Road was also recently repaired to a new pipe of the same size. Improvements currently being considered for this planning unit area include installation of new 8-inch lines along Winding Way, Lower Latigo Canyon Road, and PCH.[16,17]

Los Angeles County Fire Stations #88 on Malibu Road and #71 at Point Dume are located due east and west of the unit, respectively.

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[11] Gloria Galindo, Customer Service Clerk/Accounting Clerk, Valencia Heights Water Company, personal communication, June 28, 2010.

[12] Arthur Schimke, Regional Water Service Superintendent, Waterworks and Sewer Maintenance Division, County of Los Angeles, Department of Public Works, personal communication, June 2010.

[13] Santa Monica Mountains Conservancy/Mountains Recreation and Conservation Authority (September 2, 2009), *Malibu Parks Public Access Enhancement Plan – Public Works Plan Draft Environmental Impact Report – Water Supply.*

[14] Arthur Schimke, personal communication, April–June 2010.

[15] City of Malibu (1995), *General Plan – Land Use Element – Appendix A. Neighborhood Descriptions.*

[16] Santa Monica Mountains Conservancy/Mountains Recreation and Conservation Authority (September 2, 2009), *Malibu Parks Public Access Enhancement Plan – Public Works Plan Draft Environmental Impact Report – Water Supply.*

[17] Arthur Schimke, personal communication, April–June 2010.

7.2. Zumírez Canyon Road – Puerco Canyon Evacuations

Possible impediments to emergency ingress and egress include downed power lines, trees, traffic, and landslides. There are several cul-de-sacs and gated homes in this unit. Gated neighborhoods include Malibu Colony Ranch Estates, Paradise View Estates, and parts of Ramírez Canyon. The Zumírez Canyon Road–Puerco Canyon area is a popular recreation area. Many residents own horses. There are churches and preschools. These assets at risk pose additional considerations for evacuations.

Evacuation from Zumírez Canyon Road–Puerco Canyon will travel either eastward or westward along PCH, depending on law enforcement recommendations based on fire behavior, wind pattern, traffic, and ingress of emergency vehicles. In some cases, and only by the advice of the sheriff, Kanan Dume Road or Malibu Canyon Road might become options. Zumírez Canyon Road can also evacuate from the north to Kanan Dume, although there are heavy eucalyptus fuels along this route. Ramírez Canyon Road is narrow, with one-way in-and-out access and a narrow bridge. It has an emergency egress route through a very narrow, one-lane tunnel out to the intersection of Paradise Cove and PCH. This route could easily be blocked and cannot accommodate fire engines.

Possible evacuation areas that should be considered by local law enforcement and fire departments in the Zumírez Canyon Road–Puerco Canyon unit include open disced fields along PCH, tennis courts, and swimming pool areas that have large unvegetated and paved open areas.

7.3. Zumírez Canyon Road – Puerco Canyon Community Meeting Summary

The Zumírez Canyon–Puerco Canyon meeting was held in the City of Malibu Council Chambers on November 11, 2009. Eighteen residents and one non-resident attended.

The following assets at risk were identified at this community meeting. These can be seen on Map II.7-1 at the end of this document.

FIGURE II.7-1. COMMUNITY-IDENTIFIED ASSETS AT RISK

- St. Aiden's Episcopal Church
- First Church of Christ, Scientist
- Los Angeles County Fire Department #71
- Power Station

7.3.1. Community-Identified Potential Projects

The following items are community-identified projects from the community meeting. Residents were encouraged to “think big” and not be concerned about project cost or property ownership for the project brainstorming process. Following the brainstorming, residents prioritized projects based on which were most realistic and most important. These projects can be seen on Map II.7-1 at the end of this document.

FIGURE II.7-2. ZUMÍREZ CANYON ROAD–PUERCO CANYON COMMUNITY-IDENTIFIED PROPOSED PROJECTS

IDENTIFIED ITEM DESCRIPTION	PROPOSED PROJECT CATEGORY	PRIORITY RANK
Alternate access for Ramírez Canyon Park	Evacuation / Fire Protection	1
Identify latitude/longitude and elevation of safe zones, put on “pocket card” with instructions and post on Internet	Evacuation / Education	2

IDENTIFIED ITEM DESCRIPTION	PROPOSED PROJECT CATEGORY	PRIORITY RANK
Repair Vía Acero at Kanan Dume	Evacuation	3
Bury power lines	Risk Reduction	4
Every community needs safe zone	Evacuation	
Large animal evacuation zone	Evacuation	
Fire box with fire plans at community gates/entrance (copy Ramírez Canyon model)	Fire Protection	
Urban warning siren for fire/emergency	Fire Protection / Equipment	
Clearance in/amongst Ramírez Canyon Park	Fuel Reduction	
Eradicate hazardous eucalyptus	Fuel Reduction	
Removal of non-native flammable fire-hazard trees	Fuel Reduction	
Fuel reduction on Willmott/Latigo ¼ mile up from intersection	Fuel Reduction	
Clear public property	Fuel Reduction	
Wet defensible firebreaks, 200-foot clearance with sprinklers or hydrants	Water	
Community water tanks/fire-fighting tanks	Water	

7.4. Zumírez Canyon Road – Puerco Canyon Action Plan

The following projects are the initial priorities for community action for the Zumírez Canyon–Puerco Canyon Planning Unit.

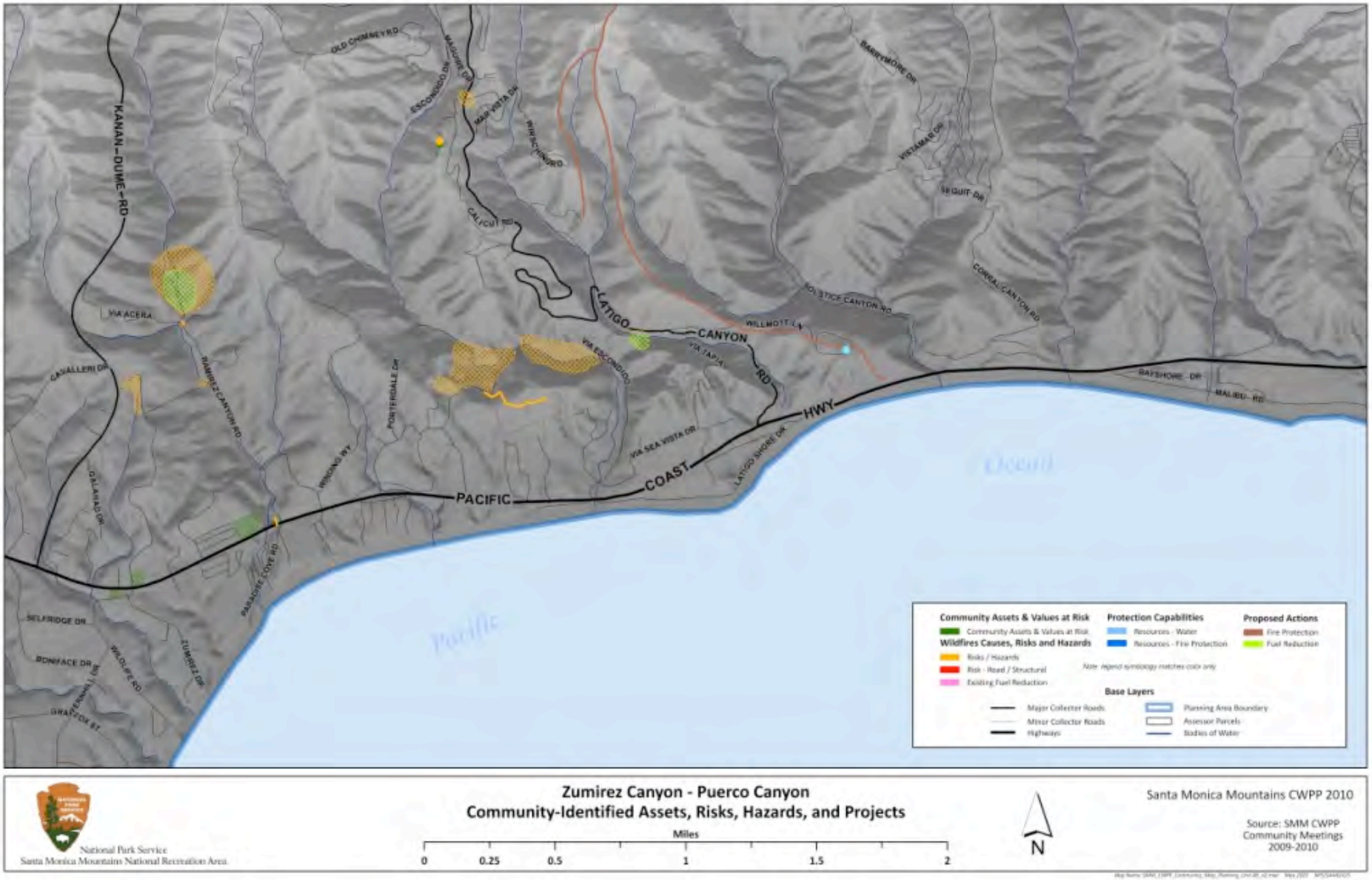
- Community organizing is needed in Ramírez Canyon to educate local residents on the need for hardened homes (resistant to wildfire) and fuel management in the home ignition zone.
- Residents throughout this planning unit should reduce urban fuels in the home ignition zone based on the Conservation Principles and Best Management Practices outlined in Chapters 1, 4, and 5 of this CWPP. Fuels maintenance should be a routine and ongoing practice for all homes and landscapes in the Santa Monica Mountains. This includes: ensuring structures are resistant to heat and embers, maintaining all vegetation "from the house out," and removing anything in this zone that might ignite and spread fire.
- Form a local Fire Safe Council (FSC). This will be the structure that will facilitate community preparedness for wildfire. Work with the California Fire Safe Council to create a FSC that will work best for this area. One option is a larger Malibu-wide FSC that could have representatives from each of the different neighborhoods and homeowner's associations (HOAs).
- Implement a hazard tree removal/thinning program through a FSC, HOA, or other community organization starting in Ramírez Canyon and in cooperation with Santa Monica Mountains Conservancy. Consider replacing non-native trees with locally appropriate native oaks. Priority order for implementation is:
    - Along main evacuation routes, starting with Ramírez Canyon Road and the eucalyptus along the northern extent of Zumírez Canyon Road.
    - Along the spur roads to main evacuation roads,
    - Near homes, especially trees that threaten more than one home,
    - Trees in or near power lines.
- Ensure that at least one team from each homeowner's association or neighborhood undergoes Malibu Community Emergency Response Team (CERT) training. This is the vehicle to begin

organizing locally for evacuation planning, in cooperation with local law enforcement and the fire department.

- Work through HOAs or FSCs to educate residents on the need to keep ingress and egress/evacuation routes clear. Residents need to understand the dangers involved in imprudent parking or long-term street storage of unused vehicles. Because natural disasters can strike at any time, key evacuation ingress/egress routes must be kept free of parked vehicles, especially trailers and other large objects that are difficult to move quickly. Trash cans and other items should be kept off the roadway and out of key turnout/passing areas.[18] A neighborhood-organizing project would include creating off-street parking where it is limited. Neighbors can work together to help each other stay in compliance.
- Work with law enforcement and Los Angeles County Fire Department through a FSC, homeowners association (HOA), or other neighborhood-level association to develop local evacuation plans. This can be based on accomplishments already made in Ramírez by Ronald Coleman. Efforts should be made to ensure that local gates are open or accessible during Red Flag conditions.
- Explore community purchase and installation of WUI building products to upgrade homes to current WUI building standards.
- All residents upgrade homes to current California WUI Fire and Building Standards.

[18] The law in Los Angeles County states that trash cans can only be on the street after 5 pm of the day preceding, and until 8 pm on the day of waste collection.

MAP II.7-1. ZUMÍREZ CANYON ROAD – PUERCO CANYON: COMMUNITY-IDENTIFIED ASSETS, RISKS, HAZARDS, AND PROJECTS[19]



[19] This map prints best at 11x17. Visit to www.forevergreenforestry.com/smmcwpp_pub.html to download a print version.

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8. Civic Center Community Fire Safety Action Plan[1]

8.1. Civic Center Description

This planning unit includes the neighborhoods of Malibu Country Estates, Malibu Knolls, Malibu Canyon condominium complexes (Maison de Ville, Malibu Canyon Village, Malibu Pacifica), and the Civic Center (educational, government, business district).

The Civic Center Planning Unit is situated in the City of Malibu north of Pacific Coast Highway (PCH) between Malibu Creek to the east and Malibu Jewish Center and Synagogue to the west. The Pacific Coast Highway forms the southern border. Private lands lie to the north, with the exception of state park lands located due north of Malibu Knolls. The Civic Center Planning Unit is 0.8 mile in area.

Assets at risk in the built environment include nearly 270 single-family homes and condominiums, a synagogue and cultural center, two churches, two preschools, a private elementary school, public elementary school, veterinary hospital, dressage facility, gas station, private tennis club, plant nursery, gym, movie theater, labor exchange, telecommunications company, building supplier, medical and dental offices, two large business and retail complexes with eateries (Cross Creek Plaza and Malibu Country Mart) hosting more than 70 businesses, professional and personal services offices, Hughes Research Laboratory, City Hall, Los Angeles County Waterworks District No. 29, Los Angeles County Courthouse, satellite District Attorney offices, Los Angeles County Public Library, Papa Jack's Skate Park (City of Malibu), and a municipal stormwater treatment facility. Properties and homes vary in size.

The three condominium complexes are zoned six units per acre. Malibu Country Estates have quarter-acre lots.[2] Malibu Knolls homes are zoned 1 acre with lots one-half to 4 acres.[3] Real estate values range from $349,000 to $2 million for condominiums, and from $1.2 million for undeveloped lots and homes to $6 million for larger estates.[4]

8.1.1. Civic Center Wildfire Environment

Five Environmentally Sensitive Habitat Areas (ESHAs) are designated for the Civic Center unit. They are the following open spaces: 1) adjacent to and south of Civic Center Way, east of Malibu Canyon Road, north of PCH; surrounding Hughes Research Laboratory; 2) and 3) areas due north and south of Malibu Knolls; 4) north of Civic Center Way and west of Stuart Ranch Road; and 5) the Malibu Creek corridor. These ESHAs include pristine chaparral, coastal sage scrub, riparian, and wetland habitat.[5]

There are several opportunities for recreation in this community. Developed types include swimming, tennis, and dressage. Passive recreation types are walking, running, and bicycling. The 15-acre Legacy Park—a city park

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[1] This document was written by Julie Clark De Blasio, Principal of Sweetgrass Environmental Consulting, in conjunction with ForEverGreen Forestry.

[2] California Coastal Commission Technical Services, San Francisco, CA (Revised 2002), *Land Use Map 3: Dan Blocker to Malibu Pier,* Local Coastal Program – City of Malibu [Data file], www.ci.malibu.ca.us/download/index.cfm/fuseaction/download/cid/1603/

[3] California Coastal Commission Technical Services, San Francisco, CA (Revised 2002), *Land Use Map 3: Dan Blocker to Malibu Pier*, Local Coastal Program – City of Malibu [Data file], www.ci.malibu.ca.us/download/index.cfm/fuseaction/download/cid/1603/

[4] PublishHomes.com, "Luxury homes in Malibu," http://www.publishhomes.com, (accessed February 21, 2010).

[5] California Coastal Commission Technical Services, San Francisco, CA (Revised 2002), *ESHA and Marine Resources Map 3: Dan Blocker to Malibu Pier*. Local Coastal Program – City of Malibu [Data file], www.ci.malibu.ca.us/download/index.cfm/fuseaction/download/cid/1603/

currently under construction—is designed to combine recreation with water quality protection. The park will feature stormwater detention basins, constructed intermittent wetlands, and riparian habitat while improving water quality as well as restoring and protecting natural resources in Malibu Creek, Malibu Lagoon, and Surfrider Beach.[6]

Ingress and egress is from the thoroughfares of Malibu Canyon Road and PCH. Few roads are interconnected and most are cul-de-sacs. Several homes or neighborhoods are gated.

CAL FIRE designated the entire Santa Monica Mountains region as a Very High Fire Hazard Severity Zone. The Civic Center Planning Unit is included. This determination by the state is based on factors such as fire weather, slope, and fuel loading, among others.

The Civic Center Planning Unit experienced many wildfires over the last century: Topanga/Escondido (1913); 30,000-acre Malibu-Latigo complex (1935); Woodland Hills #65 (October 6, 1943); 18,000-acre Liberty with losses incurred in Malibu Country Estates and Civic Center areas (November 28, 1958) with more than 100 homes lost between US 101 and the coast; 28,201-acre Wright (October 23, 1978) with 403 homes lost and 10 fatalities from US 101 to the beach; 5,197-acre Piuma (October 14, 1985); Old Topanga (November 2, 1993) with 400 homes lost and three fatalities in the burn area; Calabasas (October 21, 1996); and Canyon (October 21, 2007) with four homes, a church, and at least four businesses lost in the Civic Center Planning Unit.[7,8,9]

Homes in the Civic Center area have a variable age-class. Older structures are often wooden type. Newer construction types include plaster, stucco, and cement. Many homes, regardless of age, have wooden decks and/or fences. Mature ornamental vegetation is found throughout the entire unit and is predominant in Malibu Knolls. Flammable and fibrous tropical species are common at Hughes Research Laboratory, the condominium developments, and Malibu Country Estates. Many older homes have been remodeled. Most structures in the Civic Center unit are not retrofitted to current California Wildland-Urban Interface (WUI) Fire and Building Standards.[10]

Utilities in Malibu Country Estates and Civic Center are subterranean. Vegetation encroaches upon many power lines in Malibu Knolls. Malibu Country Estates has a View Protection and Preservation ordinance that is part of their overlay district; it was made an ordinance in 2007.[11,12] A benefit is that it appears to have dually served in ameliorating fire threat in the neighborhood through ornamental vegetation management.[13] A traffic study conducted a few years ago for Malibu Knolls concluded that plants obscured the view of motorists, and that Edison power poles needed vegetation clearing.[14]

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[6] Vic Peterson (July 31, 2006), "Legacy Park update and approval for issuance of the request for proposals on the Malibu Civic Center Integrated Water Quality Management Plan to be implemented for the Legacy site." In City of Malibu Council Agenda Report.

[7] Mike Davis (1998), "The Case for Letting Malibu Burn." In *Ecology of Fear* (New York: Henry Holt): pp. 93–147.

[8] J. Friedman (October 31, 2007), "Malibu fire damages run the gamut," *Malibu Times.*

[9] Robert .S. Taylor, Biogeographer/Fire GIS Specialist, National Park Service, personal communication, February 12, 2010.

[10] State of California, Building Standards Commission, www.bsc.ca.gov (accessed February 8, 2010).

[11] City of Malibu (n.d.), City of Malibu resolution index, http://www.ci.malibu.ca.us/download/index.cfm/fuseaction/download/cid/13947/ (accessed June 17, 2010).

[12] Hiro Koutchounian, Malibu Country Estates Homeowners Association, personal communication, May 2010.

[13] O. Damavandi (June 3, 2009), "View protection task force at odds over plan," *Malibu Times.*

[14] City of Malibu: Malibu Public Safety Committee (May 30, 2001), Minutes: special meeting – draft Malibu Knolls traffic study.

Municipal water supply is through Los Angeles County Waterworks District No. 29 in Malibu. Conveyance is along a transmission main that follows PCH, with water stored in tanks located on the upland side of the highway. Los Angeles County adopted mandatory water conservation measures in 2009. Threats to the water supply include infrastructural age and lack of capital funds to upgrade, increased demand from new development, emergency use such as during wildfire events, and electrical failure during wildfire events that may inhibit access to water.[15,16]

The Civic Center Planning Unit recently was ordered by the Los Angeles Regional Water Quality Control Board to prohibit on-site septic systems. This prohibition goes into effect November 2015 for commercial facilities and 2019 for residences.[17] The Legacy Park project will have on-site water treatment. Los Angeles County Waterworks No. 29 will lead and manage this project with the purpose of wastewater reclamation and reuse for Malibu. The design will employ a gravity collection system and septic tank effluent pumps that meet all requirements of California administrative code for water quality discharge standards for reclaimed water use.[18] The change from septics to a sanitary sewer system is projected to save 80,000 gallons of effluent from being discharged to the Malibu Creek watershed.[19] The treated water may serve to augment the available water supply.

Los Angeles County Fire Station #88 is located south of this planning unit.

8.2. Civic Center Evacuations

Possible impediments to emergency ingress and egress include downed power lines, trees, traffic, and landslides. Most streets in this unit are cul-de-sacs. Some homes and condominiums are gated.

Malibu Country Estates has a limited preferential parking ordinance. This restricts daily congestion in the neighborhood and will contribute to ease of ingress and egress during emergencies.[20]

Evacuation from the Civic Center Planning Unit will travel either eastward or westward along PCH, depending on law enforcement recommendations based on fire behavior, wind pattern, traffic, and ingress of emergency vehicles. In some cases, and only by the advice of the sheriff, Malibu Canyon Road might be an option. Law enforcement planners should give special considerations to large groups that might need to be evacuated from Webster Elementary School, Our Lady of Malibu Catholic

[15] Santa Monica Mountains Conservancy/Mountains Recreation and Conservation Authority (September 2, 2009), *Malibu Parks Public Access Enhancement Plan – Public Works Plan Draft Environmental Impact Report – Water Supply.*

[16] Arthur Schimke, Regional Water Service Superintendent, Waterworks and Sewer Maintenance Division, County of Los Angeles, Department of Public Works, personal communication, April–June 2010.

[17] Los Angeles Regional Water Quality Control Board (November 18, 2009), "Amendment to the water quality control plan for the Los Angeles region to prohibit on-site wastewater disposal systems (OWDSs) in the Malibu Civic Center area," http://www.swrcb.ca.gov/rwqcb4/press_room/announcements/public-hearing-Malibu/index.shtml.

[18] R. Crites and R. Beggs (2008), "Water recycling in small communities extended on conserved potable water supplies." In: *Proceedings of the Water Environment Federation WEFTEC 2008. Session 11-20:* pp. 1395–1402 (8).

[19] B. Douglas, Questa Engineering Corp (February 11, 2003), "Bacteria TMDL for Malibu Creek Watershed" to T. Fleming, USEPA, http://epa.gov/region09/water/tmdl/malibu/rtc_malibu_bacteria.pdf.

[20] A. Brenoff (November 11, 2007), "Neighborly advice: where the surf meets the suburbs," *Malibu Times.*

Church and School, Malibu Presbyterian Church and School, Civic Center businesses and government offices, and the equestrian center on Cross Creek Road.

Possible evacuation areas located within the Civic Center Planning Unit that should be investigated by local law enforcement and fire departments include: Hughes Research Laboratory, parking lots at the county facilities, Legacy Park, the 15-acre disced undeveloped La Paz property due east and extending north from Papa Jack's Skate Park, and the tennis club.

8.3. Civic Center Community Meeting Summary

The Civic Center meeting was held in the City of Malibu Council Chambers on November 2, 2009. No residents and four non-residents attended.

The following assets at risk were identified at the community meeting. These can be seen on Map II.8-1 at the end of this document.

FIGURE II.8-1. COMMUNITY-IDENTIFIED ASSETS AT RISK

- Civic Center courthouse and library
- City Hall complex
- Commercial vineyard and winery
- Cross Creek business center
- Edison substation
- Our Lady of Malibu Church and School
- Malibu Country Mart/business district
- Malibu Glass
- Malibu Presbyterian Church and School
- Veterinary and medical commercial complex
- Webster Elementary School

8.3.1. Community-Identified Potential Projects

The following items are community-identified projects from the community meeting. Attendees were encouraged to "think big," and not be concerned about project cost or property ownership for the project brainstorming process. Following the brainstorming, attendees prioritized projects based on which were most realistic and most important. These projects can be seen on Map II.8-1 at the end of this document.

FIGURE II.8-2. CIVIC CENTER: COMMUNITY-IDENTIFIED PROJECTS

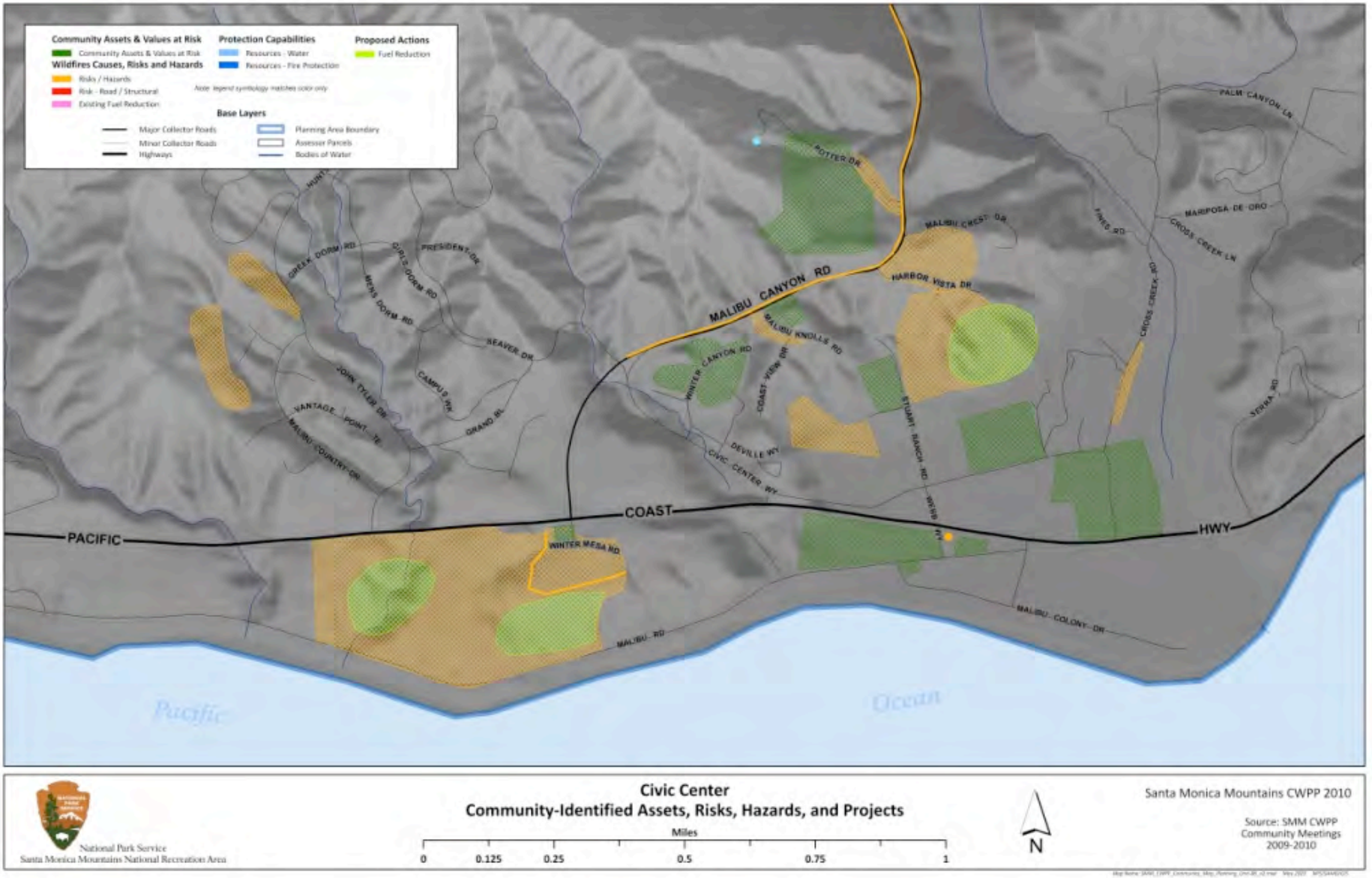
IDENTIFIED ITEM DESCRIPTION	PROPOSED PROJECT CATEGORY	PRIORITY RANK	VOTES
Better fire department response, command/control – communication efficiency, deployment of resources	Fire Protection		1
Hazard fuels clearance local contact	Fuel Reduction / Policy		1
Fuel reduction	Fuel Reduction		
Fuel reduction on state property	Fuel Reduction		
Hazardous tree removal program around homes	Fuel Reduction		

8.4. Civic Center Action Plan

The following projects are the initial priorities for community action for the Civic Center Planning Unit.

- Form a local Fire Safe Council (FSC) or join with other nearby FSCs. This structure will facilitate community wildfire preparedness. Work with the California Fire Safe Council to create a local FSC that will work best for this area. One option is a larger Malibu-wide FSC that could have representatives from each of the different neighborhoods and homeowner's associations (HOAs).
- Residents reduce urban fuels in the home ignition zone based on the Conservation Principles and Best Management Practices outlined in Chapters 1, 4, and 5 of this CWPP. Fuels maintenance should be a routine and ongoing practice for all homes and landscapes in the Santa Monica Mountains. This is especially important in the Harbor Vista and Malibu Crest Drive areas. This includes: ensuring structures are resistant to heat and embers, maintaining all vegetation "from the house out," and removing anything in this zone that might ignite and spread fire.
- Hughes Research Laboratories reduce hazardous fuels on Potter Drive.
- Ensure that at least one team from each homeowner's association or neighborhood undergoes Malibu Community Emergency Response Team (CERT) training. This is the vehicle to begin organizing locally for evacuation planning, in cooperation with local law enforcement and the fire department.
- Implement a hazard tree removal/thinning program through a FSC, HOA, or other community organization starting in the residential neighborhoods on the hills and in priority order:
    - Along main evacuation routes,
    - Along the spur roads to main evacuation roads, especially Harbor Vista Drive, Malibu Crest Drive, and Malibu Knolls Road,
    - Near homes, especially trees that threaten more than one home,
    - School district maintain palm trees behind buildings,
    - Trees in or near power lines.
- Local nursery reduce fuels along perimeter to minimize threat to neighboring homes.
- Work through a new FSC or existing HOA or other neighborhood structure to begin a local community education and preparedness campaign. This can be done in cooperation with other area FSCs and/or the City of Malibu, Los Angeles County Fire Department, and the National Park Service.
- Work with law enforcement and Los Angeles County Fire Department through a FSC, HOA, or other neighborhood-level association to develop a local evacuation plan. Efforts should be made to ensure that local gates are open or accessible during Red Flag conditions.
- Explore community purchase and installation of Wildland-Urban Interface (WUI) building products to upgrade homes to current WUI building standards.
- All residents upgrade homes to current California WUI Fire and Building Standards.

MAP II.8-1. CIVIC CENTER: COMMUNITY-IDENTIFIED ASSETS, RISKS, HAZARDS, AND PROJECTS[21]



[21] This map prints best at 11x17. Visit to www.forevergreenforestry.com/smmcwpp_pub.html to download a print version.

9. Cross Creek – Carbon Canyon Community Fire Safety Action Plan[1]

9.1. Cross Creek – Carbon Canyon Description

This planning unit includes the neighborhoods of Serra Retreat, Sweetwater Mesa, Sweetwater Canyon, Carbon Mesa, Carbon Canyon, and the business district on the north side of Pacific Coast Highway (PCH) between Serra Retreat and Carbon Canyon.

The Cross Creek–Carbon Canyon Planning Unit is situated in the City of Malibu north of PCH between Carbon Canyon to the east and to the eastern shore of Malibu Creek to the west. Pacific Coast Highway is south. Approximately 50% of lands north of the unit are state parks. The other 50% are privately owned. The Cross Creek–Carbon Canyon unit is 1.5 miles in area.

Assets at risk in the built environment include approximately 175 single-family homes, a Catholic retreat and conference center, AIDS hospice, recovery center, Los Angeles County Fire Station and Battalion Headquarters #70, a motel, at least 12 commercial complexes and many single stationary businesses hosting medical offices, personal and business services, retail stores, and several eateries. Properties and homes vary in size. Eighty percent of the 96 parcels in Serra Retreat are one-quarter acre to 1 acre in size. The remaining 20% of parcels in Serra Retreat range from more than 1 acre to 4 acres.[2] Upper Sweetwater Mesa lots are zoned 20 acres. Sweetwater Canyon parcels are 1 acre.[3] Carbon Mesa lots are zoned 40 acres. Carbon Canyon parcels range from 2 to 10 acres.[4] Real estate values for homes start at $1.1 million and go to $18 million for large estates.[5]

9.1.1. Cross Creek – Carbon Canyon Wildfire Environment

The open-space areas surrounding all residential and commercial development in this unit are considered Environmentally Sensitive Habitat Areas (ESHAs). Upland reaches include coastal sage scrub and chaparral habitat. Drainages and canyons include riparian and wetland habitat.[6,7] Sweetwater Mesa is a significant cultural resources area.[8]

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[1] This document was written by Julie Clark De Blasio, Principal of Sweetgrass Environmental Consulting, in conjunction with ForEverGreen Forestry.

[2] City of Malibu (1995), *General Plan – Land Use Element – Appendix A. Neighborhood Descriptions.*

[3] California Coastal Commission Technical Services, San Francisco, CA (Revised 2002), *Land Use Map 3: Dan Blocker to Malibu Pier,* Local Coastal Program – City of Malibu [Data file], www.ci.malibu.ca.us/download/index.cfm/fuseaction/download/cid/1603/

[4] California Coastal Commission Technical Services, San Francisco, CA (Revised 2002), *Land Use Map 4: Carbon Beach to Topanga Beach,* Local Coastal Program – City of Malibu [Data file].

[5] LALife.com, www.lalife.com (accessed February 25, 2010).

[6] California Coastal Commission Technical Services, San Francisco, CA (Revised 2002), *ESHA and Marine Resources Map 3: Dan Blocker to Malibu Pier,* Local Coastal Program – City of Malibu [Data file].

[7] California Coastal Commission Technical Services, San Francisco, CA, (Revised 2002), *ESHA and Marine Resources Map 4: Carbon Beach to Topanga Beach,* Local Coastal Program – City of Malibu [Data file].

[8] C. King (1967), "The Sweetwater Mesa site (LAn–267) and its place in southern California pre-history." In *University of California Archaeological Survey Annual Report*, pp. 25–76.

There are no public lands or facilities in this planning unit. Recreational opportunities are private except for those along roadways. Developed private types include swimming, tennis, and dressage. Passive recreation types are walking, running, and bicycling.

Ingress and egress is from the thoroughfare of PCH. Few roads are interconnected and most are cul-de-sacs. Serra Retreat and its adjoining neighborhood of Sweetwater Mesa are gated and guarded at the two entries on Cross Creek and Serra Roads. Several homes in the Cross Creek–Carbon Canyon Planning Unit are gated.

CAL FIRE designated the entire Santa Monica Mountains region as a Very High Fire Hazard Severity Zone. The Cross Creek–Carbon Canyon Planning Unit is included. This determination by the state is based on factors such as fire weather, slope, and fuel loading, among others.

The Cross Creek–Carbon Canyon area experienced several wildfires in the last century: Calabasas (1903); Las Flores #47 (October 20,1942); Hume (December 27, 1956); 28,201-acre Wright (September 25, 1970) with 403 homes lost and ten fatalities in the burn area; 5,197-acre Piuma (October 14, 1985); Old Topanga (November 2, 1993) with 400 homes lost and three fatalities in the burn area; Calabasas (October 21, 1996); and Canyon (October 21, 2007) with homes destroyed in the Cross Creek–Carbon Canyon Planning Unit.[9,10,11]

Two landslides are active in the area: Carbon Canyon Slide and Carbon Mesa Slide. There is potential for unstable slopes resulting from these slides to affect ingress and egress in the two neighborhoods.

Homes in the Cross Creek–Carbon Canyon Planning Unit have a variable age-class. Older structures are often wooden type. Many homes, regardless of age, have wooden decks and/or fences. Newer structures are often constructed of plaster, stucco, or cement. Mature ornamental vegetation is found throughout the entire unit and is predominant in Serra Retreat and Carbon Canyon. Large stands of unmaintained eucalyptus line the main evacuation route out of Serra Retreat. Flammable and fibrous tropical species are common in Sweetwater Canyon, homes on PCH, Carbon Mesa, and lower Carbon Canyon. Vegetation encroaches upon many power lines in the area. Many older homes have been remodeled. Most structures in the Cross Creek–Carbon Canyon area are not retrofitted to current California WUI Fire and Building Standards.[12]

Municipal water supply is through Los Angeles County Waterworks District No. 29 in Malibu. Conveyance is along a transmission main that follows PCH, with water stored in tanks located on the upland side of the highway. The county adopted mandatory water conservation measures in 2009. Threats to the water supply include infrastructural age and lack of capital funds to upgrade, increased demand from new development, emergency use such as during wildfire events, and electrical failure during wildfire events, which may inhibit access to water.[13,14]

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[9] Mike Davis (1998), "The Case for Letting Malibu Burn." In *Ecology of Fear* (New York: Henry Holt): pp. 93–147.

[10] J. Friedman (October 31, 2007), "Malibu fire damages run the gamut," *Malibu Times.*

[11] Robert S. Taylor, Biogeographer/Fire GIS Specialist, National Park Service, personal communication, February 12, 2010.

[11] State of California, Building Standards Commission, www.bsc.ca.gov (accessed February 8, 2010).

[13] Santa Monica Mountains Conservancy/Mountains Recreation and Conservation Authority (September 2, 2009), *Malibu Parks Public Access Enhancement Plan – Public Works Plan Draft Environmental Impact Report – Water Supply.*

Los Angeles County Fire Station #88 is located southwest of the unit, and Los Angeles County Fire Station #70 is at the corner of Carbon Canyon Road and PCH.

9.2. Cross Creek – Carbon Canyon Evacuations

Possible impediments to emergency ingress and egress include downed power lines, trees, traffic, or landslides. Most streets are cul-de-sacs in this planning unit. Serra Retreat and some homes in other areas are gated.

Evacuation from the Cross Creek–Carbon Canyon area will travel either eastward or westward along PCH, depending on law enforcement recommendations based on fire behavior, wind pattern, traffic, and ingress of emergency vehicles. In some cases, and only by the advice of the sheriff, Malibu Canyon Road might become an option.

No possible evacuation areas were identified by residents within the Cross Creek–Carbon Canyon Planning Unit. Local law enforcement and fire departments should investigate feasibility of tennis courts and pool areas in the unit as safe areas.

9.3. Cross Creek – Carbon Canyon Community Meeting Summary

The Cross Creek–Carbon Canyon meeting was held in the City of Malibu Council Chambers on October 27, 2009. One resident and nine non-residents attended.

The following assets at risk were identified at the community meeting. These can be seen on Map II.9-1 at the end of this document.

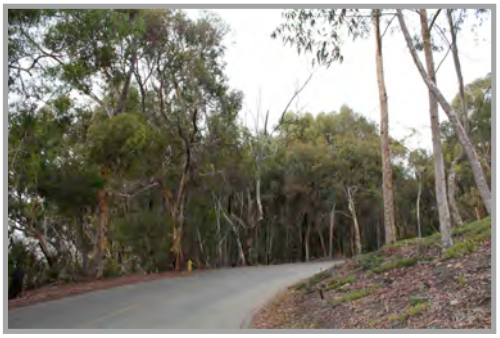


FIGURE II.9-1. COMMUNITY-IDENTIFIED ASSETS AT RISK

- Business District
- Fire Station #70
- Serra Retreat

9.3.1. Community-Identified Potential Projects

The following items are community-identified projects from the community meeting. Residents were encouraged to "think big," and not be concerned about project cost or property ownership for the project brainstorming process. Following the brainstorming, residents prioritized projects based on which were most realistic and most important. These projects can be seen on Map II.9-1 at the end of this document.

FIGURE II.9-2. CROSS CREEK – CARBON CANYON COMMUNITY-IDENTIFIED PROJECTS

IDENTIFIED ITEM DESCRIPTION	PROPOSED PROJECT CATEGORY	PRIORITY RANK
Regular neighborhood fire safety meetings before fire season	Emergency Preparedness	1
Mass mailings with fire safety info (e.g. "Ready, Set, Go")	Education	2
Oak planting/restoration as fire buffer above Serra Retreat/Cross Creek	Fire Protection	
Limb/maintain/trim eucalyptus on lower Carbon Canyon	Fuel Reduction	
Open canopy/thin/limb eucalyptus on Serra Road	Fuel Reduction	

[14] Arthur Schimke, Regional Water Service Superintendent, Waterworks and Sewer Maintenance Division, County of Los Angeles, Department of Public Works, personal communication, April–June 2010.

9.4. Cross Creek – Carbon Canyon Action Plan

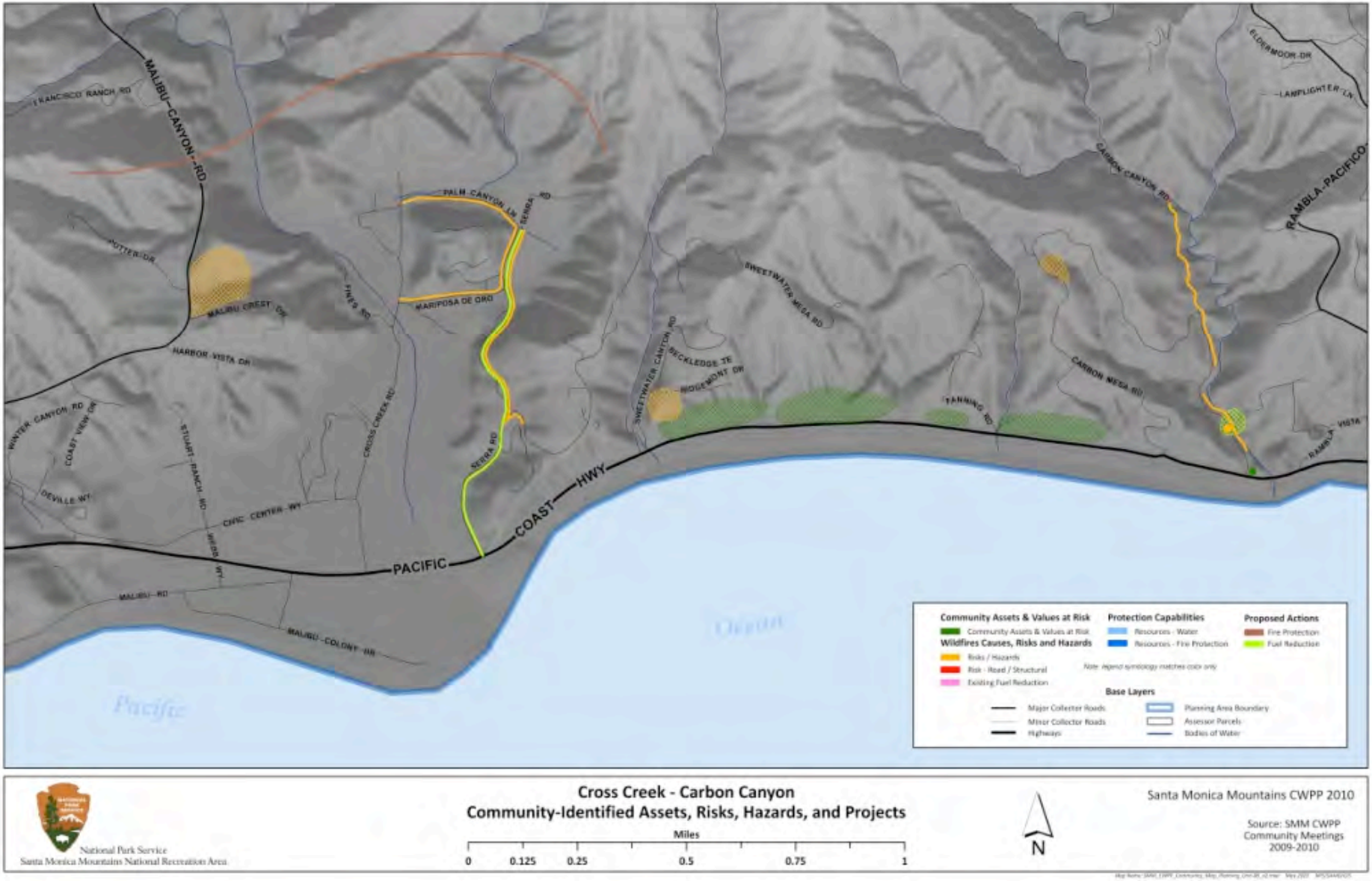
The following projects are the initial priorities for community action for the Cross Creek–Carbon Canyon Planning Unit.

- Form a local Fire Safe Council (FSC) or join with other nearby FSCs. This structure will facilitate community wildfire preparedness. Work with the California Fire Safe Council to create a FSC that will work best for this area. One option is a larger Malibu-wide FSC that could have representatives from each of the different neighborhoods and homeowner's associations (HOAs). Fire-safety meetings in the neighborhoods can be held through the FSC, especially before and during fire season.
- Implement a hazard tree removal/thinning program through a FSC, HOA, or other community organization, starting in the residential neighborhoods on the hills and in priority order:
    - Along main evacuation routes, especially Serra Road, Carbon Canyon Road, lower Sweetwater Mesa Road, and Palm Canyon Drive,
    - Along the spur roads to main evacuation roads, especially Mariposa de Oro,
    - Near homes, especially trees that threaten more than one home,
    - Trees in or near power lines,
    - The clump of eucalyptus trees behind Rob Roys.
- Residents reduce urban fuels in the home ignition zone based on the Conservation Principles and Best Management Practices outlined in Chapters 1, 4, and 5 of this CWPP. Fuels maintenance should be a routine and ongoing practice throughout the year for all homes and landscapes in the Santa Monica Mountains. This includes: ensuring structures are resistant to heat and embers, maintaining all vegetation "from the house out," and removing anything in this zone that might ignite and spread fire.
- Explore community purchase and installation of Wildland-Urban Interface (WUI) building products to upgrade homes to current WUI building standards.
- All residents upgrade homes to current California WUI Fire and Building Standards.
- Ensure that at least one team from each homeowner's association or neighborhood undergoes Malibu Community Emergency Response team (CERT) training. This is the vehicle to begin organizing locally for evacuation planning, in cooperation with local law enforcement and the fire department.
- Work through HOAs to educate residents on the need to keep ingress and egress/evacuation routes clear. Residents need to understand the dangers involved in imprudent parking or long-term street storage of unused vehicles. Because natural disasters can strike at any time, key evacuation ingress/egress routes must be kept free of parked vehicles, especially trailers and other large objects that are difficult to move quickly. Trash cans and other items should be kept off the roadway and out of key turnout/passing areas.[15] A neighborhood-organizing project would include creating off-street parking where it is limited. Neighbors can work together to help each other stay in compliance.
- Work through a new FSC, existing HOA, or other neighborhood structure to begin a local community education and preparedness campaign. This can be done in cooperation with other area FSCs and/or the City of Malibu, Los Angeles County Fire Department, and the National Park Service.
- Work with law enforcement and Los Angeles County Fire Department through a FSC, HOA, or other neighborhood-level association to develop a local evacuation plan. Efforts should be made to ensure that local gates are open or accessible during Red Flag conditions.

Develop a neighborhood Arson Watch program, especially in Carbon Canyon. This could be integrated into the above-mentioned Fire Safe Council.

[15] The law in Los Angeles County states that trash cans can only be on the street after 5 pm of the day preceding, and until 8 pm on the day of waste collection.

MAP II.9-1. CROSS CREEK–CARBON CANYON: COMMUNITY-IDENTIFIED ASSETS, RISKS, HAZARDS, AND PROJECTS[16]



[16] This map prints best at 11x17. Visit to www.forevergreenforestry.com/smmcwpp_pub.html to download a print version.

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10. La Costa – Big Rock – Peña Canyon Community Fire Safety Action Plan[1]

10.1. La Costa – Big Rock – Peña Canyon Description

This planning unit includes the neighborhoods of La Costa, Rambla Pacifico to Malibu northern city limits, Lower Las Flores Canyon, Las Flores Mesa, Big Rock, Peña Canyon, the Las Flores business district, and homes on the north side of Pacific Coast Highway (PCH) within the unit boundary.

The La Costa–Big Rock–Peña Canyon Planning Unit is situated in the City of Malibu north of PCH from Peña Canyon to the east and West Rambla Vista at PCH to the west. Pacific Coast Highway is south. Rambla Pacifico extends north into unincorporated private lands. State Conservancy lands are north of Las Flores Canyon, Las Flores Mesa, Big Rock, and Peña Canyon. The La Costa–Big Rock–Peña Canyon unit is 2.5 square miles in area.

Assets at risk in the built environment include less than 400 single-family homes, duplexes, triplexes, four-plexes, six-plexes, several businesses including dental, personal, and business services, retail stores, eateries, historic bungalows, an historic business structure, historic courthouse/jail, a plant nursery, bed-and-breakfast, local newspaper, private elementary school, city park, recovery treatment center, and Caltrans maintenance yard.

Properties and homes vary in size. Lower Rambla Pacifico and Las Flores Canyon are mostly zoned six units per acre. Most La Costa lots are one-quarter acre. Homes in the lower part of Big Rock are on half-acre lots. Upper Rambla Pacifico to the city line and Upper Big Rock areas generally have 1-acre parcels. Las Flores Mesa hosts 2-acre lots. There are scattered 5-, 10-, 20-, and 40-acre parcels in the remainder of the unit.[2] Real estate values for homes start at $1.4 million for duplexes and range from $1.7 to $11 million for single-family homes.[3]

10.1.1. La Costa – Big Rock – Peña Canyon Wildfire Environment

Environmentally Sensitive Habitat Areas (ESHAs) surround the La Costa–Big Rock–Peña Canyon unit. The area in Las Flores Canyon follows the undeveloped stream corridor north and fans out in all directions after New Roads School. This fan extends east to surround the Las Flores Mesa to Big Rock and onward to the Malibu city limits near Topanga Canyon. A narrow strip follows PCH between homes on the north side of the highway and structures on the mesa above. Upland reaches of this ESHA include coastal sage scrub and chaparral habitat. Undeveloped areas in Las Flores Canyon, Piedra Gorda Canyon in Big Rock, and Peña Canyon host riparian and wetland habitat.[4] Big Rock Mesa was a live oak woodland until its development in the 1950s.[5]

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[1] This document was written by Julie Clark De Blasio, Principal of Sweetgrass Environmental Consulting, in conjunction with ForEverGreen Forestry.

[2] California Coastal Commission Technical Services, San Francisco, CA (Revised 2002), *Land Use Map 4: Carbon Beach to Topanga Beach*, Local Coastal Program – City of Malibu [Data file], www.ci.malibu.ca.us/download/index.cfm/fuseaction/download/cid/1603/

[3] Trulia Real Estate Search, http://www.trulia.com/homes/California/Malibu (accessed February 26, 2010).

[4] California Coastal Commission Technical Services, San Francisco, CA (Revised 2002), *ESHA and Marine Resources Map 4: Carbon Beach to Topanga Beach*, Local Coastal Program – City of Malibu [Data file].

[5] Dayton Lummis (2007), *Dust Devils: Journeys in the Vanishing American West* (Santa Fe, NM: Sunstone Press).

Las Flores Canyon Park (City of Malibu) is the only developed public access facility in the unit. Other recreational opportunities are private except for those along roadways, fire roads, and the park. Developed private types are swimming and tennis. Passive recreation types include walking, running, bicycling, and mountain biking.

Ingress and egress is from the thoroughfare of PCH. La Costa is interconnected. Roads are narrow, winding, have little street shoulder and parking, and are privately maintained. Side streets off the connector roads are cul-de-sacs. The La Costa area historically experienced slope destabilization. There are three dewatering projects that help ameliorate slippage. The Calle del Barco Slide in upper La Costa relegates the road and area to periodic unstable conditions.[6] Upper Rambla Pacifico extends north to Stunt Road in the unincorporated area and serves as a conduit to the San Fernando Valley. Lower Rambla Pacifico became dead-end in 1984, when an *ancient landslide*—the Rambla Pacifico Slide—became active and destroyed eight homes.[7] Las Flores Canyon connects with PCH and its upper reaches outside city limits with Scheuren and Saddle Peak roads, which both serve as connectors to the San Fernando Valley. It is subject to vagaries from the Eagle Pass–Las Flores Slide, which regularly blocks the road and imposes high costs for safety and clearance.[8,9] Las Flores Canyon is a developed floodplain with historic property and road losses during rain and debris flow events.[10] Las Flores Mesa is a neighborhood of cul-de-sacs and roads that are privately maintained. The area is unstable due to a slide and artesian springs. Building activities and roads exacerbate this slippage. The Big Rock community is a series of cul-de-sacs that extend almost to the ridgetop. Big Rock Drive is the main thoroughfare and has no outlet. There are active landslides in this neighborhood with the Big Rock Mesa Slide predominant. Piedra Gorda Canyon in Big Rock has 55° slopes. Peña Canyon is a narrow steep cul-de-sac. It has V-shaped 60° slopes. There are no active landslides but evidence of ancient and foreboding activity.[11]

CAL FIRE designated the entire Santa Monica Mountains region as a Very High Fire Hazard Severity Zone. The La Costa–Big Rock–Peña Canyon Planning Unit is included.

The La Costa–Big Rock–Peña Canyon Planning Unit experienced several wildfires in the last century: Las Flores–Temescal (1910); Las Flores #29 (November 17, 1928); Las Flores #47 (October 20, 1942); Hume (December 27, 1956); 28,201-acre Wright (September 25, 1970) with 403 homes lost and ten fatalities in the burn area; Old Topanga (November 2, 1993) with several homes lost in Las Flores and homes in Rambla Pacifico damaged; Canyon (October 21, 2007) with homes destroyed in Rambla Pacifico.[12,13,14]

Homes in the La Costa–Big Rock–Peña Canyon unit have a variable age-class. Older structures range from wooden to Mission-style stucco type. Many homes, regardless of age, have wooden decks and/or fences. Mature unmaintained ornamental vegetation is found throughout the entire unit. Many older homes have been remodeled. Most structures in the La Costa–Big Rock–Peña Canyon unit are not retrofitted to current California WUI Fire and

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[6] City of Malibu (1995), *General Plan – Land Use Element – Appendix A. Neighborhood Descriptions.*

[7] K. Kelleher (April 10, 1994), "Malibu and County ask for flood, slide funds," *Los Angeles Times.*

[8] J. Pasternak (June 25, 1987), "Las Flores Landslide area $11-million Malibu road project," *Los Angeles Times.*

[9] R. Russell (March 20, 1994), "Die-hard canyon residents still loyal to Las Flores Malibu," *Los Angeles Times.*

[10] City of Malibu (1995), *General Plan – Land Use Element – Appendix A. Neighborhood Descriptions.*

[11] F. Weirich and L. Blesius (2007), "Comparison of satellite and air photo-based landslide susceptibility maps," *Geomorphology*, Elsevier Press.

[12] Mike Davis (1998), "The Case for Letting Malibu Burn." In *Ecology of Fear* (New York: Henry Holt), pp. 93–147.

[13] J. Friedman (October 31, 2007), "Malibu fire damages run the gamut," *Malibu Times.*

[14] Robert S. Taylor, Biogeographer/Fire GIS Specialist, National Park Service, personal communication, February 12, 2010.

Building Standards.[15] Utilities are aboveground except for some streets with subterranean phone lines.[16] Vegetation encroaches upon many power lines in the unit.

Municipal water supply is through Los Angeles County Waterworks District No. 29 in Malibu. Conveyance is along a transmission main that follows PCH, with water stored in tanks located on the upland side of the highway. The county adopted mandatory water conservation measures in 2009. Threats to the water supply include infrastructural age and lack of capital funds to upgrade, increased demand from new development, electrical failure, and emergency use during wildfire events, which can affect access to supply.[17,18]

Big Rock Mesa Fire Safe Council has been active the last several years. It has completed two grant-funded fuel-reduction projects to date and intends to expand its sphere of influence to include more streets and areas of Big Rock.[19]

Los Angeles County Fire Station #70 is located at the corner of Carbon Canyon Road and PCH, on the western edge of this planning unit.

10.2. La Costa – Big Rock – Peña Canyon Evacuations

Possible impediments to emergency ingress and egress include downed power lines, trees, traffic, and landslides. There are many narrow, winding, unstable streets with hairpin turns and cul-de-sacs in this unit.

Evacuation from the La Costa–Big Rock–Peña Canyon area will travel either eastward or westward along PCH, depending on law enforcement recommendations based on fire behavior, wind pattern, traffic, and ingress of emergency vehicles. In some cases, and only by the advice of the sheriff, Las Flores Canyon Road, Upper Rambla Pacifico, or Topanga Canyon Boulevard might become options.

Possible survival areas that should be investigated by local law enforcement and fire departments include local tennis courts and swimming pools.

10.3. La Costa – Big Rock – Peña Canyon Community Meeting Summary

The La Costa–Big Rock–Peña Canyon community meeting was held in the City of Malibu Council Chambers on October 22, 2009. Twenty-six residents and three non-residents attended.

The following assets at risk were identified at the community meeting. These can be located on Map II.10-1 at the end of this document.

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[14] State of California, Building Standards Commission, www.bsc.ca.gov (accessed February 8, 2010).

[16] City of Malibu (1995), *General Plan – Land Use Element – Appendix A. Neighborhood Descriptions*.

[17] Santa Monica Mountains Conservancy/Mountains Recreation and Conservation Authority (September 2, 2009), *Malibu Parks Public Access Enhancement Plan – Public Works Plan Draft Environmental Impact Report – Water Supply.*

[18] Arthur Schimke, Regional Water Service Superintendent, Waterworks and Sewer Maintenance Division, County of Los Angeles, Department of Public Works, personal communication, April–June 2010.

[19] Stu Walter, Big Rock Mesa Fire Safe Council, personal communication, October 2008 and June 2010.

FIGURE II.10-1. COMMUNITY-IDENTIFIED ASSETS AT RISK

- Caltrans Maintenance Yard
- Historic Court House
- Las Flores Creek Park – City of Malibu
- Los Angeles County Fire Department Station #70
- New Roads School
- Water tank and pumps – Los Angeles County Waterworks District No. 29

10.3.1. Community-Identified Potential Projects

The following items are community-identified projects from the community meeting. Residents were encouraged to "think big," and not be concerned about project cost or property ownership for the project brainstorming process. Following the brainstorming, residents prioritized projects based on which were most realistic and most important. These projects can be seen on Map II.10-1 at the end of this document.

FIGURE II.10-2. LA COSTA – BIG ROCK – PEÑA CANYON COMMUNITY-IDENTIFIED PROJECTS

IDENTIFIED ITEM DESCRIPTION	PROPOSED PROJECT CATEGORY	PRIORITY RANK
Hazard tree removal/thinning program	Fuel Reduction	1
Alternative evacuation route – Seaboard to PCH	Evacuation	1
Brush removal with goats	Fuel Reduction	2
Secure power to water tank pumps	Risk Reduction	2
Hazard tree removal (upper Big Rock Drive)	Fuel Reduction	3
Bury all power lines	Risk Reduction	4
Volunteer fire department of homeowners	Fire Protection	6
Clearance on Seaboard	Fuel Reduction	6
Policy to regulate flammable non-native trees	Fuel Reduction / Policy	6
Create ordinance to prohibit overhangs to hydrants	Policy	7
Clearance at end of Rockpoint Road	Fuel Reduction	
Enforce metal blade prohibition for gardening power tools	Policy	
Bury water tank and electric lines. Add generator at bottom of hill. Increase fire protection access.	Risk Reduction	
Backup generation of water tank power	Water	
Gravity-feed tank at Tuna	Water	
Replace missing fire hydrant on Rambla Pacifico (before Sumac Ridge)	Water	

10.4. La Costa – Big Rock – Peña Canyon Action Plan

The following projects are the initial priorities for community action for the La Costa–Big Rock–Peña Canyon Planning Unit.

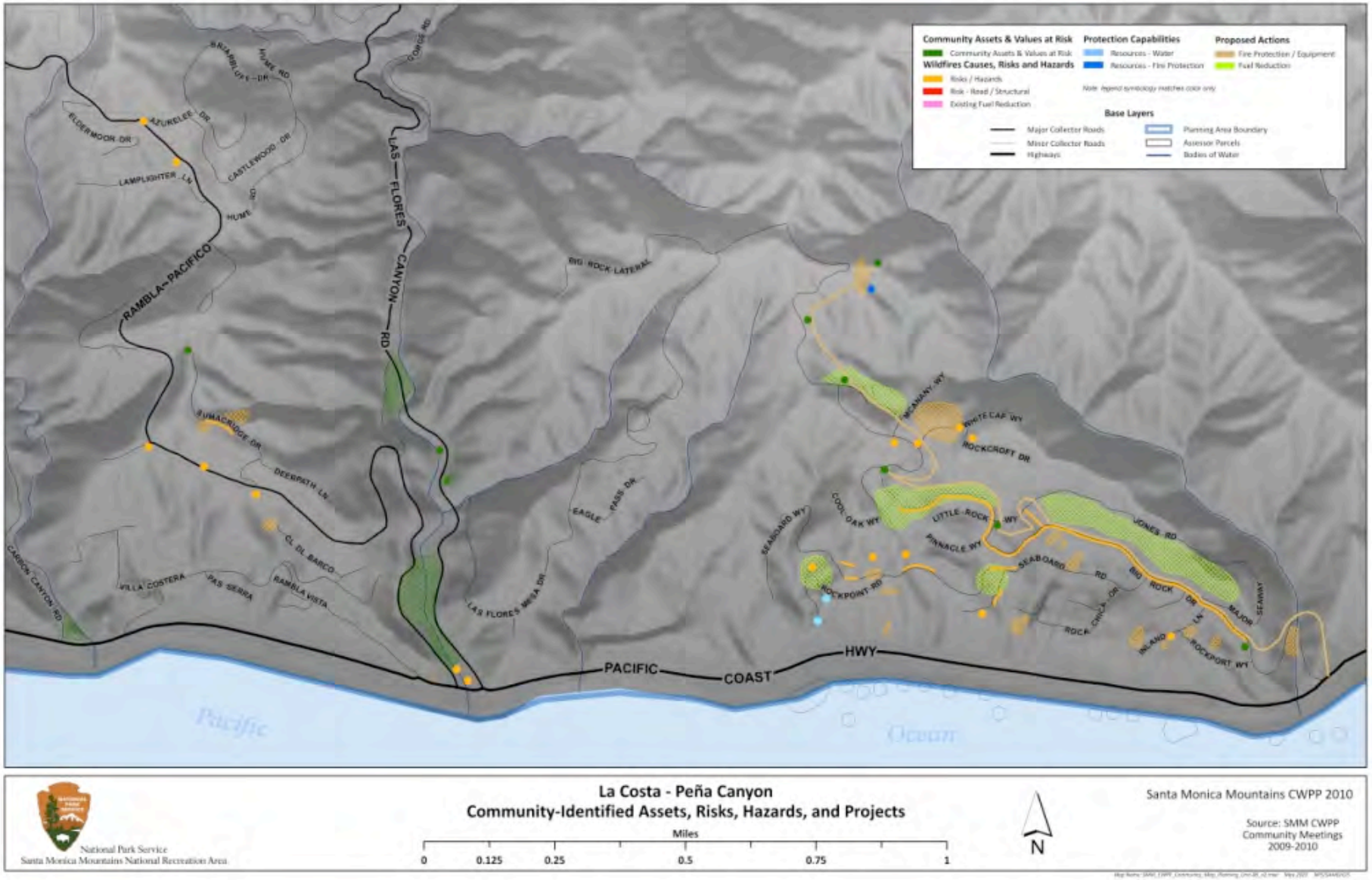
- Implement a hazard tree removal/thinning program through the Big Rock FSC and local homeowner's associations (HOAs), starting in upper Big Rock. Replace hazardous trees with native live oak trees. Implement in priority order:

  - Along main evacuation routes and near water tanks,
  - Along the spur roads to main evacuation roads,
  - Near homes, especially for trees that threaten more than one home,
  - Trees in or near power lines.

- Ensure that at least one team from each HOA or neighborhood undergoes Malibu Community Emergency Response Team (CERT) training. This is the vehicle to begin organizing locally for evacuation planning, in cooperation with local law enforcement and the fire department.
- Residents reduce urban fuels in the home ignition zone based on the Conservation Principles and Best Management Practices outlined in Chapters 1, 4, and 5 of this CWPP. Fuels maintenance should be a routine and ongoing practice throughout the year for all homes and landscapes in the Santa Monica Mountains. This includes: ensuring structures are resistant to heat and embers, maintaining all vegetation "from the house out," and removing anything in this zone that might ignite and spread fire.
- Big Rock Fire Safe Council/Big Rock Mesa Property Owners Association undertake a community outreach program to ensure broad-based representation and participation from residents throughout Big Rock in fire-safety activities. Develop an organizational structure to ensure a long-term, sustainable, democratic process.
- Explore community purchase and installation of wildland-urban interface (WUI) building products to upgrade homes to current WUI building standards. All residents upgrade homes to current California WUI Fire and Building Standards.
- Work with law enforcement and Los Angeles County Fire Department through the FSC, HOA and/or other neighborhood-level association to develop a local evacuation plan. Efforts should be made to ensure that local gates are open or accessible during Red Flag conditions.
- Work through HOAs and FSC to educate residents on the need to keep ingress and egress/evacuation routes clear. Residents need to understand the dangers involved in imprudent parking or long-term street storage of unused vehicles. Because natural disasters can strike at any time, key evacuation ingress/egress routes must be kept free of parked vehicles, especially trailers and other large objects that are difficult to move quickly. Trash cans and other items should be kept off the roadway and out of key turnout/passing areas.[20] A neighborhood-organizing project would include creating off-street parking where it is limited. Neighbors can work together to help each other stay in compliance.
- Work through the FSC and HOAs to begin a local community education and preparedness campaign. Include components such as pool pumps, generators, and home fire preparedness equipment. This can be done in cooperation with other area FSCs and/or the City of Malibu, Los Angeles County Fire Department, and the National Park Service.

[20] The law in Los Angeles County states that trash cans can only be on the street after 5 pm of the day preceding, and until 8 pm on the day of waste collection.

MAP II.10-1. LA COSTA – BIG ROCK – PEÑA CANYON: COMMUNITY-IDENTIFIED ASSETS, RISKS, HAZARDS, AND PROJECTS[21]



[21] This map prints best at 11x17. Visit to www.forevergreenforestry.com/smmcwpp_pub.html to download a print version.

11. Ventura: Rancho Guadalasca – Yerba Buena Canyon Community Fire Safety Action Plan

11.1. Ventura: Rancho Guadalasca – Yerba Buena Canyon Communities Description

This planning unit includes the neighborhoods and settlements within the historic range of Rancho Guadalasca in unincorporated Ventura County. This includes the area east of California State University Channel Islands to west of Hidden Valley. It includes County Line, Yerba Buena, Deer Creek Canyon, Deals Flat, The Colony, West Carlisle Canyon, and the many ranches and estates located within. The Rancho Guadalasca–Yerba Buena Canyon Planning Unit includes and extends from Mugu Lagoon and Rancho Guadalasca at the western base of the Santa Monica Mountains to the Ventura/Los Angeles county line in the east. It includes all beach and coastal mesa properties on both sides of the Pacific Coast Highway (PCH) and extends north to just before East Carlisle Canyon. The Pacific Ocean borders the unit on the south. Newbury Park, Thousand Oaks, Hidden Valley, Lake Sherwood, and Carlisle Canyon are located north. The Rancho Guadalasca–Yerba Buena Canyon unit is 50.4 square miles in area.

Assets at risk in the built environment include less than 160 single-family homes and townhouses along PCH, and less than 150 single-family homes, ranches, estates, and mobile homes or trailers with over 500 outbuildings in the adjacent hills. Additional values include three state beaches (Point Mugu, Thornhill Broom, Sycamore Cove) and a state park (Point Mugu); Naval Base Ventura County, Point Mugu; state conservancy land, numerous national park properties, U.S. Department of Defense communications relay towers (Laguna Peak), many agricultural operations and equestrian ranches; temple-sponsored outdoor education facility, camp, and conference center; ranch for inner-city children, day camp ranch, church camp/ranch, eatery, and duck club.

Properties and homes vary in size. Coastal parcels range from six units per acre to 1-acre parcels. Inland lots are large. Five to 40 acres each is common. Real estate values for beach townhouses range from $550,000 to $1.7 million. Inland developed properties start at $790,000 and are priced to $6 million for large estates. Undeveloped land ranges from $11,250 to $225,000 per acre.[1]

11.1.1. Ventura: Rancho Guadalasca – Yerba Buena Canyon Communities Wildfire Environment

The Rancho Guadalasca–Yerba Buena Canyon unit contains critical wildlife corridors and habitats. It is surrounded by pristine coastal sage scrub, chaparral, coastal marsh, coastal wetland, and riparian habitat. Deer Creek Canyon and Yerba Buena feature pools and waterfalls in their gorges. Stands of native purple needlegrass *(Nassella pulchra),* part of historical native California grasslands, are found at La Jolla Valley in Point Mugu State Park and extend eastward throughout the planning unit.[2,3] At least 32 sensitive species are identified for this unit.[4] Significant

[1] Malibu, California Real Estate – Los Angeles County Real Estate – Bobby Lehmkuhl (accessed April 12, 2010), www.4malibu.com.

[2] J.W. Bartolome (1981), "*Stipa pulchra:* A survivor from the pristine prairie," *Fremontia* 9(1): pp. 3–6.

[3] David Magney Environmental Consulting (May 2006), Beltrani–Deals Flat vegetation map [data], Ojai, CA.

cultural resource sites are found at Calleguas Creek, Deer Creek, Mugu Lagoon, Potrero Pass, Rancho Guadalasca, Serrano Valley, and Sycamore Canyon.[5,6,7,8] Constraints to development include cumulative losses of natural habitat, native plant communities, and scenic views; wildlife corridor disruption due to fragmentation, fencing, grading, and structures; related negative effects to adjacent open space and recreational uses of public lands, infrastructural costs, and availability of water and access by emergency services.[9,10] Planning agencies such as the California Coastal Commission commonly request that new development footprints be condensed. In other words, outbuildings, landscaping, and developed recreation such as pools and courts must be built close to the main structure.[11]

Passive recreational opportunities abound in this CWPP planning unit with its large tracts of public lands open space. Activities include beachcombing, bicycling, camping, cliff-diving, fishing, hiking, horseback riding, kayaking, mountain biking, ocean diving, painting, paragliding, running, skim-boarding, sunbathing, surfing, swimming, tidepool exploring, wildflower and wildlife viewing, and windsurfing. Developed and private types of activity include automobile touring, boating, dirt biking, motor biking, pool swimming, target shooting, and tennis.

Ingress and egress is from the thoroughfare of PCH and connector roads Deer Creek Canyon, Yerba Buena, Decker Road, and Mulholland Highway. Connectivity and condition of roads in the unit vary. Yellow Hill Road is privately maintained, fragmented, and has several loops and cul-de-sacs. Pacific View Road is similar in most respects to Yellow Hill. Some roads and drives are dirt. Roads are narrow, have little shoulder, and are winding with some hairpin turns and sheer drops.

CAL FIRE designated the entire Santa Monica Mountains region as a Very High Fire Hazard Severity Zone, including this area.

The Rancho Guadalasca–Yerba Buena Canyon area has a history of frequent wildfires, with numbers on the rise over the last twenty years: 15,000-acre Potrero (November 1930) with property losses from Potrero Road to County Line Beach; La Fouge (November 7, 1947); Rancho Sierra Vista (November 16, 1951); Ventu Park (November 7, 1958); Houston (November 17, 1959); Broome Ranch (November 26, 1959); 12,298-acre Potrero (September 6,

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[4] California Wetlands Information System (CWIS): Mugu Lagoon (1997) [Data file], Sacramento CA: California Environmental Resources Evaluation System (CERES), http://ceres.ca.gov/wetlands/geo_info/so_cal/mugu_lagoon.html.

[5] California State University Channel Islands (2009), Facilities Project Supplemental Environmental Impact Report Section 4.4: Cultural Resources.

[6] California Wetlands Information System: Mugu Lagoon (1997) [Data file], Sacramento, CA: California Environmental Resources Evaluation System (CERES), http://ceres.ca.gov/wetlands/geo_info/so_cal/mugu_lagoon.html.

[7] D. Davenport, J.R. Johnson, and J. Timbrook (1993), *The Chumash and the Swordfish,* www.antiquity.cc/ant/067/0257/Ant0670257.pdf.

[8] Frederick H. Rindge (1898), *Happy Days in Southern California* (Los Angeles: Anderson, Ritchie, and Sons).

[9] Ron P. Schafer (September 22, 2008), "Comments on Project LU08-0088…Little Sycamore Canyon and Deer Creek Canyon Watersheds," correspondence from Santa Monica Mountains Conservancy to Ventura County Planning Division.

[10] Woody Smeck (September 3, 2008), "Project LU08-0088…Little Sycamore Canyon and Deer Creek Canyon Watersheds," correspondence from Santa Monica Mountains National Recreation Area to Ventura County Planning Division.

[11] Pat Veesart, Southern California Enforcement Supervisor, California Coastal Commission, personal communication, 2007.

1973); Potrero (February 28, 1975); Hill Canyon (October 28, 1980); Fence (May 50, 1983); La Jolla (November 10, 1984); 6,567-acre Decker (October 14, 1985); Rancho (August 6, 1986); Sycamore (April 10, 1988); Pacific (October 29, 1989); Center (June 1, 1991); Potrero (November 22, 1991); Party Rock (July 1, 1992); Satwiwa (July 16, 1993); Green Meadow (October 25, 1993) with 24 homes lost in the burn area; Circle X (May 20, 1995); Triunfo (May 8, 1996); Encinal (June 4, 1996); Sycamore (August 4, 1997); Yerba (August 14, 1997); Yerba (September 2, 1998); unnamed (June 11, 1999); Greenwood (July 15, 1999); Yerba (August 14, 1999); Wendy (August 9, 2000); Deer Creek (August 30, 2002); Sandstone (July 22, 2007); Deer Creek (September 7, 2007); Sterling (December 8, 2007); Sycamore (March 28, 2008); La Jolla (October 15, 2008); Yellow Hill (November 21, 2008); and Potrero (December 8, 2008).[12]

Ventura County Fire Department has conducted an annual defensible space program in the Rancho Guadalasca–Yerba Buena Canyon Planning Unit area for more than 40 years along fire roads, public roads, and county property that borders homes.[13]

Homes in the Rancho Guadalasca–Yerba Buena Canyon unit have a variable age-class. Older structures range from wooden to adobe types. Some of these buildings have been remodeled. Many homes, regardless of age, have wooden decks and/or fences. Most structures are not retrofitted to current California WUI Fire and Building Standards.[14] Utilities are aboveground. Mature ornamental vegetation is found throughout the entire unit. Eucalyptus trees were planted historically as windbreaks on the mesa ranches of Deals Flat.

Municipal water supply for the lower coastal areas and beach community in the Rancho Guadalasca–Yerba Buena Canyon unit is through the Yerba Buena Water Company, which is owned by a local development interest. Two main groundwater wells serve the client base. No contaminants have been documented, but the water from these wells historically was declared vulnerable to contamination from roads, surface runoff, campgrounds, and recreation.[15,16] Conveyance is along a transmission main that follows PCH, with water stored in tanks located on the upland side of the highway. The Yerba Buena Water Company has a history of financial problems that result in its inability to upgrade to current water quality standards.[17] The State has repeatedly expressed its concern that the company is unsustainable and reliant on frequent loans from its financier, Crown Pointe Estates at Malibu LLC, especially because the financier is not a licensed water company.[18]

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[12] Robert S. Taylor, Biogeographer/Fire GIS Specialist, National Park Service, personal communication, February 2010.

[13] Captain Brendan Ripley (June 9, 2009), "Notice of Categorical Exemption: Malibu Fuel Bed and Fire Roads," correspondence from Ventura County Fire Department to County Clerk of Ventura.

[14] State of California, Building Standards Commission, www.bsc.ca.gov (accessed February 8, 2010).

[15] California Department of Health Services–Santa Barbara District (2002 May), Yerba Buena Water Company Well #5 Drinking Water Source Assessment, Sacramento, CA.

[16] California Department of Health Services–Santa Barbara District (2003 March), Yerba Buena Water Company Well #6 Drinking Water Source Assessment, Sacramento, CA.

[17] California Public Utilities Commission Audit and Compliance Branch (April 27, 2006), Water Division Resolution W-4597 Discussion, http://docs.cpuc.ca.gov/published/agenda_resolution/55243-02.htm.

[18] F. Curry (November 9, 2009), "California small companies positioning for sale," *California Water Association*, "Investor owned water companies."

Properties in the hills and upper reaches of the Rancho Guadalasca–Yerba Buena Canyon unit have independent water sources from individual groundwater wells.[19] Naval Base Ventura County, Point Mugu, receives its water from Port Hueneme Water Agency, which contracts with both Calleguas Municipal Water District and California American Water Company.[20] California American Water Company supplies the needs of Point Mugu State Park.[21] Threats to the water supply include infrastructural age and lack of capital funds to upgrade; increased demand from new development and depletion of the aquifer; electrical failure; and emergency use during wildfire events.[22]

Ventura County Fire Station #56 is located on PCH within the Rancho Guadalasca–Yerba Buena Canyon Planning Unit. Response time to properties in the upper reaches of this unit is long, and access can be prohibitive due to road design, conditions, and distance required to travel from Station #56.[23]

11.2. Ventura: Rancho Guadalasca – Yerba Buena Canyon Communities Evacuations

Possible impediments to emergency ingress and egress include downed power lines, trees, traffic, and poor road conditions. There are many narrow, winding, unstable streets with hairpin turns, cul-de-sacs, and sheer drops. The Rancho Guadalasca–Yerba Buena Canyon unit has many public or private venues where large groups of people convene. These locations include public lands, campgrounds, private ranches, camps, and Neptune's Net restaurant. There are sizable numbers of large domestic animals in this unit. Evacuation plans should include all these considerations.

Evacuation from the Rancho Guadalasca–Yerba Buena Canyon area will travel southward to PCH, depending on law enforcement recommendations based on fire behavior, wind pattern, traffic, and ingress of emergency vehicles. In some cases, and only by the advice of the sheriff, northward travel to Decker Canyon Road and Mulholland Highway may be options. Evacuation area options that should be investigated by local law enforcement and fire departments include County Line Beach, tennis courts, pools, and grassy or disced areas of large landscaped estates.

11.3. Ventura: Rancho Guadalasca – Yerba Buena Canyon Communities Community Meeting Summary

The Rancho Guadalasca–Yerba Buena Canyon community meeting for purposes of this plan was held in Gildred Hall at Camp Hess Kramer on November 3, 2009. Twenty-three residents and four non-residents attended.

The following assets at risk were identified at this community meeting. These can be seen on Map II.11-1 at the end of this document.

FIGURE II.11-1. COMMUNITY-IDENTIFIED ASSETS AT RISK

- "Animal Actors," "Rockets Film Fauna," wild animal living areas
- Camp Hess Kramer
- Circle X Ranch (National Park Service)

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[19] Thomas White, Jr, Resident, Upper Yerba Buena, personal communication, May 2010.

[20] Salim Rahemtulla, Community Planner and Liaison Officer, Naval Base Ventura County, personal communication, April–June 2010.

[21] Dennis Dolinar, District Maintenance Chief, Angeles District, California State Parks, personal communication, March 30, 2010.

[22] Santa Monica Mountains Conservancy/Mountains Recreation and Conservation Authority (September 2009), Malibu Parks Public Access Enhancement Plan–Public Works Plan Draft Environmental Impact Report–Water Supply.

[23] Alex Sanchez, Captain, Ventura County Fire Department, personal communication, November 2009.

- Communications towers/repeaters (Sandstone Peak)
- Gilmore Ranch *aka* Salvation Army Road
- Hilltop Camp
- Laguna Peak Repeater Site
- Lazy J Ranch
- Neptune's Net
- Rare/Endangered Areas
- United States Navy Target Range
- Ventura County Fire Station #56

11.3.1. Community-Identified Potential Projects

The following items are community-identified projects from the community meeting. Residents were encouraged to "think big," and not be concerned about project cost or property ownership for the project brainstorming process. Following the brainstorming, residents prioritized projects based on which were most realistic and most important to them. These projects can be seen on Map II.11-1 at the end of this document.

FIGURE II.11-2. VENTURA: RANCHO GUADALASCA–YERBA BUENA CANYON COMMUNITY-IDENTIFIED PROJECTS

IDENTIFIED ITEM DESCRIPTION	PROPOSED PROJECT CATEGORY	PRIORITY RANK
Map-grid SMMs for public use evacuation information, etc.	Emergency Preparedness	1
Reverse 911 for public information on fire	Policy	2
High-speed Internet service "FIOS"	Emergency Preparedness	3
Underground power lines	Risk Reduction	4
Create safe zone at Leo Carrillo State Beach	Evacuation	5
Clear Yellow Hill Motorway old fire road to Mulholland and PCH for an escape route	Evacuation / Fire Protection	5
Roadside vegetation mechanical clearance program	Fuel Reduction	5
Create community emergency kits (food, water, blankets, etc.)	Emergency Preparedness	6
Coordinate between counties on information pages	Education / Policy	7
Signage: no smoking, Red Flag warning, and fire danger	Education / Policy	7
Create email/text message emergency information system	Emergency Preparedness	7
Phone trees for neighborhoods	Fire Protection	7
Clear fire roads (in general and specific area on map)	Evacuation / Fire Protection	8
Create CERT and have trainings	Emergency Preparedness	9
Incentive to replace wood siding or trim	Policy	9
Widen Yerba Buena for passing	Evacuation / Fire Protection	
Fire education	Education	
Bring cell service to areas identified on map	Emergency Preparedness	
Identify emergency water sources (e.g. lakes, streams, tanks, large swimming pools) for use in areas where hydrant systems are not adequate or available	Emergency Preparedness	
Update Google and Mapquest (Yellow Hill - old name doesn't connect to Mulholland)	Emergency Preparedness	

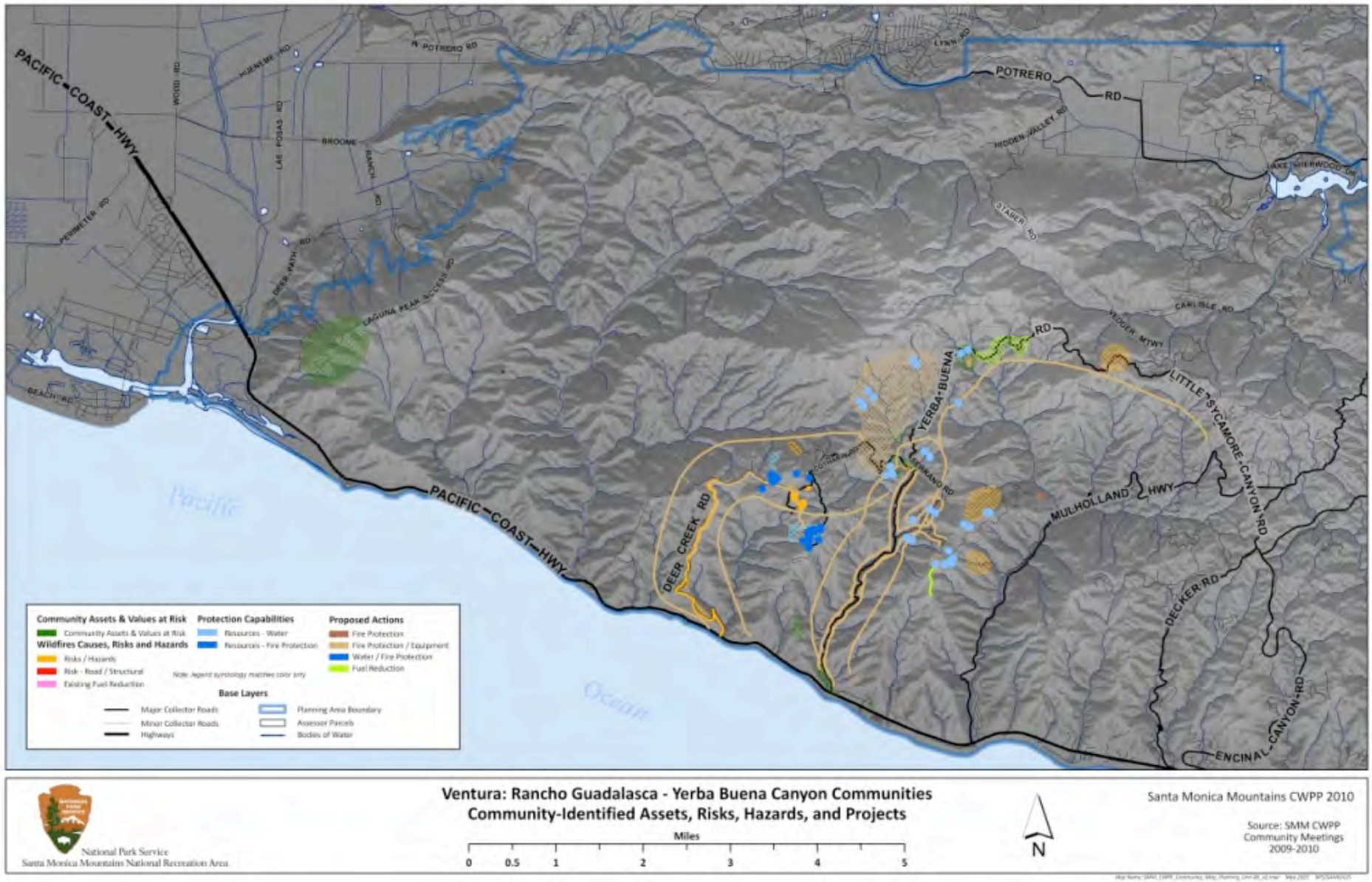
IDENTIFIED ITEM DESCRIPTION	PROPOSED PROJECT CATEGORY	PRIORITY RANK
Wildfire information phone # (recorded and updated)	Emergency Preparedness	
Community chipper days/program	Fuel Reduction	

11.4. Ventura: Rancho Guadalasca – Yerba Buena Canyon Communities Action Plan

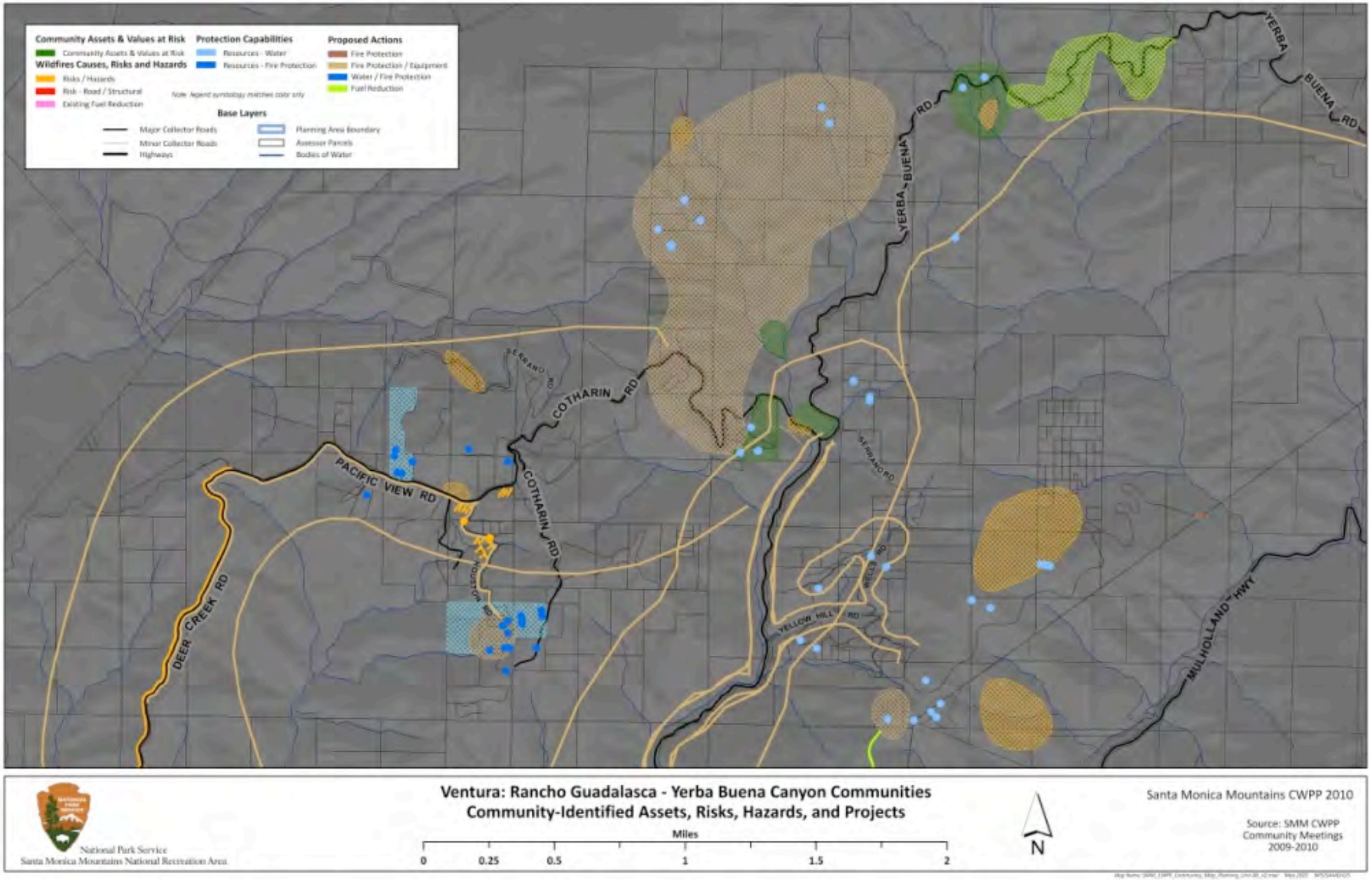
The following projects are the initial priorities for community action for the Rancho Guadalasca–Yerba Buena Canyon Planning Unit.

- Ensure that at least one team from each neighborhood undergoes Ventura County Community Emergency Response Team (CERT) training. This is the vehicle to begin organizing locally for emergency response and evacuation planning, in cooperation with local law enforcement and the fire department. Explore and identify local emergency communication options, including a standardized map grid of the entire area. Use CERT to communicate with cellular service providers in regard to expanding service throughout this area. Organize local emergency supply caches. Educate residents on pool pumps, generators, and home fire preparedness equipment.
- Form a local Fire Safe Council (FSC). This organizational structure will facilitate community preparedness for wildfire. Work with the California Fire Safe Council to create a FSC that will best accommodate and empower this area.
- Implement a hazard tree removal/thinning program, and treatment for invasive species through a FSC, homeowner's association (HOA), or other community organization, in priority order:
    - Along main evacuation routes, especially Yerba Buena Road,
    - Along the spur roads to main evacuation roads, including Cotharin, Houston, and Yellow Hill roads,
    - Near homes, especially trees that threaten more than one home, including the bottom of Houston Road and Bony Pony areas,
    - Trees in or near power lines.
- Work with law enforcement and Ventura County Fire through a FSC or other neighborhood-level association to develop a local evacuation plan. Efforts should be made to ensure that local gates are open or accessible during Red Flag conditions.
- Develop a neighborhood Arson Watch program. This could be integrated into the work of the Fire Safe Council. Work with the public land managers to help with Arson Watch in parks and other public lands during Red Flag weather.
- Residents register with Ventura County reverse 911 program at this website: http://portal.countyofventura.org/portal/page/portal/cov/emergencies/reverse911/reverse911register.
- Residents reduce urban fuels in the home ignition zone based on the Conservation Principles and Best Management Practices outlined in Chapters 1, 4, and 5 of this CWPP. Fuels maintenance should be a routine and ongoing practice for all homes and landscapes in the Santa Monica Mountains. This includes: ensuring structures are resistant to heat and embers, maintaining all vegetation "from the house out," and removing anything in this zone that might ignite and spread fire.
- Explore community purchase and installation of wildland-urban interface (WUI) building products to upgrade homes to current WUI building standards. All residents upgrade homes to current California WUI Fire and Building Standards.

MAP II.11-1. RANCHO GUADALASCA–YERBA BUENA CANYON COMMUNITY-IDENTIFIED ASSETS, RISKS, HAZARDS, AND PROJECTS[24]



[24] These two maps print best at 11x17. Visit to www.forevergreenforestry.com/smmcwpp_pub.html to download a print version.


Community Assets & Values at Risk
Community Assets & Values at Risk
Wildfires Causes, Risks and Hazards
Risks / Hazards
Risk - Road / Structural
Existing Fuel Reduction
Protection Capabilities
Resources - Water
Resources - Fire Protection
Note: legend symbology matches color only
Proposed Actions
Fire Protection
Fire Protection / Equipment
Water / Fire Protection
Fuel Reduction
Base Layers
Major Collector Roads
Minor Collector Roads
Highways
Planning Area Boundary
Assessor Parcels
Bodies of Water
YERBA BUENA RD
COTHARIN RD
PACIFIC VIEW RD
DEER CREEK RD
SERRANO RD
YELLOW HILL RD
MULHOLLAND HWY
National Park Service
Santa Monica Mountains National Recreation Area
Ventura: Rancho Guadalasca - Yerba Buena Canyon Communities
Community-Identified Assets, Risks, Hazards, and Projects
Miles
0
0.25
0.5
1
1.5
2
N
Santa Monica Mountains CWPP 2010
Source: SMM CWPP
Community Meetings
2009-2010

12. Sycamore Canyon – Upper Latigo Canyon Community Fire Safety Action Plan

12.1. Sycamore Canyon – Upper Latigo Canyon Description

This planning unit includes the rural neighborhoods and settlements in unincorporated Los Angeles County of Arroyo Sequit, Little Sycamore Canyon, Upper Decker Road, Upper Encinal Road, Upper Trancas Canyon, Upper Kanan Dume Corridor, Castro Peak, Newton Canyon, Upper Latigo Canyon, Malibu Vista, and Decker-Edison, a rural road that is starting to be developed. The Sycamore Canyon–Upper Latigo Canyon unit extends from Leo Carrillo State Park to Latigo Canyon. Its northern boundary loosely follows the ridgeline that borders Westlake Village and Triunfo Canyon, with Mulholland Highway the division in the northeastern corner of the unit. The southern boundaries include 2.2 miles of Pacific Ocean frontage at Leo Carrillo State Beach and the northern City of Malibu border from its westernmost end near Leo Carrillo to Latigo Canyon. The Sycamore Canyon–Upper Latigo Canyon Planning Unit is located in unincorporated Los Angeles County. It is 37.3 miles in area.

Assets at risk in the built environment include more than 400 single-family homes, ranches, and estates. There are at least 2,000 trailers, outbuildings, and large appurtenances on these properties. Additional assets include open-space areas; national park, state conservancy, state park and beach (Leo Carrillo), and Malibu city park (Charmlee Wilderness) lands and open space; several equine farms and facilities, several artificial lakes and ponds, at least seven vineyards and wineries, many orchards, a few historic structures, two private resorts (Calamigos Ranch and Malibu Phoenix), two substance-abuse treatment facilities, two communications repeater tower sites (Bardman and Castro Peak), two day camps (Camp Bloomfield and Decker Canyon Camp), a private country club and golf course (Malibu Country Club), Los Angeles County Fire Station #72, a health spa, state corrections and forestry camp facility (Camp 13), and juvenile probation facility (Fred Miller Camp School–County of Los Angeles). Properties and homes vary in size. Parcels range from a fraction of an acre to more than 250 acres. Single-family homes currently start at $1.9 million and increase to $5 million for large estates. Undeveloped parcels start at $450,000.[1]

12.1.1. Sycamore Canyon – Upper Latigo Canyon Wildfire Environment

The Sycamore Canyon–Upper Latigo Canyon unit is mostly undeveloped. It encompasses several Significant Ecological and cultural resources areas, including the following: Eastern Wildlife Management Corridor, seven significant watersheds (Arroyo Sequit, Decker, Trancas, Kanan, Ramírez, Escondido, and Latigo), Ramírez Canyon Environmentally Sensitive Habitat Area, Kanan Scenic Highway, oak woodlands, southern sycamore-alder riparian woodlands, pristine coastal sage scrub and chaparral habitat, mixed chaparral/oak woodland, California walnut stands, elderberry, vernal riparian habitat, and other significant botanical areas. Many sensitive, threatened, and

[1] Chris Cortazzo, Coldwell Banker Previews International, www.chriscortazzo.com (accessed March 5, 2010).

endangered plants and animals are identified in this planning unit. Numerous significant cultural resource sites are found throughout the region. Areas with high historic disturbance in this planning unit have dense populations of non-native grasses and mustards.[2,3,4] Los Angeles County Regional Planning policies for building in the area of the Sycamore Canyon–Upper Latigo Canyon unit include limited grading activities, condensed and small development footprint, viewshed protection, fire protection with development of a fuel-modification plan for each new property, and monitoring for biota, cultural resources, geotechnical, and water quality protections.[5] This planning unit is considered very important by public agencies in terms of protection and acquisition of private lands for wildlife corridors and habitat, access, connectivity, easements, watershed protection, and recreation.[6]

Passive recreational opportunities include walking, jogging, bicycling, mountain biking, bird watching, wildflower and wildlife viewing, dressage, and horseback riding. Developed and private types include automobile touring, dirt biking, motor biking, pool swimming, tennis, and golf. The Sycamore Canyon–Upper Latigo Canyon area is notorious for illegal sports car and motorcycle speeding, also known as "canyon carving," on the relatively desolate, winding, and steep roads. Law enforcement has increased patrols to curb this activity since 2007 to prevent accidents and fires.[7]

Ingress and egress is from connector roads off US Highway 101 to the north. They include State Route 23 (Decker Canyon Road) and County Highway N9 (Kanan Dume Road), both of which intersect with the east-west corridor of Mulholland Highway. Access from the south is via Pacific Coast Highway (PCH) to Mulholland Highway, Decker Canyon Road, Encinal Canyon Road, Trancas Canyon Road, Kanan Dume Road, and Latigo Canyon Road. Connectivity and condition of lateral roads in the planning unit varies. Mulholland Highway, Upper Encinal Canyon Road, and Kanan Dume Road are wide with some curves. Upper Decker Canyon, Upper Trancas Canyon, and Upper Latigo Canyon roads are very steep, narrow, with hairpin turns, have deep drop-offs, and are often subject to landslides. Roads off these six thoroughfares in the planning unit vary in condition. Some roads and drives are privately maintained and are dirt. Many have circuitous connections. Others are cul-de-sacs.

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[2] County of Los Angeles Department of Regional Planning (2003), General Information – Project in Kanan Dume Corridor.

[3] Santa Monica Mountains Conservancy (October 2008), Project Plan – Draft Dirt Mulholland action plan – Coastal slope trail – Kanan Dume Road to Latigo Canyon Road segment.

[4] D. Waldecker (October 12, 2007), Environmental Scientist, California Department of Parks and Recreation, Natural Environmental Study Report: Leo Carrillo North Beach Cabins Project.

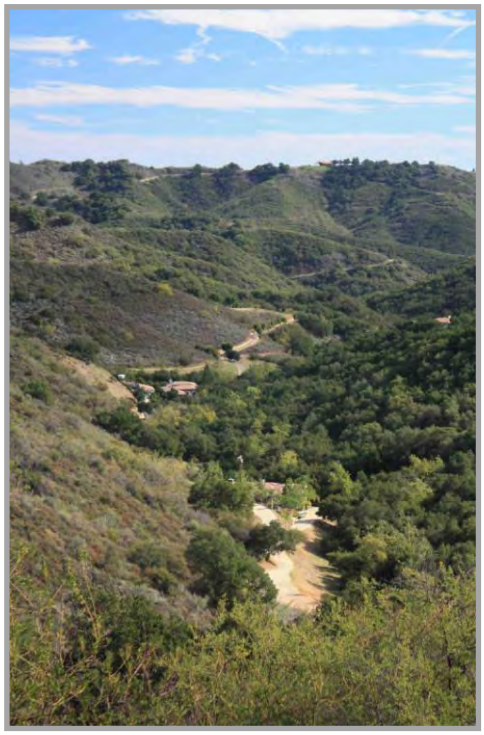
[5] County of Los Angeles Department of Regional Planning (2003), General Information – Project in Kanan Dume Corridor.

[6] Santa Monica Mountains Conservancy (October 2008), Project Plan – Draft Dirt Mulholland action plan – Coastal slope trail – Kanan Dume Road to Latigo Canyon Road segment.

[7] L. Michaelson (2007), "Cops come down hard on „canyon carving"," *Topanga Messenger*.

CAL FIRE designated the entire Santa Monica Mountains region as a Very High Fire Hazard Severity Zone, including the Sycamore Canyon–Upper Latigo Canyon area.

The Sycamore Canyon–Upper Latigo Canyon Planning Unit has a history of wildfires with an increase in frequency of incidents the last 20 years: Potrero (November 1930); 30,000-acre Latigo complex (1935); Sequit 57 (July 13, 1940); 15,000-acre Woodland Hills 65 (November 6, 1943) with 150 homes destroyed in the burn area; Houston (November 17, 1951); 16,400-acre Newton complex (December 28, 1956) with 100 homes destroyed in the burn area; Zuma (December 2, 1958); 18,000-acre Liberty (November 28, 1958) with 100 homes destroyed in the burn area; Latigo (October 30, 1967); unnamed (September 5, 1970); 28,201-acre Wright (September 25, 1970) with 403 homes destroyed in the burn area and ten fatalities; Carlisle (November 15, 1977); Trancas (September 23, 1978); 25,586-acre Kanan (October 23, 1978) with 200 homes destroyed in the burn area and two fatalities; unnamed (November 20, 1980); 43,090-acre Dayton Canyon (October 9, 1982) with 74 homes destroyed in the burn area; Decker (August 7, 1983); 6,567-acre Decker (October 14, 1985); Sherwood (June 30, 1985); Archery (October 18, 1991); Encinal (November 24, 1991); Carlisle (July 15, 1992); 30,000-acre Green Meadow (October 25, 1993) with 24 homes destroyed in the burn area; Kanan (August 5, 1994); Decker (September 3, 1995); Encinal (June 4, 1996); Charmlee (July 1, 1996); Decker (April 24, 1997); School (August 13, 1997); Encinal (August 22, 1998); Trancas (September 2, 1998); NPS Truck (July 29, 2000); West PCH (April 10, 2002); Backbone (May 26, 2002); Lofty Kanan (August 2, 2003); Latigo Canyon (February 8, 2006); Tunnel (June 18, 2007); Mulholland (January 17, 2008); Westlake (May 1, 2008); 4,709-acre Corral (November 24, 2007) with 50 homes destroyed in the burn area; and Kanan (September 27, 2008).[8,9]



Homes in the Sycamore Canyon–Upper Latigo Canyon Planning Unit have a variable age-class. Older structures tend to be wooden. Newer structures generally are constructed of stucco, plaster, or masonry. Many homes, regardless of age, have wooden decks, fences, or outbuildings. Mature, lush, and tall ornamental vegetation is found around structures throughout the entire unit. Many older homes have been remodeled. Utilities are aboveground. Many farms, ranches, and homes are gated. Part of Newton Canyon is gated. Most structures in the Sycamore Canyon–Upper Latigo Canyon unit are not retrofitted to current California WUI Fire and Building Standards.[10]

There are two municipal water suppliers for the Sycamore Canyon–Upper Latigo Canyon Planning Unit. Leo Carrillo State Beach and Park receive their water from Los Angeles County Waterworks District No. 29.[11] Las Virgenes Municipal Water District (LVMWD) services the remainder of the unit.[12] Mandatory water conservation

[8] Robert S. Taylor, Biogeographer / Fire GIS Specialist, National Park Service, personal communication, February 12, 2010.

[9] Mike Davis (1998), "The Case for Letting Malibu Burn." In *Ecology of Fear* (New York: Henry Holt), pp. 93–147.

[10] State of California, Building Standards Commission, www.bsc.ca.gov (accessed February 8, 2010).

[11] Los Angeles County Waterworks District No. 29 (October 31, 2009), Map [Data].

[12] Las Virgenes Municipal Water District (2010), District Map [Data], www.lvmwd.com/Modules/ShowDocument.aspx?documentid=838.

and enforcement measures were established in 2009. The district has one emergency 9,500-acre-foot back-up reservoir.[13] There are few subdivisions in the Sycamore Canyon–Upper Latigo Canyon unit. Water subscribers to LVMWD are required to pay for pipeline extensions and hook-ups to their properties from the water company trunk line. The design of the existing delivery system does not provide adequate pressure for fire department use.[14] Many property owners in the area instead rely on individual wells.

The Sycamore Canyon–Upper Latigo Canyon unit is very large. First responders may come from various fire stations: Los Angeles County Fire Station #72 is located on Decker Canyon Road. Station #99 is on Encinal Bluffs near PCH and Lower Decker Canyon Road. Station #71 is located at Point Dume. Station #88 is on Malibu Road.

12.2. Sycamore Canyon – Upper Latigo Canyon Evacuations

Possible impediments to emergency ingress and egress include downed power lines, trees, traffic collisions, locked gates, and poor road conditions. The Sycamore Canyon–Upper Latigo Canyon unit has multiple venues where large groups of people convene. There are many large and small domestic animals in this unit. Evacuation plans should include all these considerations and be coordinated with community emergency service providers. A few spots have the potential to be utilized as staging areas.

12.3. Sycamore Canyon – Upper Latigo Canyon Community Meeting Summary

The Sycamore Canyon–Upper Latigo Canyon community meeting was held in "The Atrium" at Calamigos Ranch on November 9, 2009. Four residents and three non-residents attended.

The following assets at risk were identified at the community meeting. These can be seen on Map II.12-1 at the end of this document.

FIGURE II.12-1. COMMUNITY-IDENTIFIED ASSETS AT RISK

- AT&T site (satellite site)
- Calamigos Ranch
- Fred Miller Camp School
- Castro Peak
- Los Angeles County Fire Station #72
- Arroyo Sequit
- Camp 13
- Charmlee Park
- Decker Camp
- Rocky Oaks

12.3.1. Community-Identified Potential Projects

The following items are community-identified projects from the community meeting. Residents were encouraged to "think big," and not be concerned about project cost or property ownership for the project brainstorming process. Following the brainstorming, residents prioritized projects based on which were most realistic and most important. These projects can be located on Map II.12-1 at the end of this document.

[13] Las Virgenes Municipal Water District (2010), www.lvmwd.com.

[14] Santa Monica Mountains Conservancy (October 2008), Project Plan – Draft Dirt Mulholland action plan – Coastal slope trail – Kanan Dume Road to Latigo Canyon Road segment.

FIGURE II.12-2. SYCAMORE CANYON – UPPER LATIGO CANYON COMMUNITY-IDENTIFIED PROJECTS

IDENTIFIED ITEM DESCRIPTION	PROPOSED PROJECT CATEGORY	PRIORITY RANK
Better radio communications for emergency services in dead zones	Emergency Preparedness	1
Hydrants/water throughout for fire protection	Water	1
More firefighters per engine/station	Fire Protection	1
Training program for residential home defense from wildfire/CERT training	Emergency Preparedness	2
Emergency wildfire communication notification system for residents	Emergency Preparedness	2
Cooperative hazardous fuel-reduction program	Fuel Reduction	2
Bury power lines	Risk Reduction	3
Create safe zones where they do not exist	Evacuation	3
Roadside hazardous fuel reduction, private and public	Fuel Reduction	
Guard rails on steep canyon roads	Risk Reduction	
Arson watch program	Risk Reduction	
Generators for water tanks	Water	
Incentive for local water storage	Water	

12.4. Sycamore Canyon – Upper Latigo Canyon Action Plan

The following projects are the initial priorities for community action for the Sycamore Canyon–Upper Latigo Canyon Planning Area.

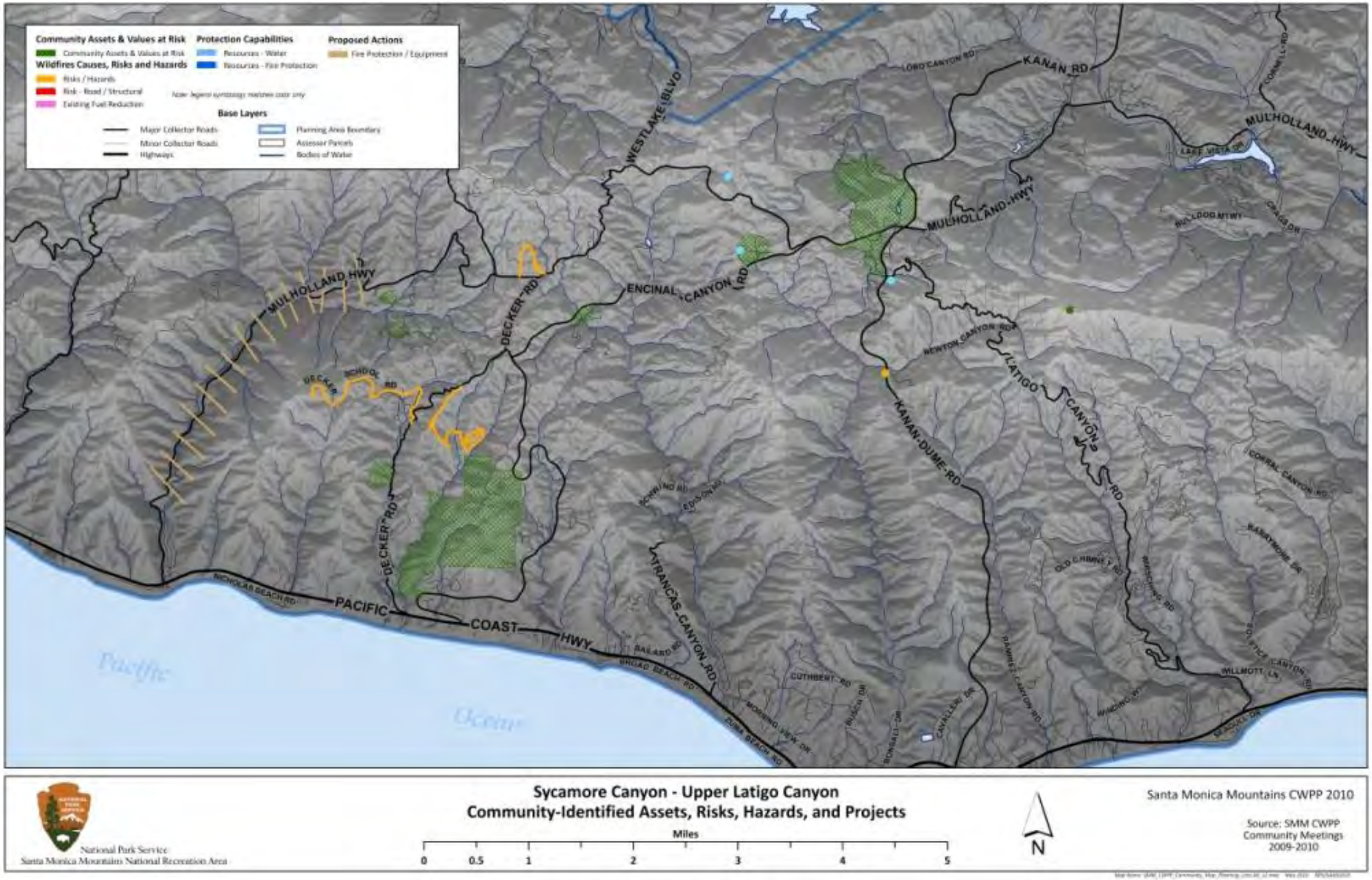
- Form a local Fire Safe Council (FSC) or join with other nearby FSCs. This organizational structure will facilitate community preparedness for wildfire throughout the local communities. Work with the California Fire Safe Council to create a FSC that will best accommodate and enable this area.
- Ensure that at least one team from each homeowner"s association (HOA) or neighborhood undergoes Community Emergency Response (CERT) training through the Los Angeles County Fire Department.[15] This is the venue to begin organizing locally for evacuation planning, in cooperation with local law enforcement and the fire department.
- Implement a hazard tree removal/thinning program through a FSC, HOA, or other community organization, in priority order:
    - Along main evacuation routes, especially localized areas of Mulholland Drive, Decker Canyon Road, Encinal Canyon Road, Kanan Dune Road, and Latigo Canyon Road.
    - Along the spur roads to these main evacuation roads,
    - Near homes, especially trees that threaten more than one home,
    - Trees in or near power lines.
- Residents reduce urban fuels in the home ignition zone based on the Conservation Principles and Best Management Practices outlined in Chapters 1, 4, and 5 of this CWPP. Fuels maintenance should be a routine and ongoing practice for all homes and landscapes in the Santa Monica Mountains. This includes: ensuring structures are resistant to heat and embers, maintaining all vegetation "from the house out," and removing anything in this zone that might ignite and spread fire.

[15] http://fire.lacounty.gov/ProgramsEvents/PECERT.asp

- Work through a new FSC, existing HOA, or other community organization to begin a local community education and preparedness campaign. Include community education on pool pumps, generators, and home fire-preparedness equipment.
- Work with law enforcement and Los Angeles County Fire Department through a FSC, HOA, or other neighborhood-level association to develop a local evacuation plan. Efforts should be made to ensure that local gates are open or accessible during Red Flag conditions.
- Work through a new FSC, existing HOA, or other community organization to undertake a more detailed analysis of risks and hazards in this area *(see Chapter 7)*.
- Work through HOAs or FSC to educate residents on the need to keep ingress and egress/evacuation routes clear. Residents need to understand the dangers involved in imprudent parking or long-term street storage of unused vehicles. Because natural disasters can strike at any time, key evacuation ingress/egress routes must be kept free of parked vehicles, especially trailers and other large objects that are difficult to move quickly. Trash cans and other items should be kept off the roadway and out of key turnout/passing areas.[16] A neighborhood-organizing project would include creating off-street parking where it is limited. Neighbors can work together to help each other stay in compliance.

[16] The law in Los Angeles County states that trash cans can only be on the street after 5 pm of the day preceding, and until 8 pm on the day of waste collection.

MAP II.12-1. SYCAMORE CANYON – UPPER LATIGO CANYON: COMMUNITY-IDENTIFIED ASSETS, RISKS, HAZARDS, AND PROJECTS[17]



[17] This map prints best at 11x17. Visit to www.forevergreenforestry.com/smmcwpp_pub.html to download a print version.

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13. Corral Canyon – Pepperdine University Community Fire Safety Action Plan

13.1. Corral Canyon – Pepperdine University Description

This planning unit includes the unincorporated neighborhoods of Los Angeles County in Corral Canyon (El Nido, Barrymore Drive, Malibu Bowl) and Pepperdine University. The Corral Canyon–Pepperdine University unit extends from Solstice Canyon east to Puerco Canyon inclusive. Its northern boundary includes National Park Service inholdings near Castro Crest ridgeline and Malibu Creek State Park. The southern boundary includes the northern part of the City of Malibu boundary starting inside Solstice Canyon Park, near El Nido and moving eastward to Pepperdine University property along Pacific Coast Highway. The eastern boundary is Los Angeles County Highway N1 (Malibu Canyon Road). The Corral Canyon–Pepperdine University unit is 9.1 square miles in area.

Assets at risk in the built environment include more than 600 single-family homes, 119 faculty residences related to Pepperdine University, student housing for 4,000, and at least 25 administrative and educational facilities buildings of the university. Additional assets include open-space areas of the City of Malibu, national parks (Solstice Canyon, Castro Crest), state conservancy (Corral Canyon Park), a state park (Malibu Creek), two artificial lakes, a remote automated weather station, commercial agriculture operation, and remnants of a few historic structures. Properties and homes vary in size. Parcels range from a fraction of an acre to more than 800 acres.[1,2] Single-family home prices in Corral Canyon currently start at $470,000 and go up to $2 million. Undeveloped parcels in this unit range from $30,000 to $140,000 per acre.[3]

13.1.1. Corral Canyon – Pepperdine University Wildfire Environment

Development in the Corral Canyon–Pepperdine University Planning Unit is surrounded by open space and high habitat values. The Coastal Zone extends inland from the beach into this area.[4] The environment includes several Significant Ecological Areas and cultural resource sites. Attributes include Solstice, Corral, and Upper Puerco canyon watersheds, oak woodlands, white alder/sycamore/walnut woodlands, upland prairies/meadows, riparian corridors, pristine coastal sage scrub, rock outcrop, and chaparral habitat, as well as other significant habitat areas. At least thirteen sensitive, threatened, or endangered plant and animal species are

[1] Corral Canyon (2010), Corral Canyon, www.corralcanyon.org

[2] Pepperdine University (2010), Pepperdine University, www.pepperdine.edu

[3] All Malibu Land, www.malibulandandhomes.com (accessed July 7, 2010).

[4] The California Coastal Zone extends 1,000 yards inland from the mean high tide line. In significant coastal estuarine habitat and recreational areas it extends inland to the first major ridgeline or 5 miles from the mean high tide line, whichever is less. In developed urban areas, the boundary is generally less than 1,000 yards.

identified in this unit. Pepperdine University cultivates local vegetation from surrounding hillside native plant communities to use in ornamental landscaping. Sixty percent (500 acres) of the 830-acre campus is undeveloped and saved as open space.[5] Areas with high historic disturbance in this planning unit have dense populations of non-native grasses and at least 28 types of noxious weed species.[6] The increasing presence of these non-native "wildland" species is a strong indicator that type conversion poses a threat to the native environment.[7]

Passive recreational opportunities include walking, jogging, bicycling, mountain biking, bird watching, wildflower and wildlife viewing, and horseback riding. Developed and private types include dirt biking, motor biking, pool swimming, and court sports.

Ingress and egress is from Pacific Coast Highway to the south for all the areas of the planning unit. Pepperdine University is also accessible on the east side from Malibu Canyon Road. There are no other paved roads that lead outside the unit. Connectivity and condition of roads in the area vary. Corral Canyon experiences a great deal of geologic instability including at least two active landslides. Subdivisions in El Nido and Malibu Bowl were created prior to modern building and grading standards. These lots and accompanying streets often are located on steep unstable hillsides. Barrymore Drive has active landslides.[8] Twenty-five percent of parcels in Corral Canyon are undevelopable. Lateral streets in Corral Canyon are narrow with some hairpin turns and generally have marginal shoulder space and very little parking.[9,10] The streets in El Nido and Malibu Bowl are a combination of cul-de-sacs and circuitous drives. Barrymore Drive is one-way in and out. Access to all three subdivisions in the canyon is restricted to Corral Canyon Road, which is five miles long, travels along the ridgetop, and terminates in a dead-end. Corral Canyon Road crosses over a bridge at Solstice Creek in the lower reach of the canyon. Access historically has been a problem when the bridge suffers damage from wildfire or storm events.[11,12] Pepperdine University has wide curved streets that afford good access. The institution is gated and guarded.

CAL FIRE designated the entire Santa Monica Mountains region as a Very High Fire Hazard Severity Zone, including this area. This determination by the state is based on factors such as fire weather, slope, and fuel loading, among others.

The Corral Canyon–Pepperdine University Planning Unit has a history of many wildfires: Rindge (1903); Topanga-Escondido (1913); 30,000-acre Latigo complex (1935); 15,000-acre Woodland Hills #65 (November 6,

[5] Center for Sustainability (2010), Pepperdine University, www.pepperdine.edu/sustainability/current-practices/water.htm.

[6] Interagency Burned Area Emergency Response (BAER) (December 10, 2007), Corral fire report – CA-LAC-259483 – Santa Monica Mountains – Los Angeles County, California.

[7] California Invasive Plant Council (2010), California inventory, www.cal-ipc.org

[8] Interagency Burned Area Emergency Response (December 10, 2007), Corral fire report.

[9] Chuck Chriss (2010), Getting around Malibu – El Nido. In *Malibu Complete*, www.malibucomplete.com.

[10] Chriss (2010), Getting around Malibu – Malibu Bowl. In *Malibu Complete*.

[11] Interagency Burned Area Emergency Response, (December 10, 2007), Corral fire report.

[12] Hans Laetz (November 28, 2007), "Malibu's worst fear: wildfire repeats and takes devastating toll," *Malibu Surfside News*.

1943) with 150 homes destroyed in the burn area; 18,000-acre Liberty (November 28, 1958) with 17 homes destroyed in Corral Canyon; 28,201-acre Wright (September 25, 1970) with 403 homes destroyed in the burn area and ten fatalities; 43,090-acre Dayton Canyon (October 9, 1982) with 74 homes destroyed in the burn area; Decker (August 7, 1983); 5,197-acre Piuma (October 14, 1985); Malibu (September 18, 1993); Calabasas (October 21, 1996); Corral (August 23, 1998); Latigo (January 5, 2003); Corral (October 25, 2003); Latigo Canyon (April 26, 2007); Latigo (May 23, 2007); and 4,709-acre Corral (November 24, 2007) with 32 homes lost in Malibu Bowl and three in El Nido.[13,14,15]

Structures in the Corral Canyon–Pepperdine University unit have a variable age-class. Older structures tend to be wooden. Newer structures generally are constructed of stucco, plaster, or masonry. Many homes, regardless of age, have wooden decks and/or fences. Mature, lush, and tall ornamental vegetation is found around structures in Corral Canyon. Utilities are aboveground. Many structures in the Corral Canyon–Pepperdine University unit are not retrofitted to current California WUI Fire and Building Standards.[16]

Municipal water supply for the Corral Canyon–Pepperdine University unit is from Las Virgenes Municipal Water District (LVMWD).[17] Mandatory water conservation and enforcement measures were established in 2009. The district has one emergency 9,500-acre-foot back-up reservoir.[18] Pepperdine employs a water conservation program for its 7,000+ campus population. It treats its sewage to tertiary standards in addition to use of water-saving devices.[19] Reclaimed water is stored in two on-site lakes. The treated water is used to irrigate 99% of the campus non-native landscaping. Pepperdine estimates that this system saves the university 92 million gallons of water per year.[20]

Corral Canyon residents organized and formalized the Corral Canyon Fire Safety Alliance[21] (CCFSA) and its several subcommittees following the destructive 4,709-acre Corral Canyon fire of 2007. The group has nonprofit status, 300 members, and an elected board of directors. Its working committees address public safety, policy, road conditions, parking, evacuation planning, communications, and Red Flag code violations. The group started an Arson Watch program with twelve members and is part of the larger Los Angeles County volunteer Arson Watch program. A volunteer call-firefighter program is underway to elicit participation and train local residents. Los Angeles County Fire Department Engine #271 will eventually be assigned to Corral Canyon when the call-firefighter program has

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[13] Hans Laetz (November 28, 2007), "Malibu's worst fear." *Malibu Surfside News.*

[14] Robert S. Taylor, Biogeographer/Fire GIS Specialist, National Park Service, personal communication, February 12, 2010.

[15] Mike Davis (1998), "The Case for Letting Malibu Burn." In *Ecology of Fear* (New York: Henry Holt), pp. 93–147.

[16] State of California, Building Standards Commission, www.bsc.ca.gov (accessed February 8, 2010).

[17] Las Virgenes Municipal Water District (2010), District Map [Data], www.lvmwd.com/Modules/ShowDocument.aspx?documentid=838.

[18] Las Virgenes Municipal Water District (2010), www.lvmwd.com.

[19] H. Stone and A. Bouchard (1991), "Wastewater reclamation and reuse for Malibu, CA." In *Water Resource Planning Management: Urban Water Resources* (Reston, VA: American Society of Civil Engineers), pp. 249–253.

[20] Center for Sustainability (2010), Pepperdine University, www.pepperdine.edu/sustainability/current-practices/water.htm.

[21] www.corralcanyon.org/ccfsa.html

enough trained participants. Operation Recovery is aligned with the CCFSA. It assists residents with post-emergency permitting, rebuilding, and other logistics related to loss.[22] CCFSA was awarded a California Fire Safe Council grant for hazardous fuel reduction and community education in 2011.

Los Angeles County Fire Station #88 is located on Malibu Road near the Civic Center. Station #71 is located on Pacific Coast Highway at Point Dume.

13.2. Corral Canyon – Pepperdine University Evacuations

Possible impediments to emergency ingress and egress include downed power lines, trees, landslides, poor road conditions, problems with the Solstice/Corral bridge, traffic, and locked gates. Solstice Canyon and Corral Canyon parks are popular with outdoor enthusiasts. Pepperdine University campus has at least 4,000 residents plus thousands more staff, commuter students, and facilities users.[23] There are many large and small domestic animals in this planning unit. Evacuation plans should include all these considerations and be coordinated with community emergency service providers and law enforcement. Pepperdine hosts areas that could potentially be used during evacuations. The campus is designated as a command center for emergencies, but this use may pose a conflict for evacuations.

13.3. Corral Canyon – Pepperdine University Community Meeting Summary

The Corral Canyon–Pepperdine University community meeting was held at Los Angeles County Waterworks District No. 29 offices on January 12, 2010. Twenty residents, one facilities manager, and five non-residents attended.

The following assets at risk were identified at the community meeting. These can be located on Map II.13-1 at the end of this document.

FIGURE II.13-1. COMMUNITY-IDENTIFIED ASSETS AT RISK

- Cell repeater(s)
- Charter Internet
- Future volunteer call-firefighter location/staging area
- Pepperdine
- Water tank (Las Virgenes Municipal Water District)

13.3.1. Community-Identified Potential Projects

The following items are community-identified projects from the community meeting. Residents were encouraged to "think big," and not be concerned about project cost or property ownership for the project brainstorming process. Following the brainstorming, residents prioritized projects based on which were most realistic and most important. Residents at this meeting tended to vote for projects that were beyond their capacity to do internally. These project locations can be seen on Map II.13-1 at the end of this document.

[22] Corral Canyon (2010), www.corralcanyon.org.

[23] Pepperdine University (2010), www.pepperdine.edu.

FIGURE II.13-2. CORRAL CANYON–PEPPERDINE UNIVERSITY COMMUNITY-IDENTIFIED PROJECTS

IDENTIFIED ITEM DESCRIPTION	PROPOSED PROJECT CATEGORY	PRIORITY RANK
Install gate at Upper Corral for Red Flag days closures and close every night	Risk Reduction	1
Require that potential campsite be served by 20-foot-wide fire department access roads with water and supervision during Red Flag days	Risk Reduction	2
Underground power lines that cross Corral Canyon Road	Risk Reduction	3
Verizon, AT&T, Sprint, etc., cell phone tower for Malibu Bowl and El Nido	Emergency Preparedness	4
Emergency sirens	Fire Protection / Equipment	
Put all power lines underground or find alternate technology	Risk Reduction	
Emergency phone/radio community plan and devices	Emergency Preparedness	
Community shelter-in-place plan	Evacuation	
Parking program to minimize obstructions of neighborhood roads	Policy	
Community defensible-space education program	Education	
Phone trees for both communities	Emergency Preparedness	
Enforce trash can compliance in cooperation with waste company	Policy	
Analysis for highest local fire hazard zones	Risk Assessment	

13.4. Corral Canyon – Pepperdine University Action Plan

The following projects are the initial priorities for community action for the Corral Canyon–Pepperdine University Planning Unit.

- Work through CCFSA to educate residents on the need to keep ingress and egress/evacuation routes clear, including Seabreeze, Searidge, Coral Glen, Sequit, McAlpine, and Valmere in El Nido, and Fairside, Idlewild, Ingleside, Lookout, Newell, and Cool Glen in Malibu Bowl. Residents need to understand the dangers involved in imprudent parking or long-term street storage of unused vehicles. Because natural disasters can strike at any time, key evacuation ingress/egress routes must be kept free of parked vehicles, especially trailers and other large objects that are difficult to move quickly. Trash cans and other items should be kept off the roadway and out of key turnout/passing areas.[24] A neighborhood-organizing project would include creating off-street parking where it is limited. Neighbors can work together to help each other stay in compliance.
- Evacuation out of Corral Canyon during a wildfire could be problematic. These neighborhoods need to be ready to survive wildfire if residents are not able to evacuate. To this end, ensure that at least one team from each sub-neighborhood undergoes Community Emergency Response training (CERT).
- CCFSA organize local residents to create hardened (fire-resistant) homes and significantly reduce urban fuels in the home ignition zone based on the Conservation Principles and Best Management Practices outlined in Chapters 1, 4, and 5 of this CWPP. Fuels maintenance should be a routine and ongoing practice for all homes and landscapes in the Santa Monica Mountains.
- Implement a hazard tree removal/thinning program through CCFSA, focusing in both El Nido and Malibu Bowl in priority order:
    - Along main evacuation routes, starting with Corral Canyon, Seabreeze, Lookout, and Lockwood,

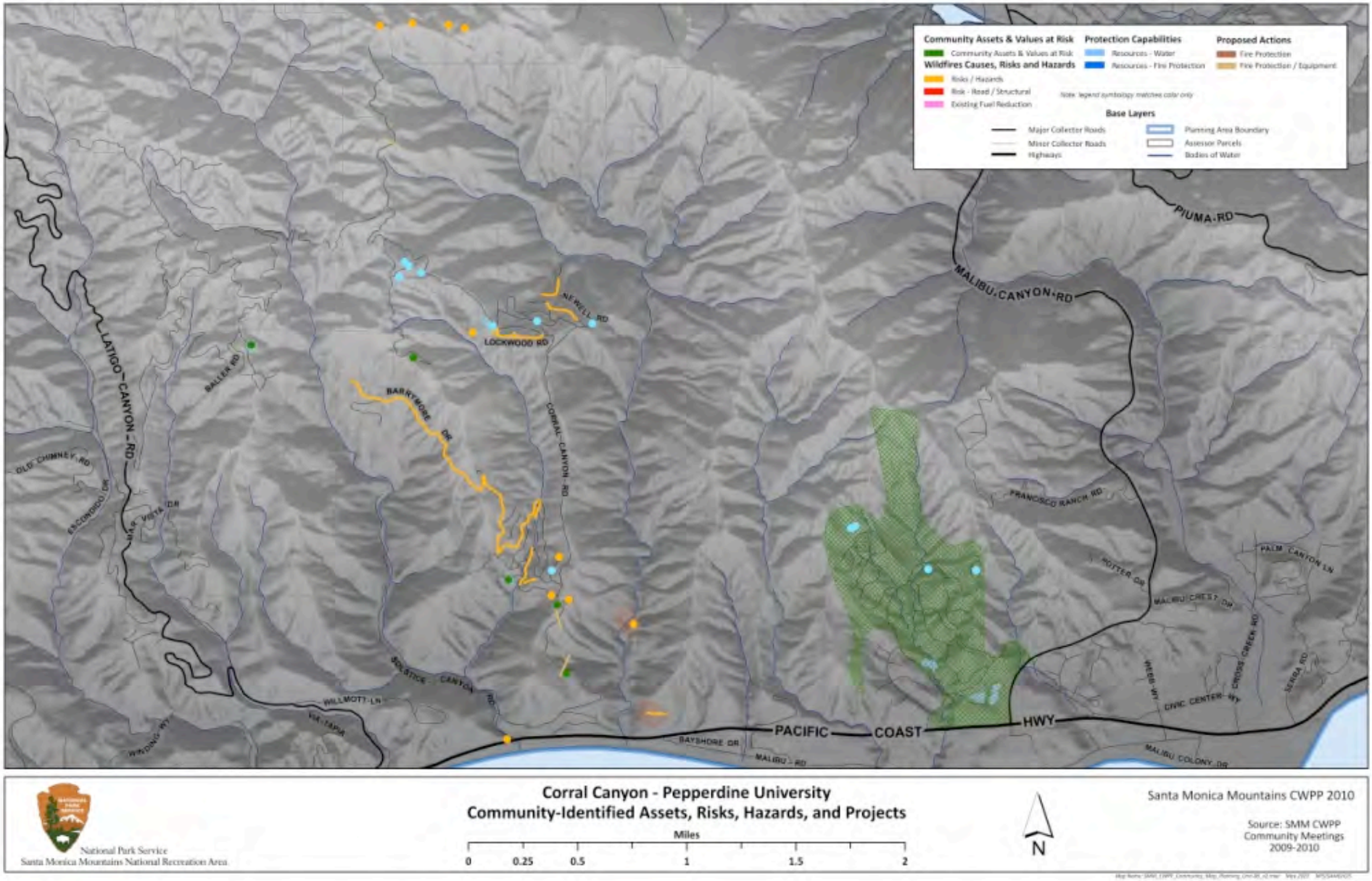
[24] The law in Los Angeles County states that trash cans can only be on the street after 5 pm of the day preceding, and until 8 pm on the day of waste collection.

  - Along all spur roads to main evacuation roads,
  - Near homes, especially trees that threaten more than one home,
  - Trees in or near power lines.

- CCFSA implement a local community education and preparedness campaign. Identify local emergency communication options including phone trees, potentially using a commercial option as discussed in Chapters 4 and 8. Include community education on pool pumps, generators, and home fire-preparedness equipment. This can be done in cooperation with Los Angeles County Fire Department and the National Park Service.
- Residents here have been especially concerned with how to reduce the chance of local ignitions following the 2007 Corral Fire. To this end, they would like to limit access to nearby public lands during times of high fire danger, including installing a gate on Corral Canyon Road directly above Malibu Bowl. The community can raise funds and work through CCFSA with the Santa Monica Mountains Conservancy (whose approval is required), Los Angeles County Fire Department, and California State Parks to explore this option for limiting public access on Red Flag days. Clear agreements would need to be established regarding who has the right and/or responsibility to maintain and close and open the gate, and at what times.

- Explore community purchase and installation of wildland-urban interface (WUI) building products to upgrade homes to current WUI building standards. All residents upgrade homes to current California WUI Fire and Building Standards.
- CCFSA continue to work with law enforcement and Los Angeles County Fire Department to develop a local evacuation plan and ensure that any local gates (roads and driveways) are open or accessible during Red Flag conditions--with the exception of the above-mentioned public-access gate(s) to wild areas.
- Community continue to expand local Arson Watch program, including cooperation with agencies that manage neighboring public properties.

***MAP II.13-1. CORRAL CANYON – PEPPERDINE UNIVERSITY: COMMUNITY-IDENTIFIED ASSETS, RISKS, HAZARDS, AND PROJECTS*[25]**



[25] This map prints best at 11x17. Visit to www.forevergreenforestry.com/smmcwpp_pub.html to download a print version.

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14. Upper Rambla/Las Flores – Tuna Canyon Community Fire Safety Action Plan

14.1. Upper Rambla/Las Flores – Tuna Canyon Description

This planning unit includes the umountainous neighborhoods and subdivisions in unincorporated Los Angeles County of West Saddle Peak, Piuma Road, Sea View Estates, Las Flores Heights, Upper Rambla Pacifico, Las Flores Canyon, and Tuna Canyon. The Upper Rambla/Las Flores–Tuna Canyon unit extends from Upper Piuma Road east to and including West Tuna Canyon. Its northern boundary includes Schueren and Saddle Peak roads. The southern boundary is the Malibu city line. This unit is 5.8 miles in area.

Assets at risk in the built environment include less than 300 large, single-family homes, hundreds of outbuildings, trailers, and appurtenances, a communications relay facility, a county fire suppression and flight crew center (Camp 8), a high-volume (200,000-gallon) municipal water tank, many tennis courts and swimming pools, federal and state conservancy lands, and a state park (Tuna Canyon Park). Properties and homes vary in size, with parcels ranging from a fraction of an acre to more than 10 acres. Single-family home prices in the area currently start at $1.4 million and go up to $4.9 million. Undeveloped parcels in this unit average $250,000.[1]

14.1.1. Upper Rambla/Las Flores – Tuna Canyon Wildfire Environment

Development here is surrounded by open space and high habitat values. Parcels tend to be large. Homes generally are built on hillsides or ridgetops. Density is low. The exception to this is the suburban-style subdivision of Sea View Estates and other neighborhoods of Upper Rambla Pacifico, where homes are clustered. The Coastal Zone extends inland from the beach into parts of this area.[2] The environment includes several Significant Ecological and cultural resources areas. Among the attributes are Las Flores and Tuna Canyon watersheds, oak woodlands, sycamore riparian woodland, riparian corridors, native grasslands, pristine coastal sage scrub, rock outcrop, chaparral, and aquatic habitat, as well as other significant botanical areas. Several sensitive, threatened, or endangered plant and animal species are identified in this unit. The area provides important habitat for native and migratory birds and wildlife. Tuna Canyon is developed only near the ridgeline. Tuna Canyon is considered one of the most pristine aquatic habitats in the Santa Monica Mountains.[3]

Passive recreational opportunities include walking, jogging, bicycling, mountain biking, bird watching, wildflower and wildlife viewing, and horseback riding. Developed and private types include dirt biking, motor biking, motor

[1] Redfin.com, Malibu, www.redfin.com/search#search_location=Malibu%2C%20CA (accessed March 6, 2010).

[2] The California Coastal Zone extends 1,000 yards inland from the mean high tide line. In significant coastal estuarine habitat and recreational areas it extends inland to the first major ridgeline or 5 miles from the mean high tide line, whichever is less. In developed urban areas, the boundary is generally less than 1,000 yards.

[3] D. Stolarz (August 19, 2002), "1256-acre Tuna Canyon Park in the Santa Monica Mountains dedicated," Santa Monica Mountains Conservancy news release.

touring, pool swimming, and tennis. This area is notorious for illegal sports car and motorcycle racing, also known as "canyon carving," on the relatively desolate, winding, steep roads. A county program called "Operation Safe Canyons" was established in 2006 to post more speed-limit signs and coordinate a citation program. Law enforcement has increased patrols to curb this activity since 2007 to help prevent accidents and fires.[4,5]

Ingress and egress is from Pacific Coast Highway to the south. Piuma, Saddle Peak, and Schueren roads are winding laterals that eventually connect with Los Angeles County Highway N1 (Malibu Canyon Road) to the west, north to Mulholland Highway, and east to State Route 27 (Topanga Canyon Boulevard). Connectivity and condition of roads in the area vary. Parts of Saddle Peak Road are privately maintained and gated.

Las Flores Canyon, Rambla Pacifico, and Tuna Canyon are geologically unstable. Rambla Pacifico was severed in two in 1984 by a massive landslide. Residents of Upper Rambla Pacifico have had a four-mile detour through Las Flores Canyon since then, as no alternate route has been established.[6] Access to Upper Rambla Pacifico deteriorated during a winter storm in 2010 when a water line underneath the road broke. The street collapsed into the canyon and is not expected to reopen until June 2010.[7] A landslide also split Hume Road. Four-mile Tuna Canyon Road is relegated to one-way downhill due to undercutting by the creek. Lower Tuna Canyon is not developable for these reasons.[8] Hillside parcels in the Upper Rambla/Las Flores–Tuna Canyon area often require use of retaining walls. Roads are narrow, very steep, and winding with drop-offs, hairpin turns, and limited shoulder.

CAL FIRE designated the entire Santa Monica Mountains region as a Very High Fire Hazard Severity Zone, including this area.

The Upper Rambla/Las Flores–Tuna Canyon unit has a history of many wildfires: Las Flores-Temescal (1910); Topanga-Escondido (1913); Las Flores #54 (1928); Topanga #50 (November 23, 1938) that destroyed 350 homes in the burn area; Las Flores #47 (October 26, 1942); 1,940-acre Hume (December 27, 1956); County Fire 123158 (December 31, 1958); 28,201-acre Wright (September 25, 1970) with 403 homes destroyed in the burn area and ten fatalities; Trippet (October 30, 1973); 5,197-acre Piuma (October 14, 1985); Saddle Peak (December 9, 1989); 18,000-acre Old Topanga (November 2, 1993) with 400 homes destroyed and three fatalities; and Canyon (October 21, 2007).[9,10]

Structures in the Upper Rambla/Las Flores–Tuna Canyon Planning Unit have a variable age-class. Older structures tend to be wooden. Newer structures generally are constructed of stucco, plaster, or masonry. Many homes, regardless of age, have wooden decks and/or fences. Mature, lush, and tall ornamental vegetation is found around

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[4] L. Michaelson (2007), "Cops come down hard on „canyon carving,"" *Topanga Messenger*.

[5] M. Picarella (February 23, 2006), "Canyons make attractive venue for racing, but residents upset," *The Acorn*.

[6] V. Shere (May 3, 2007), "Firefighting from „lessons learned"," *Malibu Times*.

[7] H. Eisner and G. Silva (February 11, 2010), "Two LA area roads collapse: Mulholland Drive, Rambla Pacifico Road crumble," www.MyFoxLA.com.

[8] M. Abramson and T. Gauer (December 18, 2007), Santa Monica Baykeeper comments to California Coastal Commission hearing agenda item, Tuna Canyon Creek.

[9] Robert S. Taylor, Biogeographer/Fire GIS Specialist, National Park Service, personal communication, February 12, 2010.

[10] Mike Davis (1998), "The Case for Letting Malibu Burn." In *Ecology of Fear* (New York: Henry Holt), pp. 93–147.

structures in most of this unit. Utilities are aboveground. Several single-family homes throughout the unit and part of Saddle Peak are gated. Many structures are of contemporary design. However, most are not retrofitted to current California WUI Fire and Building Standards.[11] Key elements to ensuring that property is fire safe are routine and ongoing vegetation and structural maintenance.

A few properties are abandoned or have unmanaged stored items that attract trespassing and enhance the fire threat in the neighborhood. Some of these parcels have been brought to the attention of Los Angeles County.[12]

Municipal water supply for this unit is from Las Virgenes Municipal Water District.[13] A 200,000-gallon water storage tank is located in the neighborhood. Mandatory water conservation and enforcement measures were established in 2009. The district has one emergency 9,500-acre-foot back-up reservoir.[14]

Los Angeles County Fire Suppression Camp 8 Heliport is located near the intersection of Upper Rambla Pacifico and Las Flores Canyon Road.

14.2. Upper Rambla/Las Flores – Tuna Canyon Evacuations

Possible impediments to emergency ingress and egress include downed power lines, trees, landslides, poor road conditions, traffic collisions, and locked gates. Evacuation plans should address the current lack of southbound and westbound options and be coordinated with community emergency service providers. A few spots have the potential to be considered as evacuation areas in this unit. Camp 8, areas within Sea View Estates, and the many private tennis courts and swimming pools should be reviewed by local law enforcement and fire departments.

14.3 Upper Rambla/Las Flores – Tuna Canyon Community Meeting Summary

The Upper Rambla/Las Flores–Tuna Canyon community meeting was held at Los Angeles County Fire Suppression Camp 8 on October 20, 2009. Twenty residents attended.

The following assets at risk were identified at the community meeting. These can be seen on Map II.14-1 at the end of this document.

FIGURE II.14-1. COMMUNITY-IDENTIFIED ASSETS AT RISK

- Camp 8
- Horse camp for handicapped children
- Power lines
- Sea View Estates
- Water tank

[11] State of California, Building Standards Commission, www.bsc.ca.gov (accessed February 8, 2010).

[12] W. Fujioka (May 13, 2008), Department of Public Works findings of the Building Rehabilitation Appeals Board in the unincorporated areas of Malibu (Supervisor District 3). Public notice.

[13] Las Virgenes Municipal Water District (2010), District Map [Data], www.lvmwd.com/Modules/ShowDocument.aspx?documentid=838

[14] Las Virgenes Municipal Water District (2010), www.lvmwd.com.

14.2.1. Community-Identified Potential Projects

The following items are community-identified projects from the community meeting. Residents were encouraged to "think big," and not be concerned about project cost or property ownership for the project brainstorming process. Following the brainstorming, residents prioritized projects based on which were most realistic and most important. These projects can be located on Map II.14-1 at the end of this document.

FIGURE II.14-2. UPPER RAMBLA/LAS FLORES – TUNA CANYON COMMUNITY-IDENTIFIED PROJECTS

IDENTIFIED ITEM DESCRIPTION	PROPOSED PROJECT CATEGORY	PRIORITY RANK
Replace cell tower – AT&T	Emergency Preparedness	1
Reopen Rambla Pacifico	Emergency Preparedness	1
Escape route access	Evacuation	2
Clearance along main county roads	Fuel Reduction	2
Organize communication tree (phone, email, etc.)	Emergency Preparedness	3
Install more water hydrants	Water	3
"No Smoking" signage	Education / Policy	4
Create Volunteer Fire Department	Fire Protection	4
Mark fire hydrants	Fire Protection / Equipment	4
Organize landing zones	Fire Protection	5
Form Fire Safe Council	Fire Safe Council	5
Community shaded fuelbreak	Fuel Reduction	5
Organize with fire department inspection patrol	Emergency Preparedness	
Oak (native) tree planting	Fuel Reduction	
Clearance on Piuma Road	Fuel Reduction	
Clearance on Scheuren Road	Fuel Reduction	
Clearance on Rambla Pacifico Road	Fuel Reduction	
Clearance on Las Flores Canyon Road	Fuel Reduction	
Clearance on Hume Bridge	Fuel Reduction	
Area hazard tree removal	Fuel Reduction	
Insurance synchronized with regulations	Policy	
Raze abandoned homes	Risk Reduction	

14.3. Upper Rambla/Las Flores – Tuna Canyon Action Plan

The following projects are the initial priorities for community action for the Upper Rambla/Las Flores–Tuna Canyon Planning Unit.

- Form a local Fire Safe Council (FSC) or join with nearby FSCs. This organizational structure will facilitate community preparedness for wildfire. Work with the California Fire Safe Council to create a FSC that will best accommodate and enable this area.
- Implement a hazard tree removal/thinning program through an FSC, local homeowner's association (HOA), or other community organizations, in priority order:

  - Along main evacuation routes, starting with Tuna Canyon, Piuma, Scheuren, Upper Rambla Pacifico, and Saddle Peak roads.
  - Along the spur roads to main evacuation roads, including Hume Bridge, Gorge Road, and Live Oak Meadow/Chumash roads.
  - Near homes, focusing on trees that threaten more than one home. This should start in the Live Oak Meadow/Chumash Road area.
  - Trees in or near power lines.

- Work through HOAs and other neighborhood groups to educate residents on the need to keep ingress and egress/evacuation routes clear. This planning unit has some of the most problematic ingress/egress issues in the entire CWPP Planning Area. Residents need to understand the dangers involved in imprudent parking or long-term street storage of unused vehicles. Because natural disasters can strike at any time, key evacuation ingress/egress routes must be kept free of parked vehicles, especially trailers and other large objects that are difficult to move quickly. Trash cans and other items should be kept off the roadway and out of key turnout/passing areas.[15] A neighborhood-organizing project would include creating off-street parking where it is limited. Neighbors can work together to help each other stay in compliance.
- Ensure that at least one team from each homeowner"s association or neighborhood undergoes Los Angeles County Fire Community Emergency Response Team (CERT) training. This is the vehicle to begin organizing locally for evacuation planning in cooperation with local law enforcement and the fire department. This is also where to develop local emergency communication efforts including phone trees, and to work with local government to explore replacing or upgrading the local AT&T cell phone tower.
- Work with law enforcement and Los Angeles County Fire Department through local HOAs and FSCs to develop a local evacuation plan. This is especially important for those areas above the Rambla Pacifico slide that would need to evacuate uphill on narrow, winding roads, before being able to get down and out the canyon. Efforts should be made to ensure that local gates are open or accessible during Red Flag conditions.
- Residents reduce urban fuels in the home ignition zone based on the Conservation Principles and Best Management Practices outlined in Chapters 1, 4, and 5 of this CWPP. Fuels maintenance should be a routine and ongoing practice for all homes and landscapes in the Santa Monica Mountains. This includes ensuring that structures are resistant to heat and embers, maintaining all vegetation "from the house out," and removing anything in this zone that might ignite and spread fire.
- Explore community purchase and installation of wildland-urban interface (WUI) building products to upgrade homes to current WUI building standards. All residents upgrade homes to current California WUI Fire and Building Standards.
- Work through a FSC or HOA to begin a local community education and preparedness campaign. Include community education on pool pumps, generators, and home fire-preparedness equipment. This can be done in cooperation with other area FSCs, Los Angeles County Fire Department, and the National Park Service.

[15] The law in Los Angeles County states that trash cans can only be on the street after 5 pm of the day preceding, and until 8 pm on the day of waste collection.

***MAP II.14-1. UPPER RAMBLA/LAS FLORES – TUNA CANYON: COMMUNITY-IDENTIFIED ASSETS, RISKS, HAZARDS, AND PROJECTS*[16]**

[16] This map prints best at 11x17. Visit to www.forevergreenforestry.com/smmcwpp_pub.html to download a print version.

15. Topanga Canyon Community Fire Safety Action Plan

15.1. Topanga Canyon Description

This planning unit encompasses the neighborhoods of the unincorporated Los Angeles County in Topanga Canyon including: Fernwood, East Saddle Peak, Old Topanga, Red Rock Canyon, Topanga Skyline, Glenview, Greenleaf Canyon, Henry Ridge, Post Office Tract, Hillside, Sylvia Park, Arteique, Santa Maria Road, Entrado, Viewridge Estates, and Top o'Topanga. The area extends from Pacific Coast Highway north to Calabasas and Los Angeles City limits near Topanga Summit on State Route 27 (Topanga Canyon Boulevard). The western boundary follows Old Topanga Canyon Road to Calabasas city limits. The eastern limit is the Los Angeles City/County line. The Topanga Canyon unit is 17.7 miles in area.

Assets at risk in the built environment include approximately 2,900 single-family homes, duplexes, multi-family structures, outbuildings, ranches, and estates.[1,2] Others include a state park and nature center (Topanga), state beach and lagoon (Topanga), several state conservancy lands, three National Park Service parcels, a post office, Los Angeles County Fire Station #69, public library, numerous equestrian ranches, at least three vineyards and wineries, more than six eateries, two shopping centers with two grocers, retail, business, and personal services, many other commercial facilities, two preschools, pet boarding facilities, a church, community center/club with sports fields, Jewish community center, building supply, natural gas distributor, Shakespearean theater, public elementary school, private elementary school/day camp, tennis camp, mobile home park, emergency response center, historic tavern, and several utilities substations and appurtenances.

Lots range from a fraction of an acre to more than 40 acres. Real estate values for mobile homes are $288,000 to $400,000. Single-family homes range from $200,000 to $9 million for large estates. Undeveloped land averages $125,000 per acre.[3]

15.1.1. Topanga Canyon Wildfire Environment

Topanga Canyon hosts pristine coastal sage scrub, mixed chaparral/oak woodland, southern sycamore riparian woodland, coastal marsh, coastal wetland, and vernal riparian habitat. This is one of the few areas along the California coast where the Coastal Zone extends for miles inland.[4] The built environment is enveloped by dense, mature urban forest. The canyon is deep and mountainous with steep slopes interspersed with limited areas of

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[1] US Census (2000), www.factfinder.census.gov

[2] B. Pool (October 7, 2005), "Book prepares Topangans for the wildfire next time," *Los Angeles Times.*

[3] Westside Multiple Listing Service, http://idx.themls.com (accessed July 5 2010).

[4] The California Coastal Zone extends 1,000 yards inland from the mean high tide line. In significant coastal estuarine habitat and recreational areas it extends inland to the first major ridgeline or 5 miles from the mean high tide line, whichever is less. In developed urban areas, the boundary is generally less than 1,000 yards.

relatively flat or rolling knolls.[5] Topanga and Old Topanga creeks host pools and waterfalls in their gorges. At least 64 sensitive species are identified for this unit.[6,7] Significant cultural resources are found throughout the canyon.[8,9] The area is susceptible to high water and debris flows during storm events.[10] Landslides and subsidence are common in the canyon.[11]

Passive recreational opportunities abound in this planning unit. Common activities include hiking, horseback riding, road and mountain biking, painting, running, and wildflower and wildlife viewing. Developed and private types include field sports, automobile touring, dirt and motor biking, pool swimming, and tennis. The area attracts both residents and visitors.

Ingress and egress is along State Highway 27 (Topanga Canyon Boulevard). Connector roads include Old Topanga Road, Mulholland Highway, State Highway 1 (PCH), and Saddle Peak and Tuna Canyon roads. Connectivity and condition of lateral roads varies: some roads are dirt, others one-way, and many are cul-de-sacs. Most are narrow, steep, have little shoulder, and are winding with sheer drops. Roads require frequent maintenance including repaving and construction of retaining walls. Slope instability and road closures are ongoing threats in Topanga.[12]

CAL FIRE designated the entire Santa Monica Mountains region as a Very High Fire Hazard Severity Zone. The Topanga Canyon unit is included. This determination by the state is based on factors such as fire weather, slope, and fuel loading, among others.

The Topanga Canyon unit has a history of frequent wildfires: Las Flores–Temescal (1910); Topanga/Escondido (1913); Topanga Post Office (March 2, 1925); Montgomery Ranch (July 15, 1926); Old Topanga #2 (September 12, 1926); Cooper #1 (October 1, 1927); Saddlepeak (1932); Cold Creek (September 7, 1936); Topanga #50 (November 22, 1938) with 350 homes destroyed; Tuna Summit (August 26, 1940); Las Flores #47 (October 20, 1942); Woodland Hills #65 (November 6, 1942) with

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[5] R. Dagit (2002), "Oaks resilient with post-fire monitoring of coast live oaks *(Quercus agrifolia)* in the 1993 Old Topanga Fire." In USDA Forest Service General Technical Report PSW_GTR-184: pp. 243–249.

[6] California Department of Fish and Game (2009), California natural diversity database – Topanga quadrangle [Data].

[7] Resource Conservation District of the Santa Monica Mountains (1999), "List and links of sensitive species located within the Topanga Creek watershed," containing Topanga Lagoon and watershed resources and references.

[8] California State Parks (2001), Topanga State Park Acquisition, Interim Management Plan, Cultural Resources Survey, Historic Resources, Evaluation Report.

[9] W.J. Wallace (1955), "A suggested chronology for southern California coastal archaeology," *Southwestern Journal of Anthropology* 11(3): pp. 214–230, University of New Mexico, Albuquerque.

[10] N.H. Brooks (1982), "Storms, floods, and debris flows in southern California and Arizona in 1978 and 1980," *Proceedings of a symposium, September 17 and 18, 1980.* US National Research Council, Committee on Natural Disasters, California Institute of Technology–Environmental Quality Laboratory, National Academy Press, Washington, DC.

[11] K.M. Hodgkinson et al. (1996), "Damage and restoration of geodetic infrastructure caused by the 1994 Northridge CA earthquake." In *US Geological Survey Open-File Report 96-517* [text, data, CD-Rom], USGS, Menlo Park, CA.

[12] G. Farber (February 3, 2009), "Adopt, advertise, and award retaining wall construction and roadway reconstruction, Greenleaf Canyon Road et al.," correspondence from LA County Dept. of Public Works to LA County Board of Supervisors.

150 homes lost in the burn area; Topanga (November 4, 1948); Miller (December 2, 1948); unnamed (July 13, 1953); unnamed (August 28, 1955); unnamed (July 20, 1956); 1,940-acre Hume (December 27, 1956); County (December 31, 1958); unnamed (October 15, 1959); unnamed (October 17, 1959); unnamed (October 16, 1960); 9,720-acre Santa Ynez (November 6, 1961); unnamed (August 21, 1966); unnamed (September 8, 1968); unnamed (September 27, 1970); unnamed (February 2, 1972); unnamed (July 3, 1972); unnamed (August 6, 1972); Trippet (October 3, 1973); Canyon (November 14, 1977); unnamed (July 11, 1979); unnamed (August 26, 1981); unnamed (October 9, 1982); Viewridge (September 6, 1984); unnamed (June 25, 1990); unnamed (October 12, 1990); Old Topanga (November 15, 1990); Cook (January 29, 1991); Mulholland (July 30, 1992); 17,000-acre Old Topanga (November 2, 1993) with over 400 homes lost and three fatalities; and Dirt Mulholland (May 9, 2009).

Homes in the Topanga Canyon unit have a variable age-class ranging from the early 20th century to 21st century. Many are built on steep unstable slopes that require retaining walls or other support.[13] Wooden and stucco types are most common. Older wooden structures predominate. Heavy, mature, lush, and tall ornamental vegetation is found throughout the entire planning unit including pine, palm, eucalyptus, acacia, pepper, bougainvillea, and wisteria. Utilities are aboveground. Many neighborhoods are cluster subdivisions surrounded by open space. Most structures in the Topanga Canyon unit are not retrofitted to current California WUI Fire and Building Standards.[14]

Natural gas supply throughout the canyon is by means of individual propane tanks. Storage varies with each property and is dependent on use and demand. Amerigas is the local provider and has delivery holding and distribution at a site on Topanga Canyon Boulevard.

Municipal water supply is through Los Angeles County Waterworks District No. 29. It has serviced the Topanga Canyon area since 1959. Conveyance is along a transmission main that follows Topanga Canyon Boulevard. Water is stored in tanks located in upland areas of the canyon. The main pump house is located in Old Topanga Canyon. Pipe breaks are common along Topanga Canyon Boulevard.[15] Some pipes are being replaced and upgraded: 1½ miles of 6-inch replaced with 16-inch from Old Topanga/Topanga Canyon Boulevard north to Hillside; and ½ mile of 10-inch replaced with 12-inch water main from Old Topanga/Topanga Canyon Boulevard north to Topanga School and up to Topanga Forks tank.[16] Threats to the supply include infrastructural age and condition, electrical failure, and emergency use during wildfire events.

Topanga has a history of community preparedness. Arson Watch was founded in 1982 as a neighborhood watch group to prevent and deter wildfires. More than 100 Arson Watch volunteers serve the Los Angeles County Sheriff's Department by educating the community about fire hazards and patrolling Topanga and the Santa Monica Mountains on high fire-danger days. While on patrol the volunteers' vehicles are clearly marked with "Arson Watch" signs that also serve to raise awareness of the fire danger in the community.

Topanga Coalition for Emergency Preparedness (T-CEP) was formed in 1993 after the Old Topanga Fire and has over 200 volunteers. This nonprofit organization helps the community, law enforcement, and local government prepare for and cope with disasters such as wildfires, floods, and earthquakes. T-CEP created: an Emergency Operations Center (EOC); communications systems utilizing various types of radios and the Internet; a neighborhood

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[13] Stanley D. Wilson (2004), *Stubblefield* (Coral Springs, FL: Llumina Press).

[14] State of California (February 8, 2010). Building Standards Commission, www.bsc.ca.gov.

[15] M.D. Trifinac and M.I .Todorovska (1997), "Northridge CA earthquake of 1994: density of pipe breaks and surface strains." In *Soil Dynamics and Earthquake Engineering* 16(3): pp. 193–207.

[16] Los Angeles Department of Public Works (2009), "Topanga Forks/Topanga Oaks Water Main Replacement, Oct 09–Oct 2010."

network organization; evacuation plans; periodic mock mass evacuations based on various scenarios; large and small animal evacuation plans; and Community Safety Area (CSA) sites for large groups (100+) of evacuees and Neighborhood Survival Area (NSA) sites for smaller groups. CSAs and NSAs are for use in cases when people are unable to safely evacuate. T-CEP and collaborators present educational events such as Disaster Readiness Fairs, Red Cross classes, and programs for children. *The Topanga Disaster Survival Guide*[17] was published in 2005 by T-CEP and the Topanga Emergency Management Planning Steering Committee established by the Los Angeles County Board of Supervisors. A model guidance document, the book was funded by County Supervisor Zev Yaroslavsky's office and mailed to all residents and businesses.[18]

Topanga Community Emergency Response Team (CERT) is a volunteer group with the Los Angeles County Sheriff's Department that offers first response and recovery disaster services. It works with the fire department, T-CEP, and Arson Watch to provide basic search and rescue, triage and first aid, support for first responders, and coordination of Community Safety Areas (CSAs).

Topanga Emergency Management Task Force was established in 2008 to maintain and update emergency management planning strategies. This is part of a larger county group co-chaired by one representative from the community and one representative from the County selected by the office of Supervisor Zev Yaroslavsky.

Topanga Town Council sponsors identification cards to residents of Topanga Canyon. The cards allow safe and legal access to residents after an evacuation.

Topanga Citizens Fire Safe Committee was formed in 1997 under the direction of County Supervisor Zev Yaroslavsky. The community was concerned about proposed vegetation management requirements. County residents in Very High Fire Severity Zones were asked to clear vegetation, including ornamentals, within the first 30 feet of each structure. The fire department downgraded the regulation to a guideline in response to citizen concerns that neither public consultation nor cost analysis had been conducted. The committee formed to develop Best Management Practices to manage hazardous vegetation instead of clearing it.[19,20,21] The group participated in the California Fire Safe Council in Sacramento until the early 2000s.[22] The committee conducted a successful chipping program in collaboration with the Los Angeles County Fire Department, local vendors, and service providers. This committee has since been inactive for several years.[23]

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[17] http://topangasurvival.wordpress.com/

[18] County of Los Angeles (2010), Topanga Emergency Management Planning, www.topangasurvival.org/index_files/faqs.htm.

[19] E. Slater (June 15, 1997), "Firefighters put heat on residents failing to cut brush and trees," *Los Angeles Times.*

[20] *Los Angeles Times* (July 22, 1997), "Residents form committee on fire safe issues." In *Topanga-Community News File.*

[21] Susan P. Nissman, Senior Field Deputy–Calabasas Office of Los Angeles County Supervisor Zev Yaroslavsky, personal communication, March 11, 2010.

[22] Burt Rashby, Topanga Citizens Fire Safe Committee, personal communication, 2001.

[23] *Topanga Messenger* (December 14, 2000), "A chipper Christmas."

The Resource Conservation District of the Santa Monica Mountains established a community chipper and education program for Topanga in 2004 with a $25,000 federal grant.[24]

A small group in the West Hillside neighborhood worked with the National Park Service and Los Angeles County Fire Department in 2009 to develop a hazardous ornamental tree management program. A $40,000 federal supplemental funds grant in 2009 funded a hazardous fuel-reduction program that eliminated many large eucalyptus along roadsides and around homes. The group received a $65,250 competitive grant award in 2009 through the California Fire Safe Council Grants Clearinghouse, which will be used to remove large woody non-native trees in 2010.[25] The West Hillside group is now assimilated into the larger North Topanga Canyon Fire Safe Council (FSC).[26]

Three FSCs are organizing in Topanga Canyon. They represent the three broad geographic areas of the canyon: South Topanga, North Topanga, and West Topanga. North Topanga Canyon FSC is in the process of formalizing its organization. South and West Topanga FSCs continue to organize.[27]

Los Angeles County Fire Station #69 is located in the Fernwood neighborhood of Topanga.

15.2. Topanga Canyon Evacuations

Possible impediments to emergency ingress and egress include downed power lines, trees, traffic, locked gates, and poor road conditions. There are many narrow, winding, unstable streets with cul-de-sacs and steep drops. Gated communities include Top o'Topanga, parts of Viewridge, and several estates. The planning unit has many public or private venues where large groups of people convene. These include public lands, private ranches, camps, schools, eateries, community halls, a theater, and church. There are considerable numbers of large and small domestic animals. Evacuation efforts should be coordinated with T-CEP (Topanga Coalition for Emergency Preparedness) and the sheriff.

15.3. Topanga Canyon Community Meeting Summary

The Topanga Canyon community meeting was held at Topanga Christian Fellowship Church on October 23, 2009. Forty residents and one non-resident attended.

The following assets at risk were identified at the community meeting. These can be located on Map II.15-1 at the end of this document.

FIGURE II.15-1. COMMUNITY-IDENTIFIED ASSETS AT RISK

- AmeriGas
- Calmont/Muse Elementary
- Children's Corner
- Bonnell Park
- Power lines, communication lines, and cellular repeaters along Topanga Canyon Boulevard
- Community House

[24] Steve Williams, Conservation Biologist, Resource Conservation District of the Santa Monica Mountains, personal communication, March 3, 2010.

[25] Kathryn Kirkpatrick, Fire Management Officer, Santa Monica Mountains National Recreation Area, personal communication, March 2010.

[26] Joyce Wisdom, North Topanga Fire Safe Council, personal communication, March 2010.

[27] Katie Ziemann, Affiliate Manager, California Fire Safe Council, personal communication, May 2010.

- Dead Horse parking lot – current NSA
- T-CEP – Emergency Operations Center
- Fernwood Market
- Horse stable
- Library
- Mermaid area safe zone
- Mill Creek Stables
- Old Canyon substation
- Phone building
- State Park values, cultural
- T-CEP headquarters
- Topanga Canyon Christian Fellowship
- Town Center
- Turtle pond
- Water tanks
- Will Geer Theatricum
- Dog kennel
- Fair Hills Farms – large horse ranch – current NSA (significant fuel reduction)
- Froggy's
- Inn of the 7th Ray
- Los Angeles County Fire Department Station #69
- Mermaid Tavern
- Montessori School
- Pine Tree Circle
- Post Office
- State Park values, threatened & endangered
- Topanga Chamber
- Topanga Elementary School
- Trippett Ranch
- Utilities substations
- The Nature of Wildworks wildlife rescue and education

15.3.1. Community-Identified Potential Projects

The following items are community-identified projects from the community meeting. Residents were encouraged to "think big," and not be concerned about project cost or property ownership for the project brainstorming process. Following the brainstorming, residents prioritized projects based on which were most realistic and most important. Projects can be seen on Map II.15-1 at the end of this document.

FIGURE II.15-2. TOPANGA CANYON COMMUNITY-IDENTIFIED PROJECTS

IDENTIFIED ITEM DESCRIPTION	PROPOSED PROJECT CATEGORY	COMMUNITY PRIORITY RANK
Street access (trees, parking, branches)	Evacuation / Fire Protection	1
No parking on pavement on main roads, especially Topanga Skyline	Evacuation / Fire Protection / Policy	1
Type III fire engines	Fire Protection / Equipment	1
Hazard tree removal throughout	Fuel Reduction	1
Non-native tree removal program, with replacement by native trees (especially oaks)	Fuel Reduction	1
Tree clearance – 30 pines, 17 palms	Fuel Reduction	1
New water tank and service to top of Topanga Skyline	Water	1
Make safe zones and areas more safe	Evacuation	2
Super Scoopers	Fire Protection / Equipment	2
Major "brush clearance"	Fuel Reduction	2
Education on how to survive if caught (can't evacuate)	Education	3

IDENTIFIED ITEM DESCRIPTION	PROPOSED PROJECT CATEGORY	COMMUNITY PRIORITY RANK
Education on stay or escape a fire	Evacuation / Education	3
Fire Safe workshops	Education	
Make magnet with emergency radio frequency and phone numbers, and mail to folks	Education / Preparedness	
Neighborhood planning – hazard vegetation analysis, evacuation/shelter, survivability plan	Emergency Preparedness	
Address emergency evacuation, ingress-egress parking	Evacuation	
Neighborhood safe areas	Evacuation	
Neighborhood safe house funded	Evacuation	
Remove low-hanging branches off all egress routes	Evacuation	
Safe evacuation spaces	Evacuation	
Safe zones – Community Safe Areas	Evacuation	
Shorty's safety zone	Evacuation	
Access on all roads: Cheney, Paradise, Sylvia	Evacuation / Fire Protection	
Escape routes “brushed” back	Evacuation / Fire Protection	
Escape routes signaled	Evacuation / Fire Protection	
More off-street parking	Evacuation / Fire Protection	
Road improvement for fire trucks	Evacuation / Fire Protection	
Second access to elementary school	Evacuation / Fire Protection	
Widen upper Topanga Skyline Drive	Evacuation / Fire Protection	
Air raid sirens	Fire Protection / Equipment	
Fire Danger signs	Fire Protection / Equipment	
More fire-fighting equipment	Fire Protection / Equipment	
Sirens/warning system	Fire Protection / Equipment	
Small fire trucks for the area	Fire Protection / Equipment	
Wildfire trucks and equipment	Fire Protection / Equipment	
Cut down eucalyptus, pines, pepper, palms	Fuel Reduction	
Old Topanga Canyon non-native tree clearance	Fuel Reduction	
Remove dead brush	Fuel Reduction	
Remove fire hazard trees around houses	Fuel Reduction	
Tree removal – East side, West Hillside	Fuel Reduction	
Enforcement of brush clearance on all roads to 10 feet	Fuel Reduction / Policy	
Ban on fire-starting construction during Santa Anas	Policy	
Replace wooden decks	Risk Reduction	
Lower Cheney and Mermaid Tavern projects	Fuel Reduction	

IDENTIFIED ITEM DESCRIPTION	PROPOSED PROJECT CATEGORY	COMMUNITY PRIORITY RANK
More water tanks	Water	
Street identification/reflectors for pools	Water	
Swimming pool signs for fire use and mapping	Water	
Water tanks	Water	
Water tanks for areas, with back-up pump station generators on site, with distribution system	Water	
West Hillside project	Fuel Reduction	

15.4. Topanga Canyon Action Plan

The following projects are initial priorities for community action for the Topanga Canyon Planning Unit.

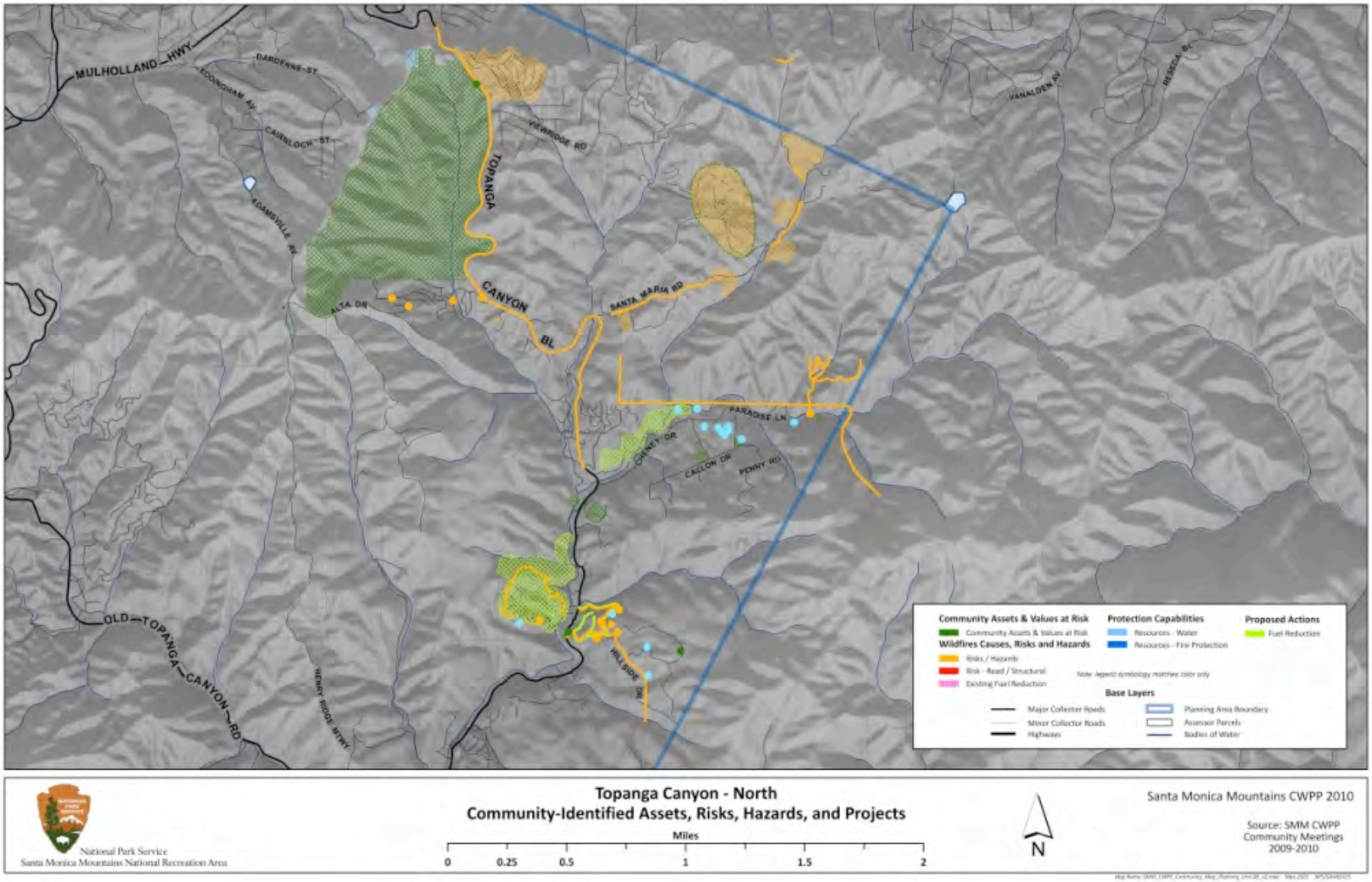
- Evacuation is a critical issue in Topanga Canyon. Therefore, priority fuel reduction should be focused on a hazard tree removal program for critical ingress and egress/evacuation routes, based on the model project done in West Hillside.
- Follow with a hazard tree removal program near residences, starting in the most populated areas. Tie this to a program to replace hazardous trees with native oaks where appropriate.
- Develop Fire Safe Councils (FSCs) to cover the three general areas of Topanga Canyon: North, South, and West. These FSCs could build on the strong social capital of various Topanga neighborhoods, creating active, grassroots organizations dedicated to the fire-safe mission. Strong FSC presence in each of the three areas will empower the residents of Topanga Canyon to be proactive and diligent in making their individual neighborhoods safer. Interested leaders should work with California Fire Safe Council, local government partners, T-CEP, Arson Watch, and others to create a solid organizational base.

- Work through FSCs and homeowner's associations (HOAs) to educate residents on the need to keep ingress and egress/evacuation routes clear. Residents need to understand the dangers involved in imprudent parking or long-term street storage of unused vehicles. Because natural disasters can strike at any time, key evacuation ingress/egress routes must be kept free of parked vehicles, especially trailers and other large objects that are difficult to move quickly. Trash cans and other items should be kept off the roadway and out of key turnout/passing areas.[28] A neighborhood-organizing project would include creating off-street parking where it is limited. Neighbors can work together to help each other stay in compliance.
- Residents reduce urban fuels in the home ignition zone based on the Conservation Principles and Best Management Practices outlined in Chapters 1, 4, and 5 of this CWPP. Fuels maintenance should be a routine and ongoing practice for all homes and landscapes in the Santa Monica Mountains. This includes ensuring that structures are resistant to heat and embers, maintaining all vegetation "from the house out," and removing anything in this zone that might ignite and spread fire.

[28] The law in Los Angeles County states that trash cans can only be on the street after 5 pm of the day preceding, and until 8 pm on the day of waste collection.

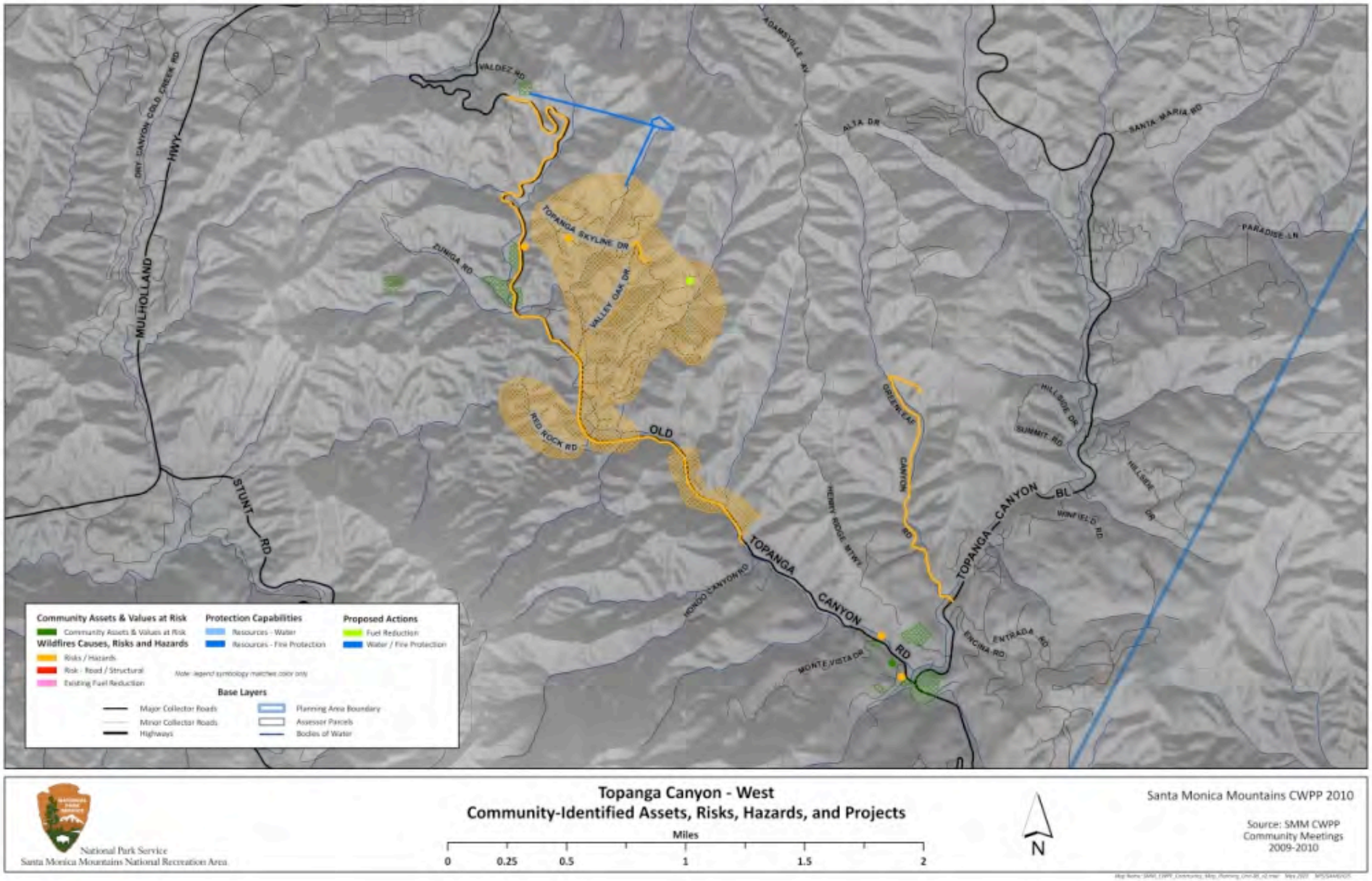
- Topanga has in place a system of Community Safety Areas and Neighborhood Survival Areas. Despite local education and organizing, there are residents who remain unaware of these locations. Enhance local signage and community education regarding existing CSAs/NSAs, evacuation routes, and other local evacuation plan components.
- Work through T-CEP and FSCs to continue local community education and preparedness campaigns, including the need for hardened homes and fuel reduction in the home ignition zone. The *Topanga Survival Guide* is an excellent community educational and organizing document. Neighborhoods need to be ready to survive wildfire if residents are not able to evacuate. Include community education on pool pumps and generators with roadside pool signs, and other home fire-preparedness equipment. This can be done in cooperation with other FSCs, Los Angeles County Fire Department, the Resource Conservation District of the Santa Monica Mountains, and the various Park Service organizations.
- FSCs and T-CEP work with the water district and fire department to explore local water storage options.
- T-CEP explore implementation of a roadside No Smoking signage campaign.
- Local FSCs work with public land managers to facilitate effective fuel reduction between public and private properties.
- Local FSCs work with T-CEP to explore community purchase and installation of WUI building products to upgrade homes to current WUI building standards.
- All residents upgrade homes to current California WUI Fire and Building Standards.

MAP II.15-1. NORTH TOPANGA CANYON: COMMUNITY-IDENTIFIED ASSETS, RISKS, HAZARDS, AND PROJECTS[29]

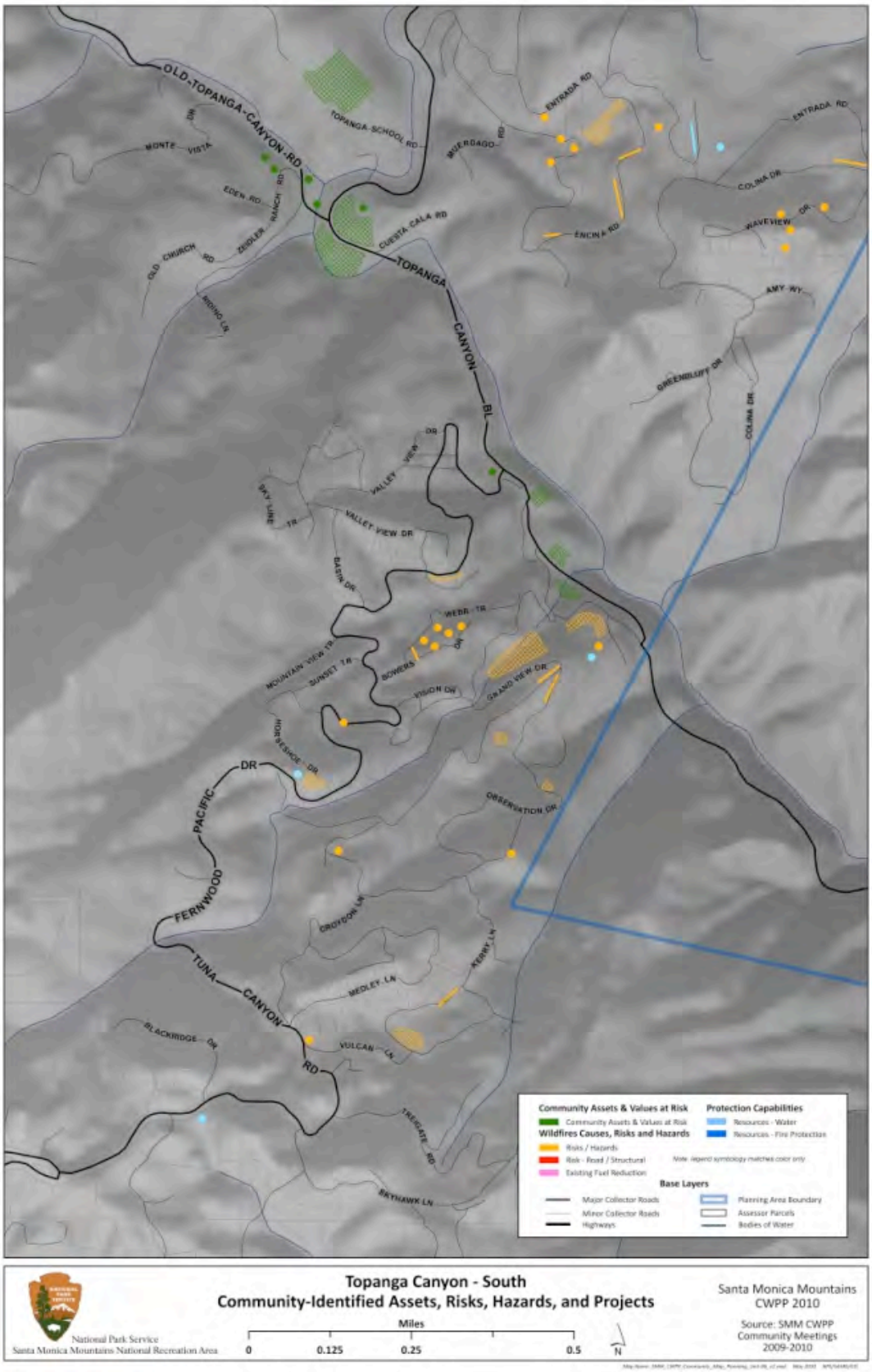


[29] All three maps print best at 11x17. Visit to www.forevergreenforestry.com/smmcwpp_pub.html to download a print version.

MAP II.15- 2. WEST TOPANGA CANYON: COMMUNITY-IDENTIFIED ASSETS, RISKS, HAZARDS, AND PROJECTS



MAP II.15- 3. SOUTH TOPANGA CANYON: COMMUNITY-IDENTIFIED ASSETS, RISKS, HAZARDS, AND PROJECTS



16. Las Virgenes Canyon Corridor Community Fire Safety Action Plan

16.1. Las Virgenes Canyon Corridor Description

This planning unit is located in unincorporated Los Angeles County and includes the neighborhoods and subdivisions of Stokes Canyon, Las Virgenes Canyon, Monte Nido, Dry Canyon, Cold Creek, Stunt Road, Lower West Saddle Peak, and Lower Piuma. The Las Virgenes Canyon Corridor unit extends from Los Angeles County Highway N1 (Malibu Canyon Road) east to just before Mountain Park Drive. The northern boundary includes properties along Mulholland Highway. The southern boundary includes properties along Piuma Road. The planning unit is 16.7 square miles in area.

Assets at risk in the built environment include more than 400 single-family homes, ranches, and estates, equine facilities, reclaimed water spreading grounds, a federal maintenance facility with dormitories (Diamond X Ranch), federal and state joint-use area (King Gillette Ranch), state biological preserve (University of California Stunt Ranch), numerous state and private land trust inholdings, 100-foot dam (Rindge), county fire station (Los Angeles County Fire Station #67), nursery (Los Angeles County Forestry Division), local joint powers authority fire department (Mountains Restoration and Conservation Authority), several historic structures, wildlife rescue facility, private school, day camp, ashram, Hindu temple, restaurant, bed-and-breakfast operation, eating disorder recovery center, trailer park, and many tennis courts and swimming pools. Most of this CWPP planning unit is unincorporated, with the northernmost part within the City of Calabasas. Properties and homes vary in size, with parcels ranging from a fraction of an acre to over 10 acres. Single-family home prices in the area currently start at $950,000 and go up to $5.5 million. Undeveloped parcels in this unit range $37,500 to $1 million per acre.[1]

16.1.1. Las Virgenes Canyon Corridor Wildfire Environment

Development in the Las Virgenes Canyon Corridor unit is surrounded by open space and high habitat values. Parcels in the lower-lying and riparian corridor areas such as Monte Nido tend to be clustered and situated in oak woodlands. Residences occupy larger parcels on the outlying border areas of the planning unit. The Coastal Zone extends inland from the beach into parts of this area.[2] The environment includes several Significant Ecological Areas and cultural resources sites. Major attributes are: Malibu Creek (perennial), Cold Creek and Las Virgenes Creek (the latter two are ephemeral tributaries to Malibu Creek); oak woodlands, sycamore riparian corridors, native grasslands, pristine coastal sage scrub, rock outcrop, chaparral, and aquatic habitat, as well as other significant botanical areas. Several sensitive, threatened, or endangered plant and animal species are identified in this unit. The southern

[1] Realtor.com, Monte Nido, www.realtor.com/realestateandhomes-search/Monte-Nido_CA (accessed March 7, 2010).

[2] The California Coastal Zone extends 1,000 yards inland from the mean high tide line. In significant coastal estuarine habitat and recreational areas it extends inland to the first major ridgeline or 5 miles from the mean high tide line, whichever is less. In developed urban areas, the boundary is generally less than 1,000 yards.

steelhead trout *(Oncorhynchus mykiss)* is found in Malibu Creek, one of its only locations in the region. The Pacific lamprey *(Lampetra tridentata)* was found in Malibu Creek as recently as ten years ago and has the potential to be identified again.[3] The area provides important habitat and wildlife corridors. Most of the undeveloped lands in the unit are part of Environmentally Sensitive Habitat Areas.[4] Threats to the environment include development, and populations of ornamental and invasive plants such as alien grasses, giant reed, Russian thistle, tree-of-heaven, and Scotch broom.

Passive recreational opportunities include walking, jogging, bicycling, mountain biking, bird watching, wildflower and wildlife viewing, and horseback riding. Developed and private types include dirt biking, motor biking, motor touring, pool swimming, and tennis. The Las Virgenes Canyon Corridor area is notorious for illegal sports car and motorcycle racing, also known as "canyon carving," on the relatively desolate, winding, steep roads. A county program called "Operation Safe Canyons" was established in 2006 to post more speed-limit signs and coordinate a citation program. Law enforcement has increased patrols to curb this activity since 2007 to help prevent accidents and fires.[5,6]

Ingress and egress is from Malibu Canyon Road to the west, Mulholland Highway to the north, and either Piuma or Stunt roads to the south. Lateral roads in the area are narrow, winding, and have little shoulder.

CAL FIRE designated the entire Santa Monica Mountains region as a Very High Fire Hazard Severity Zone, including this area

The Las Virgenes Canyon Corridor unit has a history of many wildfires: Calabasas (1903); Old Topanga #2 (1926); Cold Creek (September 7, 1936); 5,840-acre Las Flores #47 (October 26, 1942); 14,960-acre Woodland Hills #65 (November 6, 1943) with 150 homes destroyed in the burn area; 1,940-acre Hume (December 27, 1956); 17,860-acre Liberty (November 28, 1958); unnamed (October 14, 1961); unnamed (September 17, 1970); 28,201-acre Wright (September 25, 1970) with 403 homes destroyed in the burn area and ten fatalities; unnamed (July 23, 1972); unnamed (November 26, 1976); Las Virgenes (November 24, 1980); 43,090-acre Dayton (October 9, 1982) with 74 homes destroyed in the burn area; 5,197-acre Piuma (October 14, 1985); Tapia (November 13, 1992); Malibu (September 21, 1993); 18,000-acre Old Topanga (November 2, 1993) with 400 homes destroyed and three fatalities; Calabasas (October 21, 1996); Malibu (September 30, 1997); Malibu Creek (August 21, 1998); and Mulholland (September 7, 1999).[7,8]

[3] Rosi Dagit, Senior Conservation Biologist, Resource Conservation District of the Santa Monica Mountains, personal communication, March 17, 2010.

[4] Stunt Ranch, Santa Monica Mountains Reserve, http://nrs.ucop.edu/Stunt-Ranch-Santa-Monica.htm (accessed January 13, 2010).

[5] L. Michaelson (2007), "Cops come down hard on 'canyon carving'," *Topanga Messenger*.

[6] M. Picarella (February 23, 2006), "Canyons make attractive venue for racing, but residents upset," *The Acorn*.

[7] Robert S. Taylor, Biogeographer/Fire GIS Specialist, National Park Service, personal communication, February 12, 2010.

[8] Mike Davis (1998), "The Case for Letting Malibu Burn." In *Ecology of Fear* (New York: Henry Holt), pp. 93–147.

Structures in the Las Virgenes Canyon Corridor unit have a variable age-class. Older structures tend to be wooden. Newer structures generally are constructed of stucco, plaster, or masonry. An older residential trailer park is located in Las Virgenes Canyon. Most homes, regardless of age, have wooden decks and/or fences. Mature, lush, and tall ornamental vegetation is found around structures in most of this unit and predominates in the older areas. Utilities are aboveground. Several single-family homes are gated. Many structures in the outlying boundaries of the Las Virgenes Canyon Corridor are of contemporary design. However, most are not retrofitted to current California WUI Fire and Building Standards.[9]

Municipal water supply for the Las Virgenes Canyon Corridor unit is from Las Virgenes Municipal Water District.[10] Mandatory water conservation and enforcement measures were established in 2009. The district has one emergency 9,500-acre-foot back-up reservoir.[11]

Los Angeles County Fire Station #67 is near the intersection of Piuma and Cold Canyon roads in Monte Nido.

The Monte Nido community is currently organizing block captains to form a Fire Safe Council. The council is a committee within the Monte Nido Valley Community Association (MNVCA). A few residents attended fire-safe education meetings and launched an education and outreach effort through local public venues, the MNVCA, and local newsletters.[12,13]

The Stunt Vegetation Management Project area encompasses 83 acres and is a collaborative effort between National Park Service and Los Angeles County Fire.[14,15]

16.2. Las Virgenes Canyon Corridor Evacuations

Possible impediments to emergency ingress and egress include downed power lines, trees, traffic, and locked gates. Several venues in the Las Virgenes Canyon Corridor host large groups of people: Hindu Temple, Cottontail Ranch, Calmont School, King Gillette Ranch, Diamond X Ranch, Cold Creek/Stunt Ranch Preserve, Saddlepeak Lodge, the bed-and-breakfast, private ashram, and private treatment center. Most homes have large livestock and/or small domestic animals. There are a few equine facilities that board horses. The California Wildlife Center houses and rehabilitates scores of animals at any given time. A few spots have the potential to be considered as possible safe areas in this unit. King

[9] State of California, Building Standards Commission, www.bsc.ca.gov (accessed February 8, 2010).

[10] Las Virgenes Municipal Water District (2010), District Map [Data], www.lvmwd.com/Modules/ShowDocument.aspx?documentid=838.

[11] Las Virgenes Municipal Water District (2010), www.lvmwd.com.

[12] Joan Kay, Monte Nido Valley Community Association, personal communication, January–June 2010.

[13] Monte Nido Valley Community Association E-Newsletter (February, June, November 2009; February 2010).

[14] Los Angeles County Fire Department, Forestry Division (2010), Vegetation Management, Stunt Project, www.lacounty.gov/forestry/vegetation_management_projects.asp.

[15] Charlie Whitman, Prescribed Fire Technician, Santa Monica Mountains National Recreation Area, personal communication, May 2010.

Gillette, Diamond X ranches and grounds, and the many private tennis courts and swimming pools could be options. These factors should be taken into consideration when planning with local law enforcement and fire authorities.

16.3. Las Virgenes Canyon Corridor Community Meeting Summary

The Las Virgenes Canyon Corridor meeting was held at Diamond X Ranch on October 26, 2009. Nine residents and one property manager attended.

The following assets at risk were identified at the community meeting. These can be seen on Map II.16-1 at the end of this document.

FIGURE II.16-1. COMMUNITY-IDENTIFIED ASSETS AT RISK

- Cold Creek Preserve (Stunt Ranch)
- Dry Creek
- Hindu temple
- King Gillette Ranch
- Malibu Creek
- Parklands
- Cottontail Ranch
- Diamond X Ranch
- Historical structures
- Little Dry Creek
- Mountains Recreation and Conservation Authority fire station
- California Wildlife Center

16.3.1. Community-Identified Potential Projects

The following items are community-identified projects from the community meeting. Residents were encouraged to "think big," and not be concerned about project cost or property ownership for the project brainstorming process. Following the brainstorming, residents prioritized projects based on which were most realistic and most important. These projects can be located on Map II.16-1 at the end of this document.

FIGURE II.16-2. LAS VIRGENES CANYON CORRIDOR COMMUNITY-IDENTIFIED PROJECTS

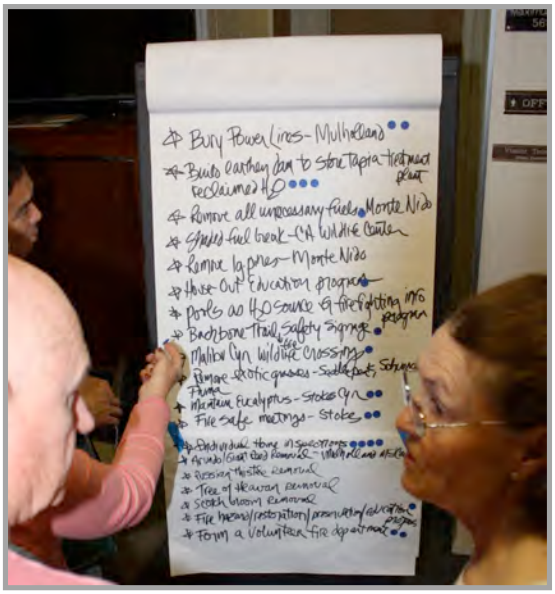
IDENTIFIED ITEM DESCRIPTION	PROPOSED PROJECT CATEGORY	PRIORITY RANK
Remove exotic grasses on Saddlepeak and Piuma	Fuel Reduction	1
Individual home inspections	Risk Assessment	1
Fire safe meetings – Stokes	Emergency Preparedness	2
Form a volunteer fire department	Fire Protection	2
Maintain eucalyptus in canyon	Fuel Reduction	2
Build earthen dam to store Tapia treatment plant effluent	Risk Reduction	2
Bury power lines on Mulholland Highway	Risk Reduction	2
Pools as water source for fire fighting	Water	2
Education Program: "House Out" with home ignition zone resource list	Education	
Fire hazard/restoration/preservation/education projects	Education	
Fire safety signage along Backbone Trail	Fire Protection / Equipment	
Arundo (giant reed) removal – Mulholland and McKain Road	Fuel Reduction	
Scotch broom removal	Fuel Reduction	
Tree-of-heaven removal	Fuel Reduction	

IDENTIFIED ITEM DESCRIPTION	PROPOSED PROJECT CATEGORY	PRIORITY RANK
Neighborhood fire safe meeting	Emergency Preparedness	
Escape route needs to be maintained	Evacuation / Fire Protection	
Removal of all unnecessary fuels in Monte Nido	Fuel Reduction	
Removal of invasive pampas and fountain grass on Saddlepeak Road	Fuel Reduction	
Removal of large pine trees in Monte Nido	Fuel Reduction	
Russian thistle removal	Fuel Reduction	
Shaded fuelbreak around wildlife center	Fuel Reduction	
Malibu Canyon wildfire crossings and other areas (from US 101 freeway southward)	Fuel Reduction / Policy	
Subterranean power lines	Risk Reduction	
Water storage of Tapia plant reclaimed water	Water	

16.4. Las Virgenes Canyon Corridor Action Plan

The following initial projects are the community priorities for action for the Las Virgenes Canyon Corridor Planning Unit.

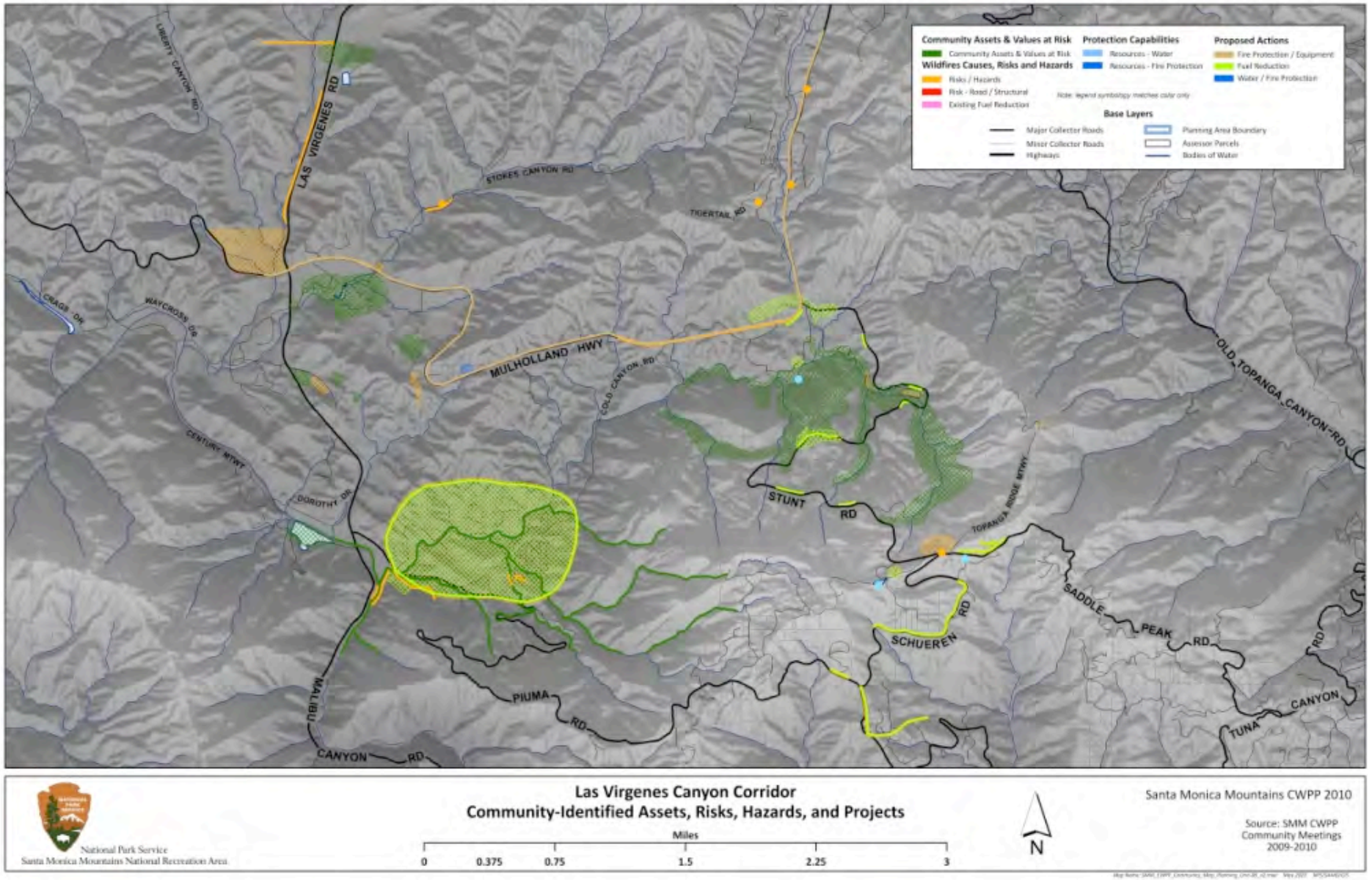
- Form a local Fire Safe Council (FSC), as is being discussed in Monte Nido, and/or join with nearby FSCs. This organizational structure will facilitate community preparedness for wildfire throughout the local communities. Work with the California Fire Safe Council to create a FSC that will best accommodate and enable this area.
- Implement a hazard tree removal/thinning program starting in Monte Nido through a FSC, homeowner's association (HOA), or other community organization, and in priority order: (Note: This would NOT include native oak trees.)
    - Along main evacuation routes, including Mulholland Highway, Malibu Canyon, Saddlepeak, Piuma, Cold Canyon, and Dry Canyon roads.
    - Along the spur roads to these main evacuation roads.
    - Near homes, with a focus on trees that threaten more than one home, especially in the Monte Nido area, and those areas identified on the community meeting map (Map II.16-1 at the end of this document).
    - Trees in or near power lines.
- Residents reduce urban fuels in the home ignition zone based on the Conservation Principles and Best Management Practices outlined in Chapters 1, 4, and 5 of this CWPP. Fuels maintenance should be a routine and ongoing practice for all homes and landscapes in the Santa Monica Mountains. This includes ensuring that structures are resistant to heat and embers, maintaining all vegetation "from the house out," and removing anything in this zone that might ignite and spread



fire.

- Work with state and federal land management agencies and private landholders through a FSC, HOA, or other community organization to remove exotic grasses and other invasive species, especially along Saddlepeak and Piuma roads.
- Work through a new FSC, existing HOA, or other community organization to begin a local community education and preparedness campaign. Include community education on pool pumps, generators, and home fire-preparedness equipment. This can be done in cooperation with other area FSCs and/or the Los Angeles County Fire Department and the National Park Service.
- Ensure that at least one team from each homeowner's association or neighborhood undergoes Community Emergency Response Team (CERT) training. This is the venue to begin organizing locally for evacuation planning, in cooperation with local law enforcement and the fire department.
- Develop a neighborhood Arson Watch program. This could be integrated into the work of the Fire Safe Council. Work with state and federal land management agencies to help with Arson Watch in local parks during Red Flag conditions.
- Explore community purchase and installation of wildland-urban interface (WUI) building products to upgrade homes to current WUI building standards. All residents upgrade homes to current California WUI Fire and Building Standards.
- Work with law enforcement and Los Angeles County Fire Department through a FSC, HOA, or other neighborhood-level association to develop a local evacuation plan. Efforts should be made to ensure that local gates are open or accessible during Red Flag conditions.

MAP II.16-1. LAS VIRGENES CANYON CORRIDOR: COMMUNITY-IDENTIFIED ASSETS, RISKS, HAZARDS, AND PROJECTS[16]



[16] This map prints best at 11x17. Visit to www.forevergreenforestry.com/smmcwpp_pub.html to download a print version.

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17. Cornell Community Fire Safety Action Plan

17.1. Cornell Description

This planning unit includes the Los Angeles County unincorporated neighborhoods of Lobo Canyon, Triunfo Canyon, Cornell, Careful, Seminole Hot Springs, Malibu Lakeside, Malibou Lake Mountain Club, and Wagon Road. The Cornell unit extends from Westlake city limits on the west to Los Angeles County Highway N1 (Malibu Canyon Road) on the east. This planning unit does not include Liberty Canyon and Lost Hills. The northern boundary is approximately one-half mile south of US 101 (Ventura Freeway). The southern boundary is Castro Ridge and the southern property line of Malibu Creek State Park. The planning unit is 21.3 square miles in area.

Assets at risk in the built environment include less than 500 single-family homes, ranches, and estates, numerous small residential and large commercial equine facilities, Los Angeles County Fire Station #65, three constructed lakes (Enchanto, Malibou, and Seminole), two national park facilities (Paramount and Peter Strauss ranches), state parks (Malibu Creek and Tapia), several historic buildings, several eateries, at least three commercial vineyards and wineries, several private vineyards, two day camps, defunct motor raceway track (Paramount Ranch), wine tasting room, western movie set (Western Town–Paramount Ranch), Santa Monica Mountains Resource Conservation District offices, wastewater treatment and reclamation plant (Tapia), water quality laboratory (Tapia), sludge-composting facility (Tapia), probation camp (Los Angeles County Camp David Gonzalez), roads maintenance facility (Los Angeles County Department of Public Works), electricity substation (Southern California Edison), private commercial trout fishing farm, private community resort club, two homeowner associations' community centers, two domestic animal rescue facilities, gas station, business and personal services, and auto repair shop. Malibu Junction is the business district located mostly east of Kanan Dume Road between Agoura Road and the Ventura Freeway.

Properties and homes vary in size. Careful, Malibou Lake Mountain Club, Malibu Lakeside, and Wagon Road are zoned single-family residential. Approximately two-thirds of the parcels at Malibou Lake Mountain Club are built. Parcels range from a fraction of an acre to more than 10 acres. Single-family home prices in the area currently start at $750,000 and go to $5.8 million. Mobile home prices begin at $160,000. Undeveloped parcels range from $17,000 to $897,000 per acre.[1]

17.1.1. Cornell Wildfire Environment

Development in the Cornell Planning Unit is surrounded by open space and high habitat values. The subdivisions of Wagon Road, Careful, Malibou Lake Mountain Club, Malibu Lakeside, and Seminole Hot Springs are clustered. The other neighborhoods are rural with a mix of paved and dirt drives; parcels are generally not adjacent to

[1] Loopnet.com, Agoura Hills land for sale, www.loopnet.com/California/Agoura-Hills_Land-For-Sale (accessed March 17, 2010).

immediate neighbors. Older neighborhoods of Malibu Lakeside, Malibou Lake Mountain Club, and Cornell are heavily wooded with tall, mature ornamental plants including pine trees and eucalyptus. The remainder of the Cornell Planning Unit is light agriculture.[2]

Passive recreational opportunities include walking, jogging, bicycling, mountain biking, bird watching, wildflower and wildlife viewing, horseback riding, dressage, fishing, painting, and sculpting. Developed and private types include dirt biking, motor biking, motor touring, boating, camping, picnicking, outdoor instruction, swimming, and tennis. The Cornell area is notorious for illegal sports car and motorcycle racing, also known as "canyon carving," on the relatively desolate, winding, and steep roads. A county program called "Operation Safe Canyons" was established in 2006 to post more speed-limit signs and coordinate a citation program. Law enforcement has increased patrols to curb this activity since 2007 to prevent accidents and fires.[3,4] Residences in Lobo and Triunfo canyons are on larger parcels. Almost all of the CWPP Planning Unit is situated within the California Coastal Zone as the area is a significant sub-watershed to Malibu Creek.[5]

The environment includes several Significant Ecological Areas and cultural resources sites. Attributes are: ephemeral Medea and Triunfo creeks, which serve as critical sub-watersheds to perennial Malibu Creek; oak woodlands, valley oak savannah, sycamore riparian corridors, native grasslands, pristine coastal sage scrub, rock outcrop, chaparral, and aquatic habitat, as well as other significant botanical areas. The Medea and Triunfo creeks sub-watersheds combined contribute 60% of the water to the Malibu Creek watershed. Enchanto, Malibou, and Seminole lakes are constructed dammed structures and are sustained by ephemeral surface and subsurface flows.[6] Many sensitive, threatened, or endangered plant and animal species are identified in this planning unit. The area provides important habitat and wildlife corridors. Most of the undeveloped lands are part of Environmentally Sensitive Habitat Areas.[7] Many significant cultural resource sites are located throughout the Cornell unit. Threats to the environment include development, vegetation clearance, grading activities, and populations of invasive species including fennel, alien grasses, peppergrass, giant reed, non-native thistles, tree-of-heaven, Spanish broom, yellow star thistle, crayfish, and Virginia opossum.[8]

Enchanto, Malibou, and Seminole lakes receive tons of silt from nearby and upstream vegetation clearing and grading activities. This problem is greatest in Malibou

[2] County of Los Angeles, Department of Regional Planning (2003), Santa Monica Mountains North Area Plan Zoning Map [Data].

[3] L. Michaelson (2007), "Cops come down hard on 'canyon carving'," *Topanga Messenger*.

[4] M. Picarella (February 23, 2006), "Canyons make attractive venue for racing, but residents upset," *The Acorn.*

[5] The California Coastal Zone extends 1,000 yards inland from the mean high tide line. In significant coastal estuarine habitat and recreational areas it extends inland to the first major ridgeline or 5 miles from the mean high tide line, whichever is less. In developed urban areas, the boundary is generally less than 1,000 yards.

[6] State of California, State Water Rights Board (1960), Malibu Lakeside Mutual Water Company – Decision approving application No. 985.

[7] California State Parks (2005), Malibu Creek State Park, General Plan, Final Environmental Impact Reports V.I.

[8] California State Parks (2005), Malibu Creek State Park, General Plan, Final Environmental Impact Reports V.I.

Lake.[9,10] Los Angeles County Board of Supervisors and the Department of Regional Planning designated Significant Ridgeline Areas and stringent grading regulations for these areas to ameliorate the problem.[11,12]

Ingress and egress is from Los Angeles County Highway N9 (Kanan Dume Road) near the eastern border of the unit, US Highway 101 (Ventura Freeway) to the north, and Los Angeles County Highway N1 (Malibu Canyon Road) to the east. Mulholland Highway bisects the unit. Lateral roads in the area are narrow, winding, and steep, with little shoulder and turn-around space except in developed subdivisions. Many streets in this unit are cul-de-sacs. Several bridges cross lakes and creeks. Some, such as those at Malibou Lake, are more than 50 years old. The County of Los Angeles recently upgraded a condemned 75-foot bridge at Malibou Lake. Three thousand pounds of asphalt on top of the bridge were removed to allow the structure to accommodate more vehicle weight. This bridge currently is designated for emergency vehicle use only.[13]

CAL FIRE designated the entire Santa Monica Mountains region as a Very High Fire Hazard Severity Zone, including this area. This determination by the state is based on factors such as fire weather, slope, and fuel loading, among others.

The Cornell unit has a history of many wildfires, with the number of incidents increasing over the last 20 years: Calabasas (1903); Montgomery Ranch (July 15, 1926); Agoura #2 (January 10, 1933); 14,960-acre Woodland Hills #65 (November 6, 1943) with 150 homes destroyed in the burn area; 28,201-acre Wright (September 25, 1970) with 403 homes destroyed in the burn area and ten fatalities; Park (October 14, 1975); unnamed (February 13, 1977); unnamed (July 27, 1977); unnamed (July 3, 1978); unnamed (September 3, 1978); unnamed (September 22, 1978); 43,090-acre Dayton (October 9, 1982) with 74 homes destroyed in the burn area; Mulholland (July 12, 1985); Park (October 14, 1985); A-Team (September 12, 1986); unnamed (October 1, 1986); Agoura (January 1, 1987); Mulholland (August 6, 1987); Lady Face (May 31, 1992); Tapia (November 13, 1992); Malibu (April 25, 1997); Morning (August 15, 1997); Malibu (September 30, 1997); Mulholland (May 22, 2002); Bulldog (July 7, 2003); Latigo (February 8, 2006); Rocky Oaks (January 17, 2007); Triunfo (May 9, 2007); Kanan (July 3, 2007); Creek (August 1, 2007); Triunfo (June 4, 2008); and Malibu (July 4, 2008).[14,15]

Structures in the Cornell Planning Unit have a variable age-class. Older structures tend to be wooden. Newer structures generally are constructed of stucco, plaster, or masonry. A large mobile home park is located at Seminole Hot Springs. Most homes, regardless of age, have wooden decks and/or fences. Mature, lush, and tall ornamental

[9] Robert McLaughlin, Malibou Lake Mountain Club, personal communication, 2004.

[10] US Environmental Protection Agency – Region 9 (March 2003), Total Maximum Daily Load (TMDL) for Nutrients – Malibu Creek Watershed.

[11] County of Los Angeles, Board of Supervisors (October 26, 2004), Meeting transcript.

[12] County of Los Angeles, Department of Regional Planning (2003), Santa Monica Mountains North Area Plan, Significant Ridgelines Map [Data].

[13] M. Picarella (August 12, 2004), "County says Malibou Lake emergency access problem is solved," *The Acorn.*

[14] Robert S. Taylor, Biogeographer/Fire GIS Specialist, National Park Service, personal communication, February 12, 2010.

[15] Mike Davis (1998), "The Case for Letting Malibu Burn." In *Ecology of Fear* (New York: Henry Holt), pp. 93–147.

vegetation is found around structures in most of this unit and predominates in the older areas. Several single-family homes throughout the unit are gated. Utilities are aboveground. Homes built in the last few years are those in the planning unit that are constructed to current California WUI Fire and Building Standards.[16]

Municipal water supply for the Cornell planning unit is from Las Virgenes Municipal Water District.[17] Mandatory water conservation and enforcement measures were established in 2009. The district has one emergency 9,500-acre-foot back-up reservoir.[18] Enchanto, Malibou, and Seminole lakes historically have been used to augment the domestic water supply during emergencies. Siltation poses threats to water-holding capacity and water quality of these lakes.[19,20]

Los Angeles County Fire Station #65 is located on Cornell Road in the Wagon Road neighborhood. Station #89 is located on Canwood Drive near the junction of Kanan Dume Road and the Ventura Freeway.

The Malibou Lake community is currently organizing a Fire Safe Council (FSC). A board is formed, a community survey designed, and records of historic fire-safe activities are being exchanged with former community leaders and the FSC board.[21,22] The Malibou Lake Emergency Response and Preparedness Program organizes and plans for various possible scenarios in the community.[23] Two vegetation management projects were conducted to date in the Cornell unit. A 450-acre vegetation management project was completed by California State Parks and Los Angeles County Fire Department at Malibu Creek State Park to enhance native plant populations and eliminate non-native species while creating increased fire protection for the park and City of Malibu.[24] Malibu Lakeside Homeowners Association collaborated with Los Angeles County Fire Department Forestry Division utilizing a federal grant managed by California Fire Safe Council to selectively remove mature eucalyptus and pine trees primarily from private properties in 2004.[25]

[16] State of California, Building Standards Commission, www.bsc.ca.gov (accessed February 8, 2010).

[17] Las Virgenes Municipal Water District (2010), District Map [Data], www.lvmwd.com/Modules/ShowDocument.aspx?documentid=838.

[18] Las Virgenes Municipal Water District (2010), www.lvmwd.com.

[19] Robert McLaughlin, Malibou Lake Mountain Club, personal communication, 2004.

[20] US Environmental Protection Agency – Region 9 (March 2003), Total Maximum Daily Load (TMDL) for Nutrients – Malibu Creek Watershed.

[21] Debbie Larson, Malibou Lake Fire Safe Council, personal communication, March 2010.

[22] Julie Ringwood, Malibou Lake Fire Safe Council, personal communication, March 2010.

[23] Malibou Lake Emergency Response and Preparedness Program (ML-ERPP), Operations Committee (2009), Draft Malibou Lake Citizen Volunteer Team Emergency Plan.

[24] Los Angeles County Fire Department, Forestry Division (2010), "Vegetation management projects," www.fire.lacounty.gov/forestry/vegetationmanagement_projects_asp.

[25] Murray Sumner, Past President, Malibu Lakeside Homeowners Association, personal communication, November 2009.

17.2. Cornell Evacuations

Possible impediments to emergency ingress and egress include downed power lines, trees, traffic, compromised bridges, and locked gates. Many streets in the unit are cul-de-sacs, narrow, and have little shoulder. Several venues in the Cornell Planning Unit host large groups: Malibu Creek State Park, Tapia Park, Paramount Ranch, Malibu Junction commercial and retail district, eateries and wine-tasting venues, Troutdale, horse ranches, Camp David Gonzales, Peter Strauss Ranch, Camp Keystone, Sunny Skies Day Camp, Malibou Lake Mountain Club, and Seminole Hot Springs community room. Many homes have large livestock and/or small domestic animals. There are many equine facilities that board or raise horses in the area. Two domestic animal rescue organizations are located here. Paramount Ranch's mowed open-space area along Cornell Road has the potential to be considered a safe area in this unit. The many private tennis courts and swimming pools might be options. These factors should be taken into consideration with local law enforcement and fire authorities when planning evacuations.

17.3. Cornell Community Meeting Summary

The Cornell community meeting was held at Diamond X Ranch on October 26, 2009. Eight residents and two non-residents attended.

The following assets at risk were identified at the community meeting. These can be located on Map II.17-1 at the end of this document.

FIGURE II.17-1. COMMUNITY-IDENTIFIED ASSETS AT RISK

- 210-foot new bridge across Triunfo Creek (to accommodate fire trucks)
- Beach/fishing at the dam
- Canyon Grill
- Commercial rock store/biker hangout
- Los Angeles County Fire Department Station #65
- Malibou Lake
- Malibou Lake Mountain Club Clubhouse
- National Park Service Fire Station Engine 73 and Engine 74
- Paramount Ranch
- Peter Strauss Ranch
- Public Works Yard
- Reagan Ranch
- Road / Caltrans maintenance yard
- Rocky Oaks
- Seminole Hot Springs Community Center
- The Old Place
- Troutdale Farm

17.3.1. Community-Identified Potential Projects

The following items are community-identified projects from the community meeting. Residents were encouraged to "think big," and not be concerned about project cost or property ownership for the project brainstorming process. Following the brainstorming, residents prioritized projects based on which were most realistic and most important. These projects can be located on Map II.17-1 at the end of this document.

FIGURE II.17-2. CORNELL COMMUNITY-IDENTIFIED PROJECTS

IDENTIFIED ITEM DESCRIPTION	PROPOSED PROJECT CATEGORY	PRIORITY RANK
Wildfire notification/communication program – "Real time" (like Twitter) with radio and/or phone tree	Emergency Preparedness	1
Cooperative fuel-reduction project where private/public land meet at Malibou Lake	Fuel Reduction	1
Map book for incoming fire resources	Fire Protection	
Upgrade vents program as incentive/grant	Hardening Homes	
Appoint a State Park liaison assigned to community –Malibou Lake and Lakeside	Policy	
Disaster program response guide (all emergencies)	Education / Preparedness	
Relocate recreational vehicle camping proposed for Reagan Ranch by involving state decision makers	Risk Reduction	
Coordinate and create safe areas within community	Evacuation	
Malibou Lake/Lakeside, Lobo, Mulholland Corridor, Triunfo, Cornell, Seminole Hot Springs Fire Safe Council created/expanded	Fire Safe Council	
Eucalyptus and Arundo (giant reed) eradication program	Fuel Reduction	
Fuel reduction, North Malibou Lake/Lakeside	Fuel Reduction	
Increased law presence at party spot #17	Risk Reduction	

17.4. Cornell Action Plan

The following projects are the initial priorities for community action for the Cornell Planning Unit.

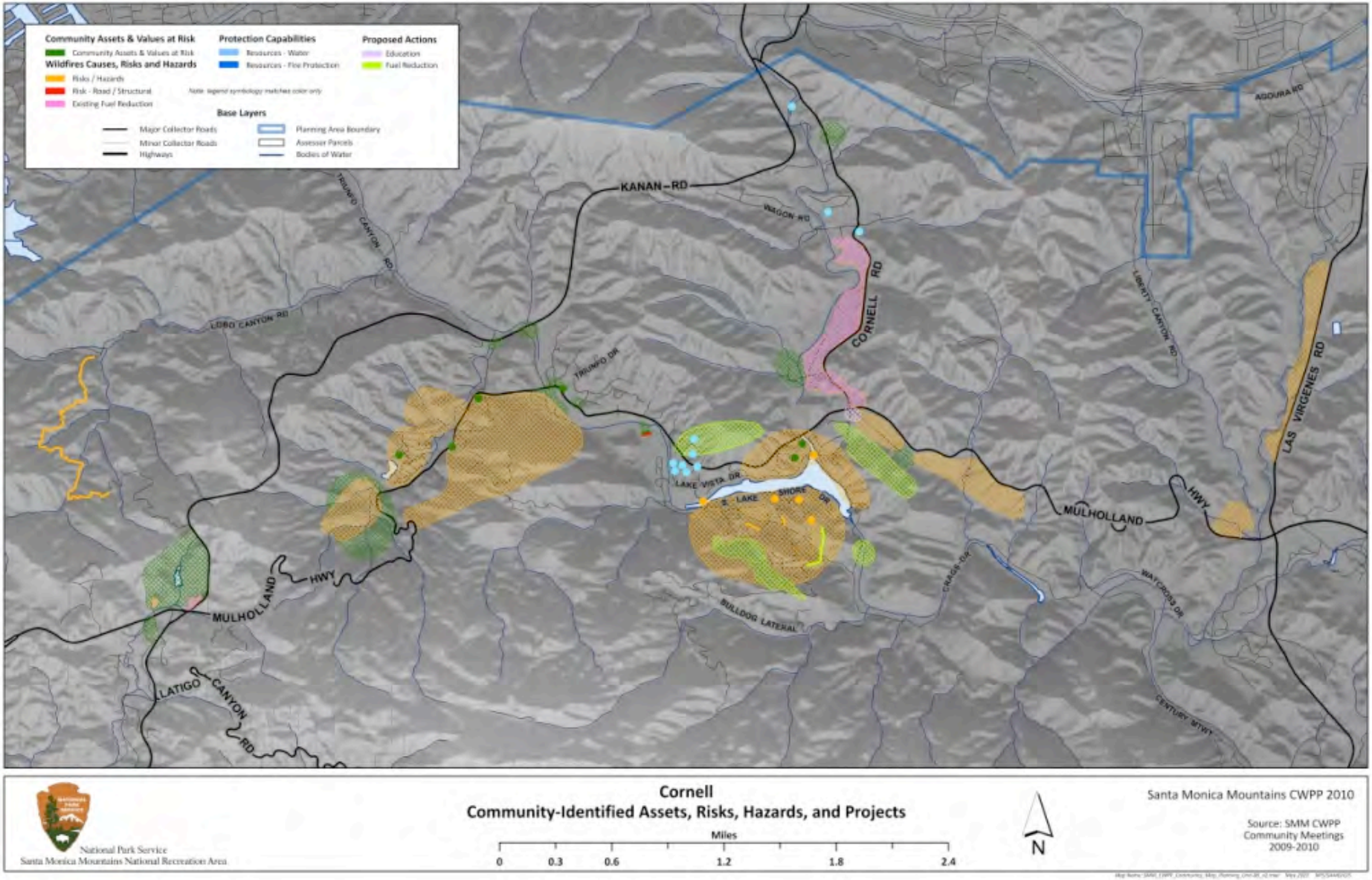
- Support efforts to form a local FSC in the Malibou Lake area, and explore options for neighboring areas. This organizational structure will facilitate community preparedness for wildfire throughout the local communities. Work with the California Fire Safe Council to create a FSC that will best accommodate and enable this area.
- Implement a hazard tree removal/thinning program through a Fire Safe Council (FSC), homeowner's association (HOA), or other community organization starting in the Malibou Lake area in priority order:
    - Along the spur roads to main evacuation roads, including Lake Vista, Lakeshore, and Crags drives, Triunfo Canyon Road, and Troutdale.
    - Near homes, especially trees that threaten more than one home, starting in the Malibou Lake and Seminole Springs areas.
    - In the interface between public and private lands, and including removal of invasive species.
    - Trees in or near power lines.
- Work through FSC and HOAs to educate residents on the need to keep ingress and egress/evacuation routes clear. Residents need to understand the dangers involved in imprudent parking or long-term street storage of unused vehicles. Because natural disasters can strike at any time, key evacuation ingress/egress routes must be kept free of parked vehicles, especially trailers and other large objects that are difficult to move quickly. Trash cans and other items should be kept off the roadway and out of key turnout/passing areas.[26] A

[26] The law in Los Angeles County states that trash cans can only be on the street after 5 pm of the day preceding, and until 8 pm on the day of waste collection.

neighborhood-organizing project would include creating off-street parking where it is limited. Neighbors can work together to help each other stay in compliance.

- Ensure that at least one team from each homeowner's association or neighborhood undergoes Community Emergency Response Team training (CERT). This is the venue to begin organizing locally for evacuation planning, including local emergency communication (e.g. Twitter and other social networking options, as well as local phone trees), in cooperation with local law enforcement and the fire department.
- Develop a neighborhood Arson Watch program. This could be integrated into the work of the Fire Safe Council. Work with public land management agencies to help with Arson Watch in local parks and other public lands during Red Flag weather. This could also be the vehicle to develop an open and effective communication link between State Parks and other public land management agencies and local residents.
- Residents reduce urban fuels in the home ignition zone based on the Conservation Principles and Best Management Practices outlined in Chapters 1, 4, and 5 of this CWPP. Fuels maintenance should be a routine and ongoing practice for all homes and landscapes in the Santa Monica Mountains. This includes ensuring that structures are resistant to heat and embers, maintaining all vegetation "from the house out," and removing anything in this zone that might ignite and spread fire.
- Work through the new FSC or existing HOA or other community organization to begin a local community education and preparedness campaign. Include community education on pool pumps, generators, and home fire-preparedness equipment. This can be done in cooperation with other area FSCs and/or the Los Angeles County Fire Department and the National Park Service.
- Explore community purchase and installation of wildland-urban interface (WUI) building products to upgrade homes to current WUI building standards. All residents upgrade homes to current California WUI Fire and Building Standards.
- Work with law enforcement and Los Angeles County Fire Department through the FSC, HOA and/or other neighborhood-level organization to develop a local evacuation plan. Efforts should be made to ensure that local gates are open or accessible during Red Flag conditions.

MAP II.17-1. CORNELL: COMMUNITY-IDENTIFIED ASSETS, RISKS, HAZARDS, AND PROJECTS[27]



[27] This map prints best at 11x17. Visit to www.forevergreenforestry.com/smmcwpp_pub.html to download a print version.

18. Liberty Canyon – Lost Hills Community Fire Safety Action Plan

18.1. Liberty Canyon – Lost Hills Description

This planning unit includes the neighborhoods of Lost Hills, Brents Junction, and the unincorporated part of Liberty Canyon. Lost Hills and Brents Junction are in the City of Calabasas. The Liberty Canyon–Lost Hills unit extends from the eastern unincorporated side of Liberty Canyon to and including the open space areas east of Los Angeles County Hwy N1 (Las Virgenes Road). The northern boundary is US Hwy 101 (Ventura Freeway). The southern boundary is due north of Mulholland Highway. The planning unit is 5.6 square miles in area.

Assets at risk in the built environment include less than 400 single-family homes, townhouses, condominiums, and apartments. Also in the unit are national park, state conservancy, and other conservation group inholdings, state park properties (Malibu Creek and Liberty Canyon Natural Preserve), water district offices (Las Virgenes Municipal), a sludge composting and distribution facility and spreading grounds (Rancho Las Virgenes Community Composting), Los Angeles County Sheriff (Malibu/Lost Hills substation), city park (Juan Bautista De Anza–City of Calabasas), community center (Agoura Hills/Calabasas), school district offices (Las Virgenes), middle school (A.E. Wright), County Supervisor district offices (Zev Yaroslavsky), veterinary hospital, grocer, two gas stations, several eateries, and commercial, business, and retail enterprises. A new shopping center is being constructed at the northeast corner of the intersection of Las Virgenes Road and Lost Hills Road.[1] All homes in the Liberty Canyon–Lost Hills unit are in subdivisions. Single-family home prices in the area currently start at $550,000 and go up to $800,000. Condominium and townhouse prices range from $230,000 to $430,000.[2]

18.1.1. Liberty Canyon – Lost Hills Wildfire Environment

Development in the Liberty Canyon–Lost Hills unit is surrounded by open space and high habitat values. All subdivisions are densely designed with multiple units per acre.[3,4] Brents Junction was the first neighborhood in the unit to be developed in the 1920s as a highway stop.[5] The commercial area is expanded and modernized. Brents Junction abuts open space and has sparse ornamental vegetation. Liberty Canyon was the first residential area to be

[1] Las Virgenes Homeowners Federation (2010), "New development," February 2010 Meeting.

[2] First Team Real Estate, Valley homes now, www.valleyhomesnow.com (accessed March 9, 2010).

[3] City of Agoura Hills (2010), *Final General Plan,* 2035 Environmental Impact Report, Volume 1–Part 1.

[4] City of Calabasas (May 2009), Draft zoning map [Data].

[5] California State University Northridge (2008), "Brents Junction." In *Oviatt Library Digital Collection.*

developed in the unit. It is lushly landscaped and has many tall trees. Homes date to the 1970s.[6] Lost Hills was the most recent area to be subdivided and developed. The environment includes several important ecological attributes: oak woodland, oak savannah, native grasslands, pristine coastal sage scrub, as well as associated sensitive species. The most significant environmental aspect/resource of this planning unit is its designation as the primary habitat and corridor linkage between the Santa Monica Mountains and the Santa Susana Mountains (*aka* Simi Hills). Ventura Freeway undercrossings are key likely-use areas for populations of bobcat, coyote, mountain lion, gray fox, and badger. Threats to the environment include development, vegetation clearance, grading activities, and populations of invasive species.

Passive recreational opportunities include walking, hiking, jogging, bicycling, mountain biking, bird watching, and wildflower and wildlife viewing. Developed and private types include swimming, court sports, and exercise classes.

Ingress and egress is from US Highway 101 (Ventura Freeway) to the north, and Los Angeles County Highway N1 (Malibu Canyon Road) to the east, and Agoura Road to the west. Lateral arteries include Liberty Canyon and Lost Hills roads. Streets are well-maintained with modern improvements such as shoulders, parking, curbs, and lights.

CAL FIRE designated the entire Santa Monica Mountains region as a Very High Fire Hazard Severity Zone, including this area. This determination by the state is based on factors such as fire weather, slope, and fuel loading, among others.

The Liberty Canyon–Lost Hills Planning Unit has a history of many wildfires: Agoura #2 (January 10, 1933); unnamed (August 18, 1955); 18,000-acre Liberty (November 28, 1958) with more than 100 homes destroyed in the burn area; 28,201-acre Wright (September 25, 1970) with 403 homes destroyed in the burn area and ten fatalities; Liberty Canyon (July 21, 1979); Las Virgenes (November 24, 1980); Gun (May 30, 1984); Mulholland (July 12, 1985); Freeway (September 23, 1994); Calabasas (October 21, 1996) caused by arcing power lines at the intersection of Las Virgenes Road and US 101; Lost Hills (August 6, 1997); Agoura (March 28, 2003); Abrams (August 8, 2003); Las Virgenes (November 3, 2007); and Lost (July 26, 2008).[7,8]

Structures in the Liberty Canyon–Lost Hills unit are predominantly built of stucco, plaster, or masonry. Age class ranges from the 1970s to present. Most homes, regardless of age, have wooden decks and/or fences. Mature, lush, and tall ornamental vegetation—including unmaintained palm trees—is found around structures in Liberty Canyon. A couple of subdivisions in the unit (single-family homes) are gated. Utilities in Liberty Canyon are aboveground. Most homes are not retrofitted to current California WUI Fire and Building Standards.[9]

[6] E.A. Cheadle (April 25, 2005), "Notice of preparation comments for proposed Liberty Canyon 23-unit residential subdivision (Tentative Tract Map No. 52909)," correspondence from Santa Monica Mountains Conservancy to C. Tran, Los Angeles County Department of Regional Planning, Impact Analysis Section.

[7] Robert S. Taylor, Biogeographer/Fire GIS Specialist, National Park Service, personal communication, February 12, 2010.

[8] Mike Davis (1998), "The Case for Letting Malibu Burn." In *Ecology of Fear* (New York: Henry Holt), pp. 93–147.

Municipal water supply for the Liberty Canyon–Lost Hills Planning Unit is from Las Virgenes Municipal Water District.[10] Mandatory water conservation and enforcement measures were established in 2009. The district has one emergency 9,500-acre-foot back-up reservoir.[11]

Los Angeles County Fire Station #125 is located on Las Virgenes Road.

Liberty Canyon is a module of the Agoura Hills Community Emergency Response Team (CERT). Members recently received radios and training. They are expanding the group and beginning a community education and outreach program.[12]

18.2. Liberty Canyon – Lost Hills Evacuations

Possible impediments to emergency ingress and egress include downed power lines in Liberty Canyon and along Las Virgenes Road, fallen trees, traffic, and locked gates. Liberty Canyon is one-way in and out. Several venues in the Liberty Canyon–Lost Hills unit host large groups of people: Brents Junction businesses, the Agoura Hills/Calabasas Community Center, and Juan Bautista De Anza Park. The area is densely populated and heavily used. Most homes have small domestic animals. The community center or De Anza Park might serve as evacuation sites. Local law enforcement and fire departments should investigate feasibility of use for these areas prior to any designation.

18.3. Liberty Canyon – Lost Hills Community Meeting Summary

The Liberty Canyon–Lost Hills community meeting was held at the offices of Los Angeles County Supervisor Zev Yaroslavsky on January 13, 2010. Fifteen residents and three non-residents attended.

The following assets at risk were identified at the community meeting. These can be located on Map II.18-1 at the end of this document.

FIGURE II.18-1. COMMUNITY-IDENTIFIED ASSETS AT RISK

- Arthur E. Wright Middle School
- Agoura Hills / Calabasas Community Center
- Church in the Canyon
- Juan Bautista De Anza Park (City of Calabasas)
- Los Angeles County Malibu/Lost Hills Sheriff's Substation
- Supervisor Zev Yaroslavsky, Calabasas Field Office
- Las Virgenes Municipal Water District compost facility
- Las Virgenes Municipal Water District offices

[9] State of California, Building Standards Commission, www.bsc.ca.gov (accessed February 8, 2010).

[10] Las Virgenes Municipal Water District (2010), District Map [Data], www.lvmwd.com/Modules/ShowDocument.aspx?documentid=838.

[11] Las Virgenes Municipal Water District (2010), www.lvmwd.com.

[12] Pamela Rowe, Liberty Canyon Module, Agoura Hills CERT, personal communication, January 13, 2010.

18.3.1. Community-Identified Potential Projects

The following items are community-identified projects from the community meeting. Residents were encouraged to "think big," and not be concerned about project cost or property ownership for the project brainstorming process. Following the brainstorming, residents prioritized projects based on which were most realistic and most important. These projects can be located on Map II.18-1 at the end of this document.

FIGURE II.18-2. LIBERTY CANYON–LOST HILLS COMMUNITY-IDENTIFIED PROJECTS

IDENTIFIED ITEM DESCRIPTION	PROPOSED PROJECT CATEGORY	PRIORITY RANK
Fuel-reduction buffer that meets regulations and Best Management Practices between open space and community	Fuel Reduction	1
Hazardous tree removal/thinning program	Fuel Reduction	2
County policy to eliminate hazard trees and prevent new ones from being planted	Fuel Reduction / Policy	2
Community home-hardening program	Hardening Homes	2
Fire prevention planning with Agoura Hills and Calabasas local governments	Policy	3
Community evacuation plan and program for elderly and pets	Evacuation	
"Reverse 911" (mass notification) system to include cell phones	Policy	
Community fire and defensible-space education program	Education	
Phone tree and local CERT program	Emergency Preparedness	
Biomass program for hazard fuels	Fuel Reduction	
Hazardous tree removal project north of Providence Road	Fuel Reduction	
Program to eliminate wood shake roofs	Policy	

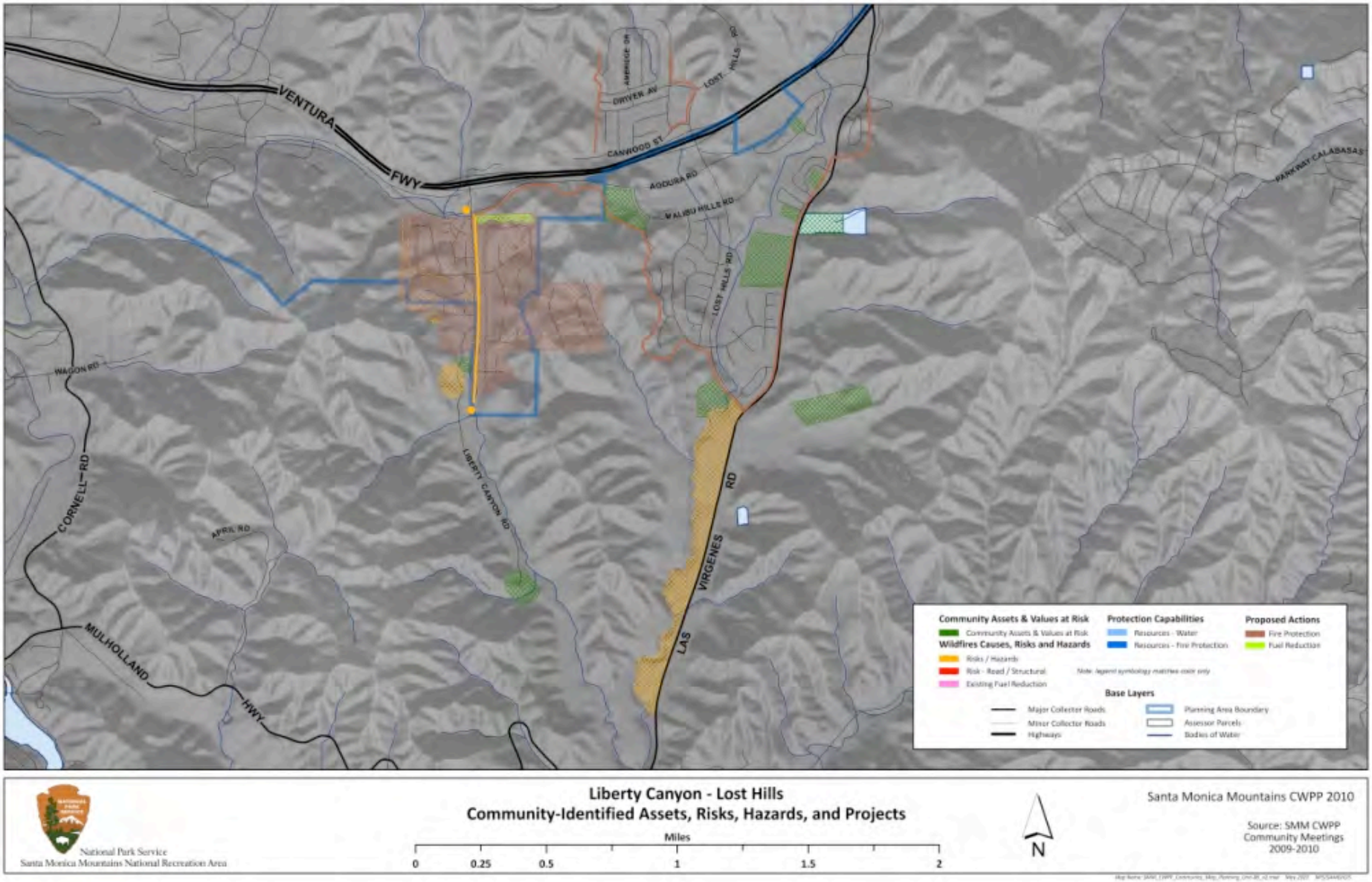
18.4. Liberty Canyon – Lost Hills Action Plan

The following projects are the initial priorities for community action for the Liberty Canyon–Lost Hills Planning Unit.

- Form a local FSC or join with nearby FSCs. This organizational structure will facilitate community preparedness for wildfire. Work with the California Fire Safe Council to create a FSC that will best accommodate and enable this area.
- Work through a new Fire Safe Council (FSC), existing homeowner's association (HOA), or other community organization to begin a local community education and preparedness campaign. Include topics about pool pumps, generators, and home fire-preparedness equipment. This can be done in cooperation with other area FSCs and/or the City of Calabasas, Los Angeles County Fire Department, and the National Park Service.
- FSCs, HOAs, or other neighborhood-level associations collaborate with law enforcement and Los Angeles County Fire to develop local evacuation plans, especially for Liberty Canyon. Efforts should be made to ensure that local gates are open or accessible during Red Flag conditions.
- Residents reduce urban fuels in the home ignition zone based on the Conservation Principles and Best Management Practices outlined in Chapters 1, 4, and 5 of this CWPP. Fuels maintenance should be a routine and ongoing practice for all homes and landscapes in the Santa Monica Mountains. This includes ensuring that structures are resistant to heat and embers, maintaining all vegetation "from the house out," and removing anything in this zone that might ignite and spread fire.

- Implement a hazard tree removal/thinning program through a FSC or homeowner's association (or other community organization):
    - Near homes, especially trees that threaten more than one home, starting in the areas around Provident Road, Defender Drive, and Country Glen Road,
    - For trees in or near power lines, especially on Liberty Canyon Road,
    - In the buffer between open space and residential areas.
- Ensure that at least one team from each HOA or neighborhood undergoes local Community Emergency Response Team (CERT) training. This is the avenue to begin organizing locally for evacuation planning, in cooperation with local law enforcement and the fire department.
- Develop a neighborhood Arson Watch program. This could be integrated into the work of the Fire Safe Council. Work with the agency partners to help with Arson Watch in the area parks and open spaces during Red Flag weather.
- Explore community purchase and installation of wildland-urban interface (WUI) building products to upgrade homes to current WUI building standards. All residents upgrade homes to current California WUI Fire and Building Standards.

MAP II.18-1. LIBERTY CANYON–LOST HILLS: COMMUNITY-IDENTIFIED ASSETS, RISKS, HAZARDS, AND PROJECTS[13]



[13] This map prints best at 11x17. Visit to www.forevergreenforestry.com/smmcwpp_pub.html to download a print version.

19. Calabasas Interface Community Fire Safety Action Plan[1]

19.1. Calabasas Interface Description

This planning unit includes the wildland-urban interface neighborhoods of the incorporated City of Calabasas. The Calabasas Interface unit extends from east of Los Angeles County Highway N1 (Las Virgenes Canyon/Malibu Canyon Road) to the eastern city boundary near Mulholland Drive and Mulholland Highway. The northern boundary is the Ventura Freeway (101). The southern boundary is the City of Calabasas boundary near Mulholland Highway. The Calabasas Interface Planning Unit is 7.1 square miles in area. The Calabasas communities of Las Virgenes Road and Brents Junction are included in Planning Unit 18, not this unit.

Assets at risk in the built environment include more than 3,000 single-family homes, townhouses, condominiums, apartments, and mobile homes. Also in the unit are state conservancy lands, Los Angeles County Fire Station #68, a grocer, landscaping plant nursery, gas station, Jewish community center, private land trust offices, natural lands interpretive center, golf course and country club, two preschools, four elementary schools, a middle school, high school, private K–12 school, municipal library, mobile home park, an organic farm, a retirement compound, private mental health treatment center, residential facility for Alzheimer's patients, tennis and swim center, children's learning center, recreation center, several historic buildings, artificial lakes, three automobile dealerships, several eateries, two shopping centers, and several commercial, business, or personal services enterprises.

Single-family home prices in the area currently start at $448,000 and go up to $12.5 million. Condominium and townhouse prices range from $199,000 to $950,000. Mobile homes run $35,000 to $325,000. Undeveloped land price ranges from $520,000 to $1.7 million per acre.[2]

19.1.1. Calabasas Interface Wildfire Environment

Development in the Calabasas Interface unit is surrounded by open space and high habitat values in the southern, western, and riparian areas. The built environment is highly disturbed and vegetated with *ruderal* (among the first plant species to colonize disturbed areas), invasive, non-native, and ornamental species. All subdivisions are densely designed with multiple units per acre.[3] The oldest subdivisions in the unit, Calabasas Highlands and Calabasas Village Mobile Estates, are located in the Mulholland Corridor. These two areas have dense, mature, ornamental vegetation. Newer subdivisions generally are landscaped with neo-tropical plants such as palms and bougainvillea. The development and landscaping of Calabasas is compact, with interspersed pocket parks and open space. City Ordinance D was passed in 2005 to save and protect remaining open space. It specifies that any change in zoning from open space requires a two-thirds concurrence of voters.[4] The environment includes several important ecological

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[1] This document was written by Julie Clark De Blasio, Principal of Sweetgrass Environmental Consulting, in conjunction with ForEverGreen Forestry.

[2] Rodeo Realty, The Zabner Group, "Calabasas real estate," www.calabasas-real-estate.com (accessed March 10, 2010).

[3] City of Calabasas (August 30, 2006), Zoning Map.

[4] League of Women Voters, Education Fund (2006), Measure D, In "Directory of Los Angeles County, California measures," www.smartvoter.org/2005/CA/LA/meas.

attributes: live oak woodland, valley oak savannah, remnant California walnut woodland, southern willow scrub, riparian and wetlands habitat, pristine coastal sage scrub, and several sensitive plant, animal, and invertebrate species.[5]

Passive recreational opportunities include walking, hiking, jogging, bicycling, mountain biking, bird watching, and wildflower/wildlife viewing. Developed and private types include swimming, golf, court sports, and exercise classes.

Ingress and egress is from US Highway 101 (Ventura Freeway) to the north, and Los Angeles County Highway N1 (Malibu Canyon Road) to the west. Valley Circle Drive is to the east. Mulholland Highway is south. Streets are well-maintained with modern improvements such as shoulders, parking, curbs, lights, and some sidewalks.

CAL FIRE designated the entire Santa Monica Mountains region as a Very High Fire Hazard Severity Zone, including this area.

The Calabasas Interface Planning Unit has a history of wildfires: Calabasas (1903); Cooper #1 (October 1, 1927); 15,000-acre Woodland Hills #65 (November 6, 1943) with 150 homes destroyed in the burn area; McCoy #36 (July 15, 1944); unnamed (August 1, 1955); unnamed (July 10, 1958); 18,000-acre Liberty (November 28, 1958) with more than 100 homes destroyed in the burn area; Junction (October 28, 1967); 28,201-acre Wright (September 25, 1970) with 403 homes destroyed in the burn area and ten fatalities; Golf Course (September 27, 1970); unnamed (July 2, 1977); Highlands (September 7, 1982); 43,090-acre Dayton (October 9, 1982) with 74 homes destroyed in the burn area; Gun (May 30, 1984); unnamed (June 25, 1990); 17,000-acre Old Topanga (November 2, 1993) with 400 homes destroyed and three fatalities in the burn area; Calabasas (October 21, 1996); 101 (March 28, 2003); and Norman (November 18, 2003).[6,7]

Structures in the Calabasas Interface Planning Unit are predominantly built of stucco, plaster, or masonry. Age class ranges from the 1970s to the present and includes some historic structures. More than 20 subdivisions in the planning unit are gated. Utilities in the Mulholland Corridor are aboveground. Most homes built since 2000 were constructed with current California WUI Fire and Building Standards.[8]

Water supply for the Calabasas Interface Planning Unit is from Las Virgenes Municipal Water District (LVMWD).[9] Mandatory water conservation and enforcement measures were established in 2009. The district has one emergency 9,500-acre-foot back-up reservoir.[10]

Los Angeles County Fire Station #68 is located on Calabasas Road and Parkway Calabasas.

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[5] Sapphos Environmental, Inc. (2000), Survey of biological resources–Motion Picture and Television Country Home project.

[6] Robert S. Taylor, Biogeographer/Fire GIS Specialist, National Park Service, personal communication, February 12, 2010.

[7] Mike Davis (1998), "The Case for Letting Malibu Burn," In *Ecology of Fear* (New York: Henry Holt), pp. 93–147.

[8] State of California, Building Standards Commission, www.bsc.ca.gov (accessed February 8, 2010).

[9] Las Virgenes Municipal Water District (2010), District Map [Data], www.lvmwd.com/Modules/ShowDocument.aspx?documentid=838.

[10] Las Virgenes Municipal Water District (2010), www.lvmwd.com.

Calabasas offers a city-sponsored Community Emergency Response Program (CERP). It is volunteer-driven and has participants who represent both the residential and business communities. Roles of those involved include emergency preparedness, education and outreach, block captain assignments, damage assessment following emergency events, and collaboration with the city. CERP communications include hand radio, internet, and Calabasas television and radio programs.[11]

The city of Calabasas adopted stringent building standards in 2008 that amended the city code for siting homes, outbuildings, and appurtenances to include types of allowed construction materials for decks, floors, underfloors, walls, eaves, roofs, tanks, and water delivery systems. This ordinance is designed to "harden" structures to survive wildfire events.[12] Guidelines were published in 2010 that advise keeping all ornamental vegetation away from roofs, installing chimney screens, and preparing household evacuation plans.[13]

Calabasas adopted a resolution in 2006 to support and help create a solid-waste conversion technology facility at the local landfill.[14,15] This project will eventually utilize *biomass* such as green waste, landscaping materials, and wood as usable energy for the community.

19.2. Calabasas Interface Evacuations

Possible impediments to emergency ingress and egress include downed power lines in the Mulholland Corridor, fallen trees, traffic, and locked gates. There are many cul-de-sacs in the area. Several venues in the Calabasas Interface Planning Unit host large groups of people and include retail and commercial businesses, recreational facilities and parks, schools, municipal buildings, and two senior care facilities/communities. The area is densely populated. Some of the many community facilities, parks, and schools may be appropriate evacuation sites. These factors should be taken into consideration with local law enforcement and fire authorities when planning.

19.3. Calabasas Interface Community Meeting Summary

The Calabasas Interface community meeting was held at Diamond X Ranch on January 14, 2010. Two residents and seven non-residents attended.

The following assets at risk were identified at the community meeting. These can be located on Map II.19-1 at the end of this document.

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[11] City of Calabasas (2010), Community Emergency Response Program, www.cityofcalabasas.com/departments/cerp.html.

[12] City of Calabasas (2008), Ordinance 2008-246, www.cityofcalabasas.com/pdf/agendas/council/2008/052108/item2-attachment-a.pdf.

[13] City of Calabasas (2010), "Wildfire," www.cityofcalabasas.com/emergency/wildfire.html.

[14] City of Calabasas (January 11, 2006), "Minutes of a regular meeting of the city council of the city of Calabasas," California, www.cityofcalabasas.com/pdf/agendas/council/2006/020106/item1.pdf.

[15] City of Calabasas, 2006, Resolution No. 2006-997: "A resolution of the City Council of the City of Calabasas, California supporting the solid waste conversion technology and requesting a facility at the Calabasas landfill," www.cityofcalabasas.com/pdf/agendas/council/2006/011606/item12-revised.pdf.

FIGURE II.19-1. COMMUNITY-IDENTIFIED ASSETS AT RISK

- Alice C. Stelle Middle School
- Bay Laurel School
- Leones Adobe
- Calabasas City Hall
- Calabasas High School
- Chaparral Elementary School
- Commons Shopping Center
- Gelsons Village Market Center
- Los Angeles County Fire Department Station #68
- Montessori School
- Motion Picture Home/Assisted Living
- Private day care
- Silverado Alzheimer's Convalescent Home
- Viewpoint Private School

19.3.1. Community-Identified Potential Projects

The following items are community-identified projects from the community meeting. Residents were encouraged to "think big," and not be concerned about project cost or property ownership for the project brainstorming process. Following the brainstorming, residents prioritized projects based on which were most realistic and most important to them. These projects can be seen on Map II.19-1 at the end of this document.

FIGURE II.19-2. CALABASAS INTERFACE COMMUNITY-IDENTIFIED PROJECTS

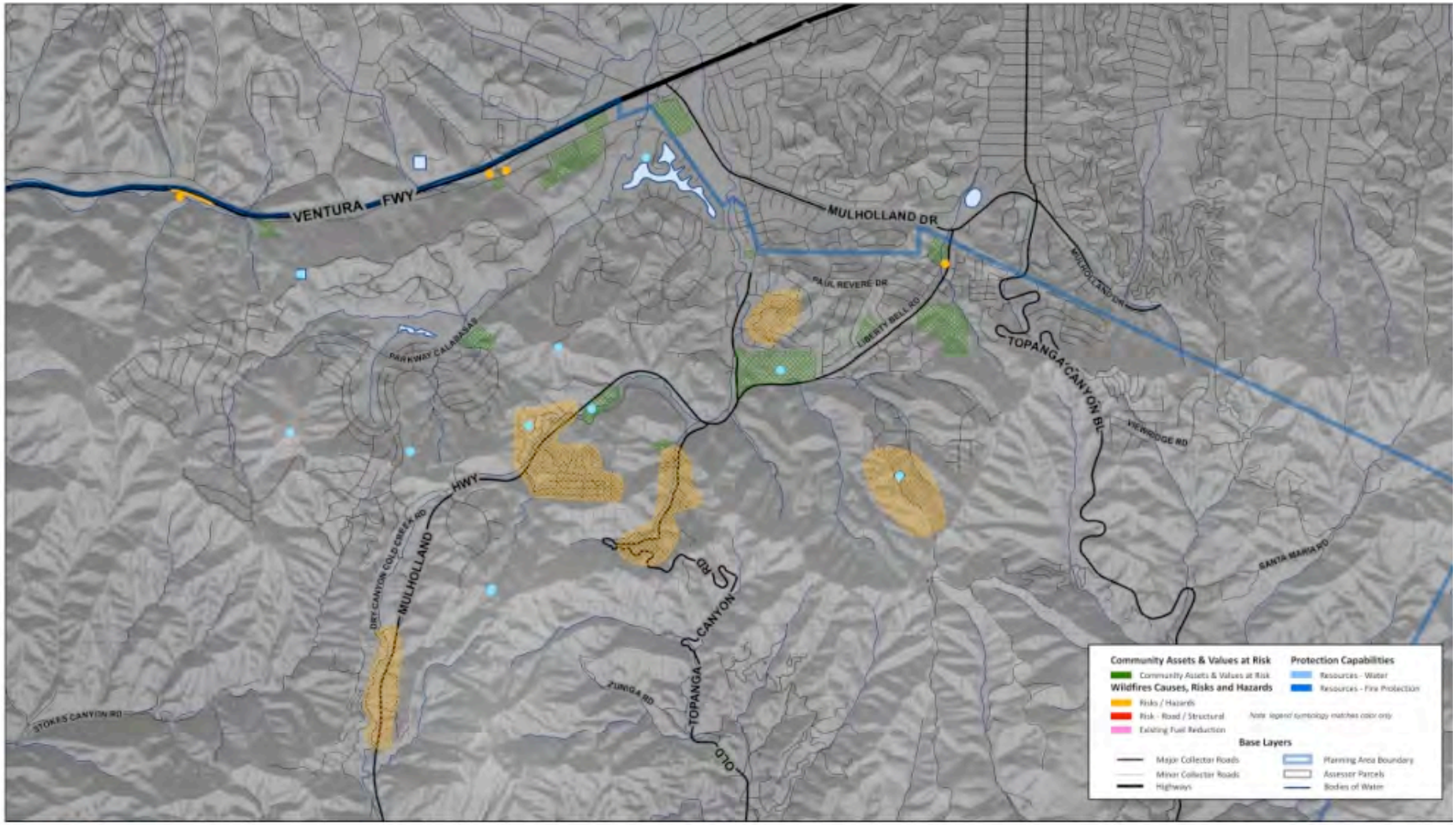
IDENTIFIED ITEM DESCRIPTION	PROPOSED PROJECT CATEGORY	PRIORITY RANK
Arson Watch program – expand to this area	Risk Reduction	1
Community wildfire education campaign	Education	2
Generators at water pump stations	Water	2
Comprehensive plan for evacuating large animals, with educational outreach regarding plan	Evacuation	3
Program to remove hazardous trees such as eucalyptus	Fuel Reduction	3
Improve cell coverage	Risk Reduction	3
"Hardening home" program with incentives	Hardening Homes	
Mulholland Highway improvements	Evacuation	
Form a Fire Safe Council	Fire Safe Council	
Xeriscape landscaping program	Fuel Reduction / Policy	
Neighborhood ID card system (for return home entry)	Policy	
Add more road emergency phones	Emergency Preparedness	

19.4. Calabasas Interface Action Plan

The following projects are the initial priorities for community action for the Calabasas Interface Planning Unit.

- Residents reduce urban fuels in the home ignition zone based on the Conservation Principles and Best Management Practices outlined in Chapters 1, 4, and 5 of this CWPP. Fuels maintenance should be a routine and ongoing practice for all homes and landscapes in the Santa Monica Mountains. This includes: ensuring structures are resistant to heat and embers, maintaining all vegetation "from the house out," and removing anything in this zone that might ignite and spread fire.
- Through a FSC, homeowner's association (HOA), or other community organization, implement a hazard tree removal/thinning program, in priority order:
    - Along main evacuation routes, including Old Topanga Canyon Road and Mulholland Highway (especially along its southern end within city limits),
    - Along the spur roads to main evacuation roads,
    - Near homes, especially trees that threaten more than one home, beginning in Calabasas Highlands, along Old Topanga Canyon Road south of Mulholland Highway, and the area east of Meadow Lark Drive off Old Topanga Canyon Road,
    - Trees in or near power lines.
- Ensure that at least one team from each homeowner's association or neighborhood participates in the Calabasas Community Emergency Response Program (CERP) training.
- Form a local Fire Safe Council or join with nearby FSCs. This organizational structure will facilitate community preparedness for wildfire. Work with the California Fire Safe Council to create a FSC that will best accommodate and enable this area. One option is a larger Calabasas-wide FSC that could have representatives from each of the different neighborhoods and homeowner's associations. A larger group provides greater support, instead of some individuals having to take on most of the work and becoming overwhelmed.
- Work through a new FSC or existing HOA (or other community organization) to begin a local community education and preparedness campaign. Include community education on pool pumps, generators, and home fire preparedness equipment. This can be done in cooperation with other area FSCs and/or the City of Calabasas and the Los Angeles County Fire Department.
- Develop a neighborhood Arson Watch program. This could be integrated into the work of the Fire Safe Council. Work with the City of Calabasas to help with Arson Watch in nearby parks and open spaces during Red Flag weather.
- Explore community purchase and installation of wildland-urban interface (WUI) building products to upgrade homes to current WUI building standards. All residents upgrade homes to current California WUI Fire and Building Standards.
- Work through HOAs to educate residents on the need to keep ingress and egress/evacuation routes clear. Residents need to understand the dangers involved in imprudent parking or long-term street storage of unused vehicles. Because natural disasters can strike at any time, key evacuation ingress/egress routes must be kept free of parked vehicles, especially trailers and other large objects that are difficult to move quickly. Trash cans and other items should be kept off the roadway and out of key turnout/passing areas. A neighborhood organizing project would include creating off-street parking where it is limited. Neighbors can work together to help each other stay in compliance.
- Through a Fire Safe Council, homeowner's association, or other neighborhood-level group, work with law enforcement, City of Calabasas, and Los Angeles County Fire Department to develop a local evacuation plan. Develop plan for large animal evacuation as well. Ensure that local gates are open or accessible during Red Flag conditions for rapid evacuation.

***MAP II.19-1. CALABASAS INTERFACE: COMMUNITY-IDENTIFIED ASSETS, RISKS, HAZARDS, AND PROJECTS*[16]**



[16] This map prints best at 11x17. Visit to www.forevergreenforestry.com/smmcwpp_pub.html to download a print version.

20. Ventura: Hidden Valley – Lake Sherwood Community Fire Safety Action Plan[1]

20.1. Ventura: Hidden Valley – Lake Sherwood Description

This planning unit includes the neighborhoods of Hidden Valley, Lake Sherwood, and East Carlisle Canyon. in unincorporated Ventura County. The Hidden Valley–Lake Sherwood unit extends from the Thousand Oaks city limit along Potrero Road to the east including Lake Sherwood to the Westlake Village city limit. Its northern boundary follows the ridgeline that borders Thousand Oaks at the top of Ventu Park. Its southern boundary is the ridgeline that borders Hidden Valley and the southern aspect of East Carlisle Canyon. The Hidden Valley–Lake Sherwood unit is 11 square miles in area.

Assets at risk in the built environment include less than 700 single-family homes, trailers, outbuildings, ranches, and estates.[2,3] Additional assets include open-space areas (Conejo Open Space Conservation Agency), national park lands, several large equine farms and facilities, several artificial lakes and ponds, a few historic structures, country club with a golf course and tennis courts, Ventura County Fire Station #33, and communications repeater towers. Properties and homes vary in size. Parcels range from a fraction of an acre to more than 40 acres.[4] Single-family homes start at $799,000 and are currently priced up to $13 million for large estates and farms. Undeveloped parcel prices start at $200,000.[5]

20.1.1. Ventura: Hidden Valley – Lake Sherwood Wildfire Environment

The Hidden Valley–Lake Sherwood Planning Unit includes pristine coastal sage scrub habitat, mixed chaparral/oak woodland, southern sycamore riparian woodland, cottonwood woodland, alder woodland, California bay laurel woodland, big-leaf maple woodland, and vernal riparian habitat. Many sensitive, threatened, and endangered plant and animal species are identified in this unit, due in part to the presence of critical wildlife habitat corridors. Carlisle Canyon is designated for public lands acquisition and restoration as a tributary to Malibu Creek.[6] At least 17 highly significant cultural resource sites are found throughout the area.[7] The Lake Sherwood–Hidden Valley Area Plan (a part of the 2005 Ventura County General Plan) recognizes and

[1] This document was written by Julie Clark De Blasio, Principal of Sweetgrass Environmental Consulting, in conjunction with ForEverGreen Forestry.

[2] County of Ventura Planning Division (November 15, 2005), *General Plan,* "Lake Sherwood/Hidden Valley Area Plan."

[3] County of Ventura Public Works (2009), "Lake Sherwood Community Services District Water Service," http://portal.countyof ventura.org/portal/page/portal/public_works/watersanitation/lake_sherwood.

[4] County of Ventura Planning Division (November 15, 2005), *General Plan,* "Lake Sherwood/Hidden Valley Area Plan."

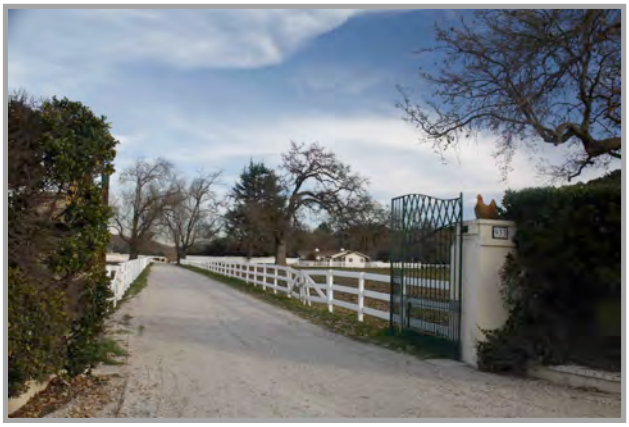
[5] Homes.com, "East Carlisle - Lake Sherwood," www.homes.com/listing/107395912/000_East_Carlisle_Lake_Sherwood_CA_91361 (accessed March 4, 2010).

[6] Mountains Recreation and Conservation Authority (2006), Proposition 84–Project Planning and Design: Potential Project Area List.

emphasizes protection of these resources by requiring strict management of pesticide use; limits fuels clearance to a maximum of 2 acres per development; requires use of non-invasive, fire-resistant, and drought-tolerant plants, to be irrigated only while being established; includes development of deed restrictions and codes to prohibit fuels clearance in some areas; suggests condensed development footprints for new construction; puts limits on grading; restricts fence building in some areas; preserves and protects cultural resources, requiring cultural resources assessments for each proposed development; discourages new projects in High Fire Hazard Severity Zones; encourages donations of private lands as open space to public agencies; and requires compensatory natural resources mitigation for all new development.[8,9]

Passive recreational opportunities include walking, jogging, bicycling, dressage, and horseback riding. Developed and private types include automobile touring, dirt biking, motor biking, pool swimming, tennis, and golf.

The Hidden Valley–Lake Sherwood Planning Unit is designated as a Very High Fire Hazard Severity Zone. This determination by the state is based on factors such as fire weather, slope, and fuel loading, among others.



Ingress and egress is from Potrero Road to the north and west, and State Route 23 (Decker Canyon Road) to the east. Connectivity and condition of lateral roads in the unit vary. Some roads and drives are dirt. Many in Lake Sherwood have circuitous connections. Carlisle Canyon and most of the lateral roads in Hidden Valley are cul-de-sacs. Much of Carlisle Canyon Road is narrow with little or no shoulder. Roads in Hidden Valley generally have shoulders. There are three modern subdivisions in Lake Sherwood with curbs and sidewalks.

The Hidden Valley–Lake Sherwood unit has a history of wildfires with an increase in frequency of incidents over the last 20 years: Potrero (November 1930); 30,000-acre Latigo complex (1935); Ventu Park (November 7, 1955); 16,400-acre Newton complex (December 28, 1956) with 100 homes destroyed in the burn area; Los Robles (June 22, 1976); Decker (July 4, 1976); Sherwood (June 30, 1985); Carlisle (July 15, 1992); 30,000-acre Green Meadow (October 26, 1993) with two homes destroyed in the unit; Hidden (October 30, 1997); Potrero (August 12, 1998); Triunfo (September 2, 1998); Sherwood (September 2, 1998); Wendy (August 9, 2000); Sherwood (July 6, 2006); Deer Ridge (April 1, 2007); Sandstone (July 22, 2007); Sterling (December 8, 2007); Potrero (February 8, 2008).[10,11]

Homes in the Hidden Valley–Lake Sherwood Planning Unit have a variable age-class. Older structures tend to be wooden. Newer structures generally are constructed of stucco, plaster, or masonry. Many homes, regardless of age, have wooden or plastic decks, fences, or outbuildings. Many older homes have been remodeled. Some utilities are underground. Most of the older and more rural neighborhoods have aboveground utilities including propane tanks. Many farms and ranches in Hidden Valley, properties in East Carlisle Canyon, and developments at Lake Sherwood are gated. The Lake Sherwood–Hidden Valley Area Plan requires the following for each new development: undergrounding of utilities; cost-share fees for public infrastructure improvements; non-combustible roofing and

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[7] County of Ventura Planning Division (November 15, 2005), *General Plan,* "Lake Sherwood/Hidden Valley Area Plan."

[8] County of Ventura Planning Division (November 15, 2005), *General Plan,* "Lake Sherwood/Hidden Valley Area Plan."

[9] Christina Danko, Staff Biologist, Ventura County Planning Department, personal communication, March 2010.

[10] Robert S. Taylor, Biogeographer / Fire GIS Specialist, National Park Service, personal communication, February 12, 2010.

[11] Mike Davis (1998), "The Case for Letting Malibu Burn," In *Ecology of Fear* (New York: Henry Holt), pp. 93–147.

siding; fuel modification plan; and a restriction that each new cul-de-sac is limited to less than 800 feet in length.[12] Many structures in the Hidden Valley–Lake Sherwood unit are not retrofitted to current California WUI Fire and Building Standards, but on average homes in the unit are among the more structurally fire safe in the Planning Area as long as they and surrounding grounds are routinely maintained.[13]

Mature, lush, and tall ornamental vegetation is found throughout the entire unit and is predominant in the older section of Lake Sherwood and Carlisle Canyon. Carlisle Canyon has the heaviest fuels in the planning unit, along a narrow, winding, dense canyon with one-way ingress/egress.

Municipal water supply for the Hidden Valley–Lake Sherwood unit varies with each neighborhood. Carlisle Canyon property owners rely on individual wells. The Lake Sherwood–Hidden Valley Area Plan limits new development in Carlisle Canyon until adequate services are available, including water.[14]

Lake Sherwood residents receive water from the Lake Sherwood Community Services District (LSCSD), which is governed by Ventura County Supervisors. The LSCSD has 18 miles of water lines, two pump stations, and two reservoirs with 5 million gallons of total water storage capacity. The District is responsible for operation and maintenance of the system.[15] The Lake Sherwood–Hidden Valley Area Plan specifies that reclaimed water from the local Triunfo County Sanitation District is to be used for large landscaped areas such as the Lake Sherwood golf course. The document adds that groundwater wells in the area are only for domestic use, with secondary use by emergency service providers.[16]

The Hidden Valley Municipal Water District serves Hidden Valley. Each property is reliant on its own groundwater well. The Hidden Valley groundwater basin is 3.5 square miles in area. It drains to Lake Sherwood and is recharged by ground infiltration (from annual rainfall of 20–24 inches). The aquifer is reliant on full recharge during exceptionally wet years to be sustainable. Cumulative and ongoing overdraft threatens the supply.[17] Hidden Valley residents refused an option to purchase water deliveries from outside suppliers in 1956. This vote discouraged large development and kept the valley in agricultural production. Fourteen percent of arable land in Hidden Valley was irrigated in 1956.[18] Intensive and high-water-use agricultural activities have increased since that time, with horse farms and irrigated pasture becoming the biggest water consumers. Prolonged drought during the last decade exacerbated the overdraft of the Hidden Valley groundwater basin. Several wells as deep as 600 feet either had no water or experienced water quality problems such as bacterial contamination. The paucity resulted in purchase of trucked-in water or purchased acre-feet from the Lake Sherwood Community Services District. The sale of the latter source was deemed illegal and stopped in 2009. Costs for purchased supplemental water ranged from $2,500 to $15,000 per month per user.[19]

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[12] County of Ventura Planning Division (November 15, 2005), *General Plan,* "Lake Sherwood/Hidden Valley Area Plan.

[13] State of California Building Standards Commission, www.bsc.ca.gov (accessed February 8, 2010).

[14] County of Ventura Planning Division (November 15, 2005), *General Plan,* "Lake Sherwood/Hidden Valley Area Plan."

[15] County of Ventura Public Works (2009), "Lake Sherwood Community Services District Water Service," http://portal.countyofventura.org/portal/page/portal/PUBLIC_WORKS/WaterSanitation/lake_sherwood.

[16] County of Ventura Planning Division (November 15, 2005), *General Plan,* "Lake Sherwood/Hidden Valley Area Plan."

[17] Department of Water Resources (February 27, 2004), "Hidden Valley groundwater basin," *California's groundwater bulletin 118 – Hydrologic Region South Coast.*

[18] California Court of Appeals, 2nd District, Division 3 (November 22, 1967), *Wilson v. Hidden Valley Municipal Water District, 256 Cal App.2d 271.*

[19] Z. Barlow (November 4, 2009), "Hidden Valley's dry wells propelled unlawful water sales," *Ventura County Star.*

Water source for Carlisle Canyon is individual property wells. There are no water delivery trunk lines near the neighborhood. Water availability to all areas of this planning unit is limited. Range of reasons includes overdraft, policy, and lack of infrastructure. Water conservation should be a focal point of the community. Ventura County Fire Department expressed concerns about availability during emergencies.[20]

The Lake Sherwood–Hidden Valley Area Plan recommends retention of open-space areas for groundwater recharge, as well as use of drought-tolerant plant materials for landscaping. It prohibits expansion of water and sewer infrastructure to discourage new development.[21] Threats to the water supply include groundwater overdraft, infrastructural age and condition, electrical failure, and emergency use during wildfire events.

Ventura County Fire Station #33 is located in the Hidden Valley–Lake Sherwood Planning Unit. It is one of the oldest county stations and provides protection to the neighborhoods in this CWPP unit as well as areas of Thousand Oaks, Westlake Village, and Decker Canyon. In an appeal to the County, the City of Thousand Oaks recently requested that the station be closed and relocated to the more densely populated community of Westlake Village. This proposal has received much opposition, in part because it would effectively remove emergency services protection from Hidden Valley, Lake Sherwood, and Carlisle Canyon, and more remote areas in Ventura County in the Santa Monica Mountains.[22]

20.2. Ventura: Hidden Valley – Lake Sherwood Evacuations

Possible impediments to emergency ingress and egress include downed power lines, trees, traffic, locked gates, and poor road conditions. Hidden Valley has several cul-de-sacs. Carlisle Canyon Road is narrow, winding with little shoulder, one-way in and out, with only a section maintained by the county. This neighborhood could be isolated from fire protection services and unable to evacuate in a wildfire.[23] The Ventu Park Fire Road may serve as an escape route to the north from Potrero Road only if recommended by local law enforcement during incidents. Preplanning will be necessary for this use as the road is private, dirt, gated, and locked.[24] Large groups of people can convene at Lake Sherwood Country Club. There are thousands of horses and small domestic animals in this planning unit. Evacuation plans should include all these considerations. Evacuation efforts should be coordinated with community emergency service providers.

20.3. Ventura: Hidden Valley – Lake Sherwood Community Meeting Summary

The Hidden Valley–Lake Sherwood community meeting was held at Santa Monica Mountains National Recreation Area Headquarters on January 6, 2010. Seven residents/land managers and five non-residents attended.

The following assets at risk were identified at the community meeting. These can be seen on Map II.20-1 at the end of this document.

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[20] Larry Williams, Fire Prevention Supervisor/Manager, Fire Hazard Reduction Unit, Ventura County Fire Department, personal communication, 2010.

[21] County of Ventura Planning Division (November 15, 2005), *General Plan,* "Lake Sherwood/Hidden Valley Area Plan."

[22] Linda Parks (April 2009), Ventura County Supervisor 2nd District, position paper.

[23] Damon Wing, Senior Administrative Aide, Ventura County Supervisor Linda Parks 2nd District, personal communication, January–June 2010.

[24] Bill Pratt, President, Ventu Park Fire Safe Council, Inc., personal communication, March 2010.

FIGURE II.20-1. COMMUNITY-IDENTIFIED ASSETS AT RISK

- 1930s historic barn
- Santa Monica Mountains dudleya *(Dudleya cymosa ssp. marcescens)* – Rare plant, Hidden Valley
- Ventura County Fire Station #33
- Hidden Valley horse boarding (hundreds)
- Lyons pentachaeta *(Pentachaeta lyonii)* – Endangered plant
- Movie production sites
- Repeaters for National Park Service and Sheriff Search and Rescue; satellite and cable communication towers on Rasnow Peak

20.1.2. Community-Identified Potential Projects

The following items are community-identified projects from the community meeting. Residents were encouraged to "think big," and not be concerned about project cost or property ownership for the project brainstorming process. Following the brainstorming, residents prioritized projects based on which were most realistic and most important. These proposed projects can be seen on Map II.20-1 at the end of this document.

FIGURE II.20-2. VENTURA: HIDDEN VALLEY – LAKE SHERWOOD COMMUNITY-IDENTIFIED PROJECTS

IDENTIFIED ITEM DESCRIPTION	PROPOSED PROJECT CATEGORY	PRIORITY RANK
Water lines and fire hydrants down Potrero and Hidden Valley roads	Water	1
Comprehensive fire education campaign, more "Ready-Set-Go" information presented in more ways	Education	2
Neighborhood Watch/HOA/CERT/FSC/phone tree/website, organization of emergency information for community	Education / Preparedness	2
Early warning system for Carlisle (handheld radios)	Evacuation	3
Water lines and fire hydrants down Carlisle Canyon Road	Water	3
Prevent City of Thousand Oaks from removing Fire Station #33, Keep Sherwood Fire Station #33	Fire Protection	
Prescribed burn (fuel reduction)	Fuel Reduction	

20.4. Ventura: Hidden Valley – Lake Sherwood Action Plan

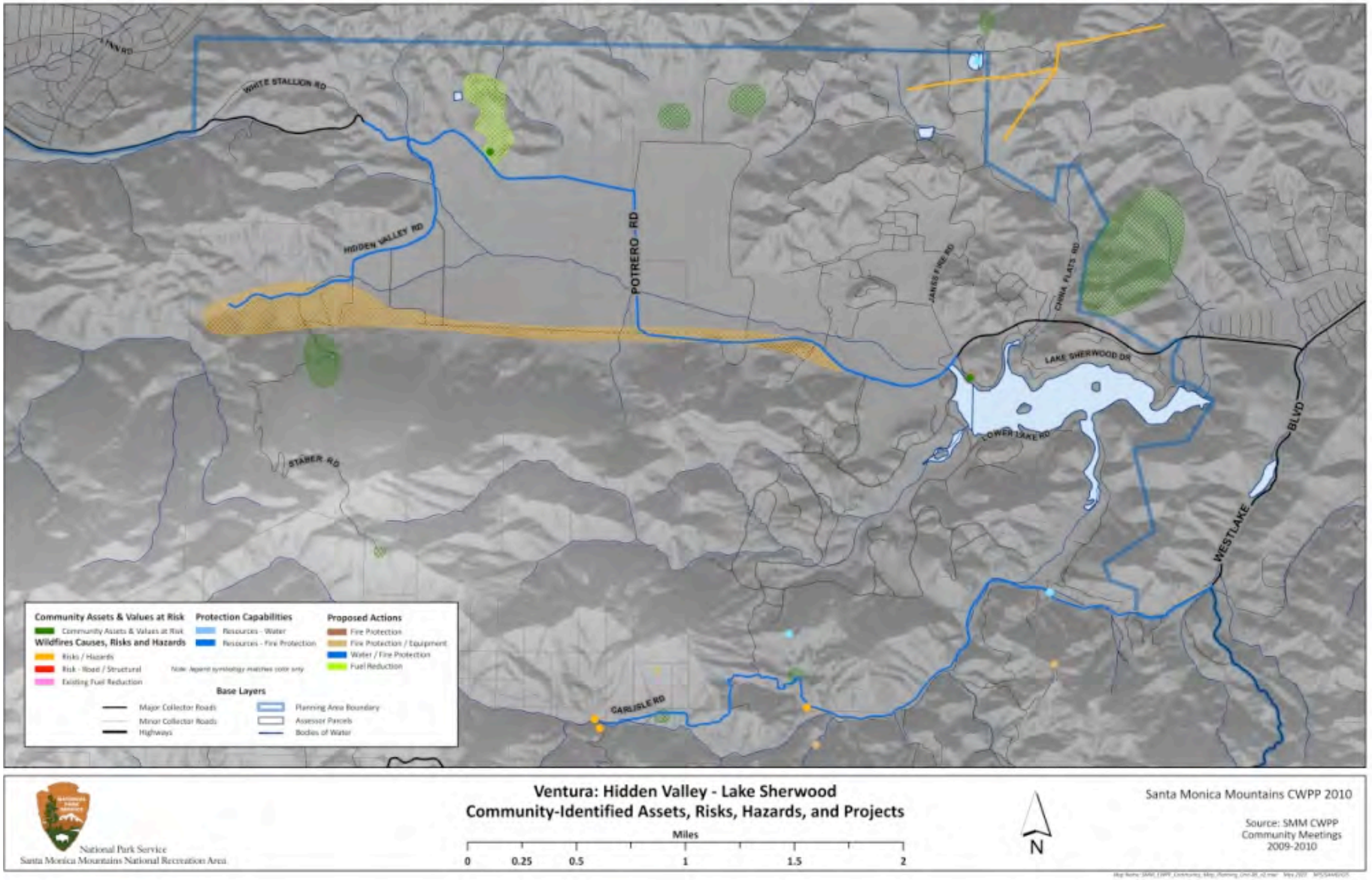
The following projects are the initial priorities for community action for the Hidden Valley–Lake Sherwood Planning Unit.

- Ensure that every homeowner's association (HOA) or neighborhood (especially in Carlisle Canyon) has a local team undergo Ventura County Community Emergency Response Team (CERT) training.[25] This is the venue to begin organizing locally for evacuation planning, in cooperation with local law enforcement and the Ventura County Fire Department. Work with these agencies to identify potential evacuation areas for Carlisle residents who may be unable to evacuate, and an overall evacuation plan. Efforts should be made to ensure that local gates are open or accessible during Red Flag conditions

[25] http://fire.countyofventura.org/Community/CERT/tabid/67/Default.aspx

- Residents reduce urban fuels in the home ignition zone based on the Conservation Principles and Best Management Practices outlined in Chapters 1, 4, and 5 of this CWPP. Fuels maintenance should be a routine and ongoing practice throughout the year for all homes and landscapes in the Santa Monica Mountains. This includes: ensuring structures are resistant to heat and embers, maintaining all vegetation "from the house out," and removing anything in this zone that might ignite and spread fire.
- Implement a hazard tree removal/thinning program through a Fire Safe Council (FSC), HOA, or other community organization, in cooperation with local open space lands management agencies and in priority order:
    - Along main evacuation routes, starting with Carlisle Canyon Road and modeling the existing shaded fuelbreaks in place along that route,
    - Along the spur roads to main evacuation roads,
    - Near homes, especially those that threaten more than one home,
    - Trees in or near power lines.
- Form a local Fire Safe Council or join with a nearby FSC. This structure will facilitate community wildfire preparedness. Work with the California Fire Safe Council to create a FSC that will work best for this area.
- Work through a new FSC or existing HOA or other neighborhood structure to begin a local community education and preparedness campaign. This can be done in cooperation with other area FSCs, the California Fire Safe Council, Ventura County Fire Department, and the National Park Service.
- Develop a neighborhood Arson Watch program.
- All residents upgrade homes to current California WUI Fire and Building Standards.

***MAP II.20-1. VENTURA: HIDDEN VALLEY – LAKE SHERWOOD COMMUNITY-IDENTIFIED ASSETS, RISKS, HAZARDS, AND PROJECTS*[26]**



[26] This map prints best at 11x17. Visit to www.forevergreenforestry.com/smmcwpp_pub.html to download a print version.

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Part III

APPENDICES

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A. Community Meeting Participants

The following community members participated in the CWPP public meetings in 2009 and 2010:

Darlene Adford
Boris Adlam
Lance Anderson
Rebecca Andrews
Michael Archer
Dora Baack
Rhiannon Bailard
Susan Baldwin Sidney
Joho Bard
Rebecca Barkin
Carole Baskerville
Tom Baskerville
Gerald Benecke
Shirley Benecke
Lynn Benjamin
Shari L. Bernathlatta
Wade Blaufuss
Larry Boodman
Nathan Borin
Bill Boyle
Teme Bridy
Michelle Brobeng
Teal Brogden
Shea Broussard
Al Broussars
Dave Brown
Patty Brown
Dieter Bruehl
Arlene Bruesand
Beth Burnam
Dale Candroth
Denise Carington
Jane Carlson
Bob Cavage
Mike Chipto
Robin Chipto
Linda Coben
Ron Coleman
Patty Colvig
Juergen Cords
Paul Courtemanche
Eddie Daffin
Nell Daffin
Dean Dauley
J. Dealy
Alessandra DeClario
Tom Delmore
Elizabeth Des Marais
G. Devault
Scott Dittrich
Annemarie Donkin
Dorothy Doyle-Storer
Linda Dubin
Cecile Dullingon
Jay Dunitz
David Eisnerand
Pierre Escaron
Gene Ewing
Zeta Fairbrother
Sherry Ferber
Chris Flores
Kristin Foord
Olivia Fortis
Mary Freeland
Jim Friedl
Joe Gareri
Eddie Gillespie
Greg Gillis-Smith
Rebecca Goldfarb
Georgia Goldforb
Eric Gordon
Judie Graham Bell
Margaret Grayson
Robert Grieley
Anne Griskey
Jerry Gross
Jennifer Grossman
Lori Gunasekera
Lee Gunya
Keith Gurrola
Gisela Guttman
Richard A. Guttman
Tom Hahn
Matt Haines
Marilou Hamill
Frank Harper
Hal Helsley
Janice Herman
Mark Herron
Steve Hess
Carol Hofmann
Sandra Hollins
Bill Holt
Steve Hoye
Callie Hurd
Rosemarie Ihde
Bill Islava
Judith Israel
Jerome Jacques
Steve Jessup
Thurman Jessup
Austin H. Johnson
Bruce Johnson
Jane Kagon
Christa Kamarath
Joan Kang
Jonathan Kaye
John Kingsbury
Kara Knack
Wolfgang Knauer
Larry Koch
Mark Konopaske
Kev Krueger
Carol Kurz
Richard L.
Markken Lahdismad
Lou Lamonte
Leslie Lee
Souange Lemonniz
Gerald Lemonnler

Joan Lesser
David Levy
Libby Lippman
Chuck Lockmann
Berndt Lohr-Schmidt
Dorr Looman
Joan Looman
Duncan Macfarlane
Will MacGregor
John Macneil
Linda Marsolek
Mike Marsolek
Mary Martin
Doug Masterson
Isabel Maxwell
Jomm Mays
John Mazza
Cam McKenna
Jan Mecagni
Rick Mecagni
Peter Melcher
Steve Merridt
Neal Michaelis
Jennifer Miller
John Mills
Regina Mocey
Peter Monge
Jim Moore
Craig Morgan
Scott Morrison
Carol Moss
Chris Mostert
Patty Mostert
Richard Mullen
Rebecca Murray
Cheryl Myerson
Deborah Nellis
Yehuda Netanel
Cindy Nexon
Jack Nicholl
Florence Nishida
Lynn Norton
John Novak
Rhoda Novak
Mike Odrslon
Carl Olson
Gabriel Orona
Liza O'Sullivan
Rene Ovando
Doug Pace
Julie Pace
Andrew Palella
Mindy Panunzio
Thom Panunzio
Randall Pelter
Timothy Pershing
Harriet Pollou
Steve Poswillo
Bill Pratt
Raphael Pumpelly
Wendy Pumpelly
Yelena Radulovich
Carol Randall
J. Rima
Laura Rosenthal
Al Rotter
Barbara Rotter
Pamela Rowe
Deborah Rubenacker
Jim Runge
Steve Ryan
Steve Scheinkman
Dan Schmitz
Al Seckel
Anthony Shafer
Ralph Shapira
Erin Shapiro
Ron Sharrin
John Shufai
Melinda Singer
Rorie Skei
Louise Stange
Dominic Stefano
Neal Steinberg
Allana Stepp
Bob Stuchlov
Rosa Stuchlov
Mary Ellen Stude
Wendy Su
Douglas Sullivan
Brenda Symons
Bo Tasker
Tam Taylor
Susan Tellem
Linda Theodosiou
Dave Thomas
Louise Thomas
Marshall Thompson
Duane Tom
David Troy
Pamela Ulich
Ryan Ulyate
Ted Vaill
Judy Villablanca
Jefferson Wagner
Stu Walter
Lesli Watts
Brian Weiss
Cory Wenter
Rob Werner
Thomas White
Steve Williams
Megan Williams-Lee
Kathy Wilstein
Damon Wing
Scott Winner
Greg Winters
Joyce Wisdom
Marti Witter
Roberta Wohl
Phillip Wong
Julie Woolley
Joan Yacovone
Ayako Yoshida
Bambi Young
Jessie Zaud
Walter Zeman

B. Community Mapping Exercise

Community Assets (Values) at Risk (*Green Highlighter*)

- Where are the places and things you most value and want to see protected from wildfire? Examples include:
  - Hospitals and health care facilities
  - Businesses
  - Schools, churches, and stores
  - Community centers
  - Rare and endangered species habitat; ecologically significant areas
  - Recreation areas
  - Culturally or historically significant areas
- What critical infrastructure needs to be protected from wildfire? Examples include:
  - Power substations and corridors
  - Communication sites and facilities, including cell phone towers
  - Landfills and treatment facilities

Wildfires Causes, Risk, and Hazards (*Orange Highlighter, Red Marker, Pink Highlighter*)

- What kinds of conditions have started wildfires in the past? Where have they started?
- What are the causes of wildfire in your community?
- Where do you think a wildfire would start in your community and why?
- What are other wildfire risks and hazards in your community?
  - Dead vegetation (insect, disease, fire, drought)
  - Fuel storage
  - Abandoned wooden structures, abandoned lots and/or absentee parcels.
  - Power lines
  - Road systems: blocked, heavily vegetated, or dead-end roads
  - Party spots
- What kind of road or structural conditions might increase fire risk? (*Red Marker*)
  - Road maintenance needs (outages, slides, etc.)
  - Bridges and/or locked gates, especially bridges too small or weak to carry a fire truck

Fire Safety (*Pink Highlighter*)

- Where have fuel reduction projects already occurred? Identify defensible space and fuel-reduction treatments.

Protection Capabilities (*Blue Highlighter and Marker, Black Marker.*)

- Are there any resources for fighting fires, and where are they located?
  - Water storage: tanks, ponds, pools (Blue marker dot w/# for 1,000 gallons (e.g. 5 =5,000)
  - Equipment (*Black Marker*)
- What information needs updating?
  - Updated road conditions: roads that do not exist on the maps, or are on the maps and do not exist on the ground. (*Black Marker*)
- What evacuation plans are in place?
  - Access routes/evacuation: Where are the safe routes to get out quickly?
  - Safe Zones: If you can't evacuate, where can you safely wait out a fire?

Priorities for Action (*Yellow Highlighter*)

If you were king or queen for a day, what would you do to make your community fire safe? How can you be part of the solution? Don't be concerned at this point about who owns the land or what it would cost.

- Starting from the house out, what can we do to make our neighborhood and/or community safe?
  - Hardened homes
  - Neighborhood projects
  - Education
  - Demonstration gardens/fire-safe landscaping demonstration projects
  - Senior/disabled/low-income home ignition zone assistance projects
  - Fire-safe assessment training and workshops
- Where would community fuel treatments be most effective? What types of treatments?
  - Hazardous vegetation removal or reduction
  - Hazard tree management
  - Shaded fuelbreaks
  - Roadside fuels reduction
  - Others?
- What other wildfire protection activities would you like to see implemented?
  - Create or strengthen Fire Safe Councils
  - Improve access routes/evacuation routes
  - Education
  - Equipment
  - Ignition reduction
  - Water storage: tanks, ponds, pools (*Blue dot w/yellow circle*)
- Which projects are your highest priority and why?

Now think about ownership, cost, effectiveness, etc. What do you want to see happen soonest?

The prioritization method is to take the total number of identified projects, divide it by 3, and give each participant that number of sticky dots. Instruct participants to place one dot (only one vote per item) on each of their priority projects. Tally "votes," and number on flip chart in red. Then ID the top three to five vote-getters as the top priorities for the group. The result will be a J-curve of the group's prioritization preferences.

C. Outreach Efforts

OUTREACH DESCRIPTION	MEDIA OUTLET	DATE
Introduction email to stakeholders explaining the Santa Monica Mountains CWPP project and timeline		Sept. 25, 2009
Calendar postings for Fall 2009 meetings in newspapers.	*Malibu Surfside News, Malibu Times, Topanga Messenger, Ventura County Star, Calabasas Acorn, Agoura Acorn*	Oct. 7, 2009
Fall meeting invitations via email and meeting flyers to community stakeholders.		Oct. 19, 2009
Fall and Winter Meetings on Community Calendars and link to article in the news item section of webpage	City of Malibu website's Community Calendar and news items section (www.ci.malibu.ca.us)	Oct. 28, 2009, Dec. 9, 2009
Media Release sent out to primary media list, Los Angeles radio list, Los Angeles community papers list—more than 60 local outlets total	Sent to more than 60 local radio stations, newspapers, and media outlets	Oct. 29, 2009
Article about CWPP meetings	Los Angeles County Fire Department Newsletter	Oct. 30, 2009
Email to Las Virgenes Homeowners Federation (for Cornell Planning Unit)		Nov. 5, 2009
Wrap-up press release and follow-up calls		Nov. 29, 2009
Calendar update regarding winter meetings in four newspapers	*Malibu Surfside News, Malibu Times, Topanga Messenger, Ventura County Star*	Dec. 7, 2009
Email to Fernwood FSC unit representatives		Dec. 8, 2009
Calls made to *Topanga Messenger, Malibu Times, Malibu Surfside News and Ventura County Star* (~~t~~op four" papers). All received an update, in prep for calendar listings.		Dec. 7–17, 2009
Researched radio stations for PSA outreach. Two PSAs (60 sec. and 30 sec.) sent to best possibilities.	KNX 1070 AM, KCRW FM, KXOS	Dec. 7–17, 2009
New calendar listing sent to top four papers plus ~~T~~opanga Online" and ~~T~~he Acorn."	~~T~~opanga Online" and ~~T~~he Acorn"	Dec. 7–17, 2009
Newspaper articles	*Ventura County Star*	Dec. 7–17, 2009
Newspaper articles	*Malibu Surfside News*	Dec. 7–17, 2009
Newspaper articles	*Malibu Times*	Dec. 7–17, 2009
Email to community stakeholders regarding winter meetings		Dec. 16, 2009

OUTREACH DESCRIPTION	MEDIA OUTLET	DATE
Posted to "The Acorn" online	"The Acorn"	Dec. 27, 2009
Researched to find more publications for meeting announcements; forwarded info found regarding Homeowners Associations; uploaded info to online calendars and blog ("This Week in Malibu")	"This Week in Malibu," "Topanga Online"	Dec. 27, 2009
Posted meetings on NPS calendar	www.nps.gov/samo/planyourvisit/events.htm	Dec. 28, 2009
Placed posters and banners publicizing community meetings in strategic places in the Santa Monica Mountains communities	Stores, government offices, mailboxes, and telephone poles in all 20 planning units.	Dec. 2009
Creation of Facebook page and invite email for fans		Dec. 2009
Sent thank you notes to Facebook fans and asked to spread the word.		Dec. 2009
Research and outreach to community events calendars		Dec. 2009
Collected coverage for project wiki page, sent updated info to *Malibu Times* calendar editor & *Surfside News* calendar. Sent remainder of listings to "The Acorn Online," "Topanga Online"; called radio stations trolling for interview interest, followed up with emails.	*Ventura County Star, Malibu Times, Malibu Surfside News,* "The Acorn" online, "Topanga Online," and KCRW, KNX, KXOS radio stations	Jan. 4, 2010
Email to 228 Santa Monica Mountains stakeholders regarding April and May working sessions.		Apr. 12, 2010
Email to 112 members of the Community Review Committee and Internal Reviewers regarding review process and April and May working sessions.	Email	Apr. 12, 2010

D. Community Review Committee and Internal Reviewers

FIGURE D- 1. COMMUNITY REVIEW COMMITTEE MEMBERS

CRC MEMBER	AFFILIATION
Bill Boyle	Malibu Colony Association
Bill Pratt	Ventura Park Fire Safe Council
Brian Weiss	Corral Canyon
Carol Moss	Malibu Colony Association
Carol Randall	Las Flores Beach Residents
Dave Brown	
Deborah Rubenacker	Los Angeles Unified School District, Related Services Department (and Corral Canyon resident)
E. Barry Haldeman	
Gerry Haigh	Topanga
Hal Helsley	Las Virgenes Canyon
Jane Carlson	Local Resident
Jay Dunitz	Big Rock
Jerry Gross	Bushfire Protect
Joan Yacovone	Liberty Canyon Home Owners Association
Joe Gareri	
John Mazza	Malibu Riviera
Joyce Wisdom	West Hillside module - North Topanga Fire Safe Council
Judith Israel	Malibu Colony
Judy Villablanca	Winding Way/Murphy Way Home Owners Association
Julie Ringwood	Malibou Lake Fire Safe Council
Kathy Wilstein	
Larry Koch	Local Resident
Lawrence Mira	
Leah Culberg	Triunfo-Lobo Community Association
Lucy Martin	Greater Mulwood Home Owners Association
Lynn Benjamin	Monte Nido
Lynn Conrad	Fernwood Fire Safe Council
Lynne Haigh	Topanga
Mark Konopaske	Home Owner
Marshall Thompson	Resident
Megan Williams-Lee	North Topanga Canyon Fire Safe Council
Pamela Rowe	Community Emergency Response Team - Agora, Liberty Canyon
Penny Chavez	Old Canyon Fire Safe Council, Resident,

CRC MEMBER	AFFILIATION
Pierre Escaron	Resident
Ralph Shapira	
Randall Pelter	Community Emergency Response Team Calabasas
Rebecca Barkin	East Hillside Module - North Topanga Fire Safe Council
Rebecca Goldfarb	Topanga Community Council; Sylvia Park module-N Topanga Fire Safe Council
Regina Mocey	Liberty Canyon
Richard Mullen	Ramirez Canyon
Ron Coleman	Ramirez Canyon
Scott Ferguson	Fernwood Neighborhood Disaster Preparedness
Scott Winner	Flames Out Retardant
Shari L. Bernathlatta	
Stewart Walter	Big Rock Mesas Property Owners Association
Susan Tellem	Resident
Ted Fulton	
Thomas White	
Tina Wallace	Seminole Springs Home Owners Association
Tom Delmore	Malibou Lake
Victoria Harris	California Wildlife Center
Wolfgang Knauer	Horizon Hills Fire Safe Council, Horizon Hills Home Owners Association

FIGURE D- 2. INTERNAL REVIEWERS

INTERNAL REVIEWER NAME	AFFILIATION
Alfredo Leon	Mountains Recreation & Conservation Authority
Alphonso P. Pepito	California State Parks
Aron Miller	State Senator Fran Pavley
Betsey Landis	California Native Plant Society
Brad Davis	City of Malibu
Brian Rekart	Tree People
Brooks Engelhardt	USDA Natural Resources Conservation Service
Callie Hurd	State Senator Fran Pavley
Carol Rice	Wildland Resource Management
Casey Burns	USDA Natural Resources Conservation Service
Chief Jim Bailey	Los Angeles County Fire Department
Chris Zimny	Board of Forestry
Christina Danko	Ventura County Planning Division
Clark Stevens*	Resource Conservation District of the Santa Monica Mountains
Cory Chappell	Tree People

INTERNAL REVIEWER NAME	AFFILIATION
Craig Sap	California State Parks
Dale Carnathan	Ventura Emergency Planning Council
Damon Wing	Supervisor Linda Parks
Dan Blankenship	California Department of Fish and Game
Dan Silver	Endangered Habitats League
Darrell Ralston	Ventura County Fire Department
Dash Stolarz	Mountains Recreation & Conservation Authority
David Updike	Mountains Conservation & Recreation Authority
Debbie Larson*	City of Calabasas, Malibu Lake Fire Safe Council
Deborah Glaser	Los Angeles San Gabriel Rivers Watershed Council
Deborah Low	Las Virgenes Municipal Water District
Dennis Washburn	LA Pierce College Foundation
Edith Ben-Horin	TreePeople
Gary Burden	Los Angeles County Fire Department
J. Lopez	Los Angeles County Fire Department
Jae Lee	USDA Natural Resources Conservation Service
James Jordan	City of Calabasas
Jesse Switzer	California Assembly member Julia Brownley
Jim Thorsen	City of Malibu
Jo Kitz	Mountains Restoration Trust
Jonna Engel	California Coastal Commission
John Hendra	Resource Conservation District of the Santa Monica Mountains
Kate Dargan	Fire Planners
Kathryn Kirkpatrick	National Park Service
Kathy Watrous	State Farm Insurance
Keith Gurrola	Ventura County Fire Department
Kelly Schmoker	California Department of Fish and Game
Kristin Foord	Conejo Open Space Conservation Agency
Larry Williams	Ventura County Fire Department
Louise Rishoff	State Assembly member Brownley
Maria Grycan	Los Angeles County Fire Department
Mark Olson	Southern California Edison
Marti Witter*	National Park Service
Marylee Guinon*	Sycamore Associates
Melanie Beck	National Park Service SMMNRA Planning
Michael Tou	Office of Assemblyperson Brad Sherman
Mike Harris	California Fair Plan

INTERNAL REVIEWER NAME	AFFILIATION
Phil Rundel	University of California, Los Angeles Stunt Ranch Preserve
Ray Smith	Los Angeles County Agriculture Commissioner
Rebekah Rodriguez-Lynn	State Senator Fran Pavley
Richard Halsey	Chaparral Institute
Robert Taylor	National Park Service
Ron Shafer	California Department of Parks and Recreation
Rorie Skei	Santa Monica Mountains Conservancy
Rosi Dagit	Resource Conservation District – Santa Monica Mountains
Sabrina Drill	University of CA Cooperative Extension
Salim Rahemtulla	Naval Base Ventura County, Point Mugu
Samona Caldwell	State Farm Insurance
Scott Chew	Los Angeles County Sheriff's Department
Stephanie Pincetl	University of California, Los Angeles Institute of the Environment
Stephen Bakken	California State Parks
Steve Hess*	Las Virgenes Home Owners Association
Steve Hudson	California Coastal Commission
Steve Williams	Resource Conservation District of the Santa Monica Mountains
Susan Nissman	Los Angeles County Supervisor Yaroslavsky office
Suzanne Good	California Department of Parks and Recreation
Terry Dipple	Las Virgenes/Malibu Council of Governments
Timothy Pershing*	Los Angeles County Supervisor Yaroslavsky office
Valerie Carrillo	Los Angeles Regional Water Quality Control Board
Vidal Millan	Southern California Edison
Walt Young	Mountains Conservation and Recreation Authority
Wayne Spencer	Conservation Biology Institute

* Also Santa Monica Mountains Community Residents

E. Fire History Data[1]

YEAR	FIRE NAME	ACREAGE	IGNITION SOURCE
1925	Topanga P.O.	172	Unknown/Unidentified
1926	Montgomery Ranch	118	Unknown/Unidentified
1926	Old Topanga No. 2	137	Unknown/Unidentified
1927	Cooper No. 1	3,177	Unknown/Unidentified
1928	Las Flores No. 59	274	Unknown/Unidentified
1930	Potrero No. 42	20,392	Unknown/Unidentified
1933	Agoura No. 2	315	Unknown/Unidentified
1935	Malibu Fire	28,192	Unknown/Unidentified
1936	N/A	59	Unknown/Unidentified
1936	Cold Creek No. 35	2,642	Unknown/Unidentified
1938	Topanga No. 50	14,528	Unknown/Unidentified
1940	Sequit Fire No. 54	178	Unknown/Unidentified
1940	Tuna Summit No. 32	101	Unknown/Unidentified
1942	Las Flores No. 47	5,840	Unknown/Unidentified
1943	Hail No. 66	16	Unknown/Unidentified
1944	McCoy No. 36	93	Unknown/Unidentified
1946	Dume Fire No. 76	213	Unknown/Unidentified
1947	La Fouge	507	Unknown/Unidentified
1948	Topanga Fire No. 118	3,277	Unknown/Unidentified
1948	Miller Fire No. 131	41	Unknown/Unidentified
1949	Reindl No. 78	231	Unknown/Unidentified
1951	Rancho Sierra Vista	3,288	Unknown/Unidentified
1951	Houston	565	Unknown/Unidentified
1953	N/A	3	Unknown/Unidentified
1953	N/A	587	Unknown/Unidentified
1953	N/A	169	Unknown/Unidentified
1955	Houston	489	Unknown/Unidentified
1955	N/A	243	Unknown/Unidentified
1955	N/A	333	Unknown/Unidentified
1955	Ventu Park	13,957	Unknown/Unidentified
1956	N/A	5	Unknown/Unidentified
1956	Hume Fire	2,194	Unknown/Unidentified
1956	Stone Canyon 2	9	Unknown/Unidentified
1958	N/A	204	Unknown/Unidentified
1958	Brea Canyon	1,244	Unknown/Unidentified
1958	Santa Susana Dump	522	Unknown/Unidentified
1958	Co. Fire 123158	5,115	Unknown/Unidentified
1959	N/A	79	Unknown/Unidentified
1959	N/A	7	Unknown/Unidentified
1959	N/A	36	Unknown/Unidentified
1959	Broome Ranch	1,240	Unknown/Unidentified
1960	N/A	11	Unknown/Unidentified
1961	N/A	46	Unknown/Unidentified
1961	N/A	7,844	Unknown/Unidentified

[1] Robert S. Taylor, Biogeographer/Fire GIS Specialist, National Park Service – Santa Monica Mountains National Recreation Area; Gregory Elwood, National Park Service Partner – GIS Technician.

YEAR	FIRE NAME	ACREAGE	IGNITION SOURCE
1964	N/A	86	Unknown/Unidentified
1966	N/A	13	Unknown/Unidentified
1967	Junction Fire	655	Unknown/Unidentified
1967	Latigo Fire	2,868	Unknown/Unidentified
1968	N/A	20	Unknown/Unidentified
1968	N/A	15	Unknown/Unidentified
1970	N/A	1	Unknown/Unidentified
1970	N/A	12	Unknown/Unidentified
1970	N/A	47	Unknown/Unidentified
1970	Clampitt Fire	77,043	Unknown/Unidentified
1970	Wright Fire	28,197	Unknown/Unidentified
1970	N/A	64	Unknown/Unidentified
1970	Golf Course Fire	201	Unknown/Unidentified
1972	N/A	17	Unknown/Unidentified
1972	N/A	8	Unknown/Unidentified
1972	N/A	6	Unknown/Unidentified
1972	N/A	19	Unknown/Unidentified
1973	Potrero	12,299	Unknown/Unidentified
1973	Trippet Fire	2,831	Unknown/Unidentified
1975	Park Fire	139	Unknown/Unidentified
1975	N/A	4	Unknown/Unidentified
1976	Los Robles	2,245	Unknown/Unidentified
1976	Decker	156	Unknown/Unidentified
1976	N/A	23	Unknown/Unidentified

YEAR	FIRE NAME	ACREAGE	IGNITION SOURCE
1977	N/A	14	Unknown/Unidentified
1977	N/A	2	Unknown/Unidentified
1977	N/A	15	Unknown/Unidentified
1977	Canyon Fire	1,162	Unknown/Unidentified
1977	Carlisle Fire	1,377	Unknown/Unidentified
1978	N/A	6	Unknown/Unidentified
1978	N/A	60	Unknown/Unidentified
1978	N/A	38	Unknown/Unidentified
1978	Trancas Fire	210	Unknown/Unidentified
1978	Kanan Fire	25,586	Unknown/Unidentified
1979	N/A	2	Unknown/Unidentified
1979	Liberty Canyon Fire	158	Unknown/Unidentified
1980	Hill Canyon	11,975	Unknown/Unidentified
1980	Sunland Fire	6,454	Unknown/Unidentified
1980	N/A	20	Unknown/Unidentified
1980	Las Virgenes Fire	2,521	Unknown/Unidentified
1981	N/A	67	Unknown/Unidentified
1982	Brush	1	Unknown/Unidentified
1982	Water	10	Smoking
1982	Highlands Fire	188	Unknown/Unidentified
1982	Dayton Canyon Fire	43,090	Unknown/Unidentified
1982	N/A	9	Unknown/Unidentified
1983	Heldover	0.002	Miscellaneous
1983	Fence	0.4	Unknown/Unidentified

YEAR	FIRE NAME	ACREAGE	IGNITION SOURCE
1983	Decker Canyon	0.1	Escaped Prescribed Burn
1984	Ditch	0.03	Equipment
1984	Gun Fire	124	Unknown/Unidentified
1984	N/A	7	Unknown/Unidentified
1984	Viewridge Fire	401	Unknown/Unidentified
1984	La Jolla	7	Playing with fire
1985	Mt. Olympus	13	Unknown/Unidentified
1985	Mulholland Fire	66	Unknown/Unidentified
1985	Hummingbird	2,382	Unknown/Unidentified
1985	Box Canyon (Pioneer) Fire	1,247	Unknown/Unidentified
1985	Park Fire	156	Unknown/Unidentified
1985	Decker Fire	6,567	Unknown/Unidentified
1986	Rancho 1	0.1	Vehicle
1986	N/A	38	Unknown/Unidentified
1986	A-Team	0.1	Unknown/Unidentified
1986	N/A	2	Unknown/Unidentified
1987	Agoura Fire	163	Unknown/Unidentified
1987	N/A	152	Unknown/Unidentified
1988	Sycamore	368	Unknown/Unidentified
1988	The Adobe Fire	241	Unknown/Unidentified
1989	Black Fire	169	Unknown/Unidentified
1989	N/A	6	Unknown/Unidentified
1990	N/A	50	Unknown/Unidentified

YEAR	FIRE NAME	ACREAGE	IGNITION SOURCE
1990	N/A	9	Unknown/Unidentified
1990	N/A	5	Unknown/Unidentified
1990	Old Topanga	20	Unknown/Unidentified
1991	Cook Fire	2	Campfire
1991	Center	0.2	Power Line
1991	Morning	1	Arson
1991	Archery	0.1	Unknown/Unidentified
1991	Potrero	1	Arson
1991	Encinal	0.2	Unknown/Unidentified
1992	Party Rock	0.1	Vehicle
1992	Pier	1	Campfire
1992	Party Rock 2	0.1	Unknown/Unidentified
1992	Phone Line	0.1	Power Line
1992	Carlisle	0.2	Power Line
1992	Big Rock	0.1	Unknown/Unidentified
1992	Tapia	0.1	Unknown/Unidentified
1992	Malibu	5	Campfire
1993	Satwiwa	45	Campfire
1993	Sycamore	5	Unknown/Unidentified
1993	Malibu	10	Unknown/Unidentified
1993	Malibu Fire 15 Ac	14	Unknown/Unidentified
1993	Green Meadows	38,480	Unknown/Unidentified
1993	Old Topanga	16,198	Arson
1994	Kanan	1	Unknown/Unidentified

YEAR	FIRE NAME	ACREAGE	IGNITION SOURCE
1994	Nicholas	1	Unknown/Unidentified
1994	Latigo Fire	63	Unknown/Unidentified
1995	Busch	0.1	Power Line
1995	Circle X	0.1	Debris
1995	Stonyvale	9	Smoking
1995	Triunfo	0.2	Playing with fire
1996	Triunfo 1	0.2	Unknown/Unidentified
1996	Encinal	0.1	Escaped Prescribed Burn
1996	Charmlee	6	Arson
1996	Calabasas	12,187	Power Line
1997	Decker	1	Campfire
1997	Malibu	10	Power Line
1997	Las Virgenes	2	Equipment
1997	Sycamore	18	Playing with fire
1997	Mulholland	20	Unknown/Unidentified
1997	Lost Hills	5	Unknown/Unidentified
1997	School	0.1	Vehicle
1997	Yerba	0.2	Debris
1997	Malibu	3	Unknown/Unidentified
1997	Hidden	0.1	Debris
1998	Potrero	2	Unknown/Unidentified
1998	Encinal	0.5	Unknown/Unidentified
1998	Malibu Creek	0.1	Campfire
1998	Corral	0.5	Unknown/Unidentified

YEAR	FIRE NAME	ACREAGE	IGNITION SOURCE
1998	Sherwood	0.2	Lightning
1998	Trancas	0.2	Lightning
1998	Yerba Buena	0.1	Lightning
1998	Triunfo	0.2	Lightning
1998	Yerba	0.1	Vehicle
1999	Pchic	0.1	Unknown/Unidentified
1999	No Name	0.5	Miscellaneous
1999	Peter Strauss	1	Campfire
1999	Greenwood	85	Playing with fire
1999	Mulholland	3	Unknown/Unidentified
2000	NPS Truck	0.01	Vehicle
2000	Topanga	0.3	Vehicle
2000	Wendy	0.05	Unknown/Unidentified
2001	Malibu Tunnel	0.1	Debris
2002	West PCH	0.2	Unknown/Unidentified
2002	Mulholland	0.2	Debris
2002	Backbone	0.2	Arson
2002	Entrada	0.1	Arson
2002	Deer Creek	1	Vehicle
2002	Decker	15	Campfire
2003	Latigo	0.3	Power Line
2003	Corral	8	Power Line
2003	Dump Fire	9	Miscellaneous
2003	Sycamore Incident	77	Power Line

YEAR	FIRE NAME	ACREAGE	IGNITION SOURCE
2003	101 Fire	0.2	Vehicle
2003	Lofty Kanan	0.1	Vehicle
2003	Malibu-PCH	0.02	Campfire
2003	Old Topanga	16	Equipment
2003	134812	0.1	Smoking
2003	Bulldog	0.1	Power Line
2003	Corral	37	Power Line
2003	Norman	0.1	Equipment
2003	Rodeo	0.2	Structure
2006	Latigo	37	Vehicle
2004	Foothill	1	Arson
2004	Wendy Incident	121	Vehicle
2005	Csuci	2	Unknown/Unidentified
2005	Freeway	15	Vehicle
2005	Topanga	23,392	Unknown/Unidentified
2006	Sherwood	168	Unknown/Unidentified
2006	Westlake	34	Equipment
2007	Malibu	37	Smoking
2007	Rocky Oaks	0.3	Miscellaneous
2007	Latigo Canyon	0.1	Miscellaneous
2007	Triunfo	0.3	Miscellaneous
2007	Latigo	0.2	Equipment

YEAR	FIRE NAME	ACREAGE	IGNITION SOURCE
2007	Tunnel	0.3	Miscellaneous
2007	Kanan	1	Equipment
2007	Sandstone	0.1	Vehicle
2007	Creek	1	Miscellaneous
2007	Flores	0.1	Vehicle
2007	Deer Creek	0.1	Vehicle
2007	Agoura 2	2	Arson
2007	Sesnon	30	Unknown/Unidentified
2007	Virgenes	0.02	Miscellaneous
2007	Corral	4,707	Unknown/Unidentified
2007	Sterling	0.01	Lightning
2008	Mulholland	0.1	Unknown/Unidentified
2008	Westlake	0.3	Unknown/Unidentified
2008	Triunfo	0.5	Unknown/Unidentified
2008	Malibu	51	Structure
2008	Bluff	0.3	Aircraft
2008	Lost	167	Unknown/Unidentified
2008	Topanga	1	Vehicle
2008	Kanan	2	Unknown/Unidentified
2008	La Jolla	22	Unknown/Unidentified
2008	Yellow Hill	2	Unknown/Unidentified

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F. Threatened and Endangered Species Tables

The following tables are a general guide to help community members understand the federally threatened and endangered species designated under the Endangered Species Act that are likely to be found in the CWPP Planning Area. They describe habitat associations that must be considered in planning fire prevention and suppression actions.

In planning fuel treatments, it is important to consult local experts familiar with the area's flora and fauna (e.g. resource professionals, or national or state park staff).

This list is not complete. It does not include any species listed as threatened, endangered, rare, or species of concern under California law, nor federal species of concern. Those species are equally important to conserve. A complete list including species of concern, sensitive, and rare species can be found in the National Park Service's "Final Environmental Impact Statement for a Fire Management Plan" for the SMMNRA (2005).[1]

FEDERALLY THREATENED, ENDANGERED, AND SENSITIVE SPECIES OF THE SMMNRA

SPECIES AND STATUS	SPECIFIC HABITAT REQUIREMENTS[2,3]
Plants	
Astragalus brauntonii Braunton's milk-vetch E[4] 	Short-lived perennial herb found in chaparral, coastal scrub, and grassland vegetation from sea level up. Often associated with recent burns or disturbed areas. Found in calcium- and magnesium-rich soils, shallowly deposited over marine-derived sandstone or limestone formations.[5] Blooms January–August. Threatened by development, vegetation/fuel management activities, and alteration of local fire regimes. Populations of A. brauntonii occur in Palo Comado Canyon, and Zuma Canyon. Photo: Anthony Valois, National Parks Service[6]
Astragalus tener titi Coastal Dunes milk-vetch E[7] 	Found in coastal dunes historically, in San Diego, Los Angeles, and Monterey counties. It is currently known from one highly fragmented population located on a coastal terrace grassland on the Monterey Peninsula. Photo: © 2006 Bob Huettmann (CalPhotos)[8]

[1] www.researchlearningcenter.org/samo/planning/FireEIS/, pp. 3-80 to 3-83.

[2] California Department of Fish and Game, *Life History Accounts and Range Maps–California Wildlife Habitat Relationships System.* www.dfg.ca.gov/biogeodata/cwhr/cawildlife.aspx.

[3] California Native Plant Society. *Inventory of Rare and Endangered Plants.* http://cnps.web.aplus.net/cgi-bin/inv/inventory.cgi.

[4] Federally "Endangered" as per the Endangered Species Act.

[5] Landis, Betsey. Surveys and Observations of Braunton's Milkvetch (*Astragalus brauntonii*). 2007 USFWS, Ventura, CA.

[6] Valois, Anthony. National Park Service. May 2005. Photos. Wildflowers of the Santa Monica Mountains National Recreation Area. Brauton's Rattle-weed, *Astragalus brauntonii* www.researchlearningcenter.com/bloom/species/Astragalus_brauntonii.htm.

[7] http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=Q07J

[8] www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=941

SPECIES AND STATUS	SPECIFIC HABITAT REQUIREMENTS[2,3]
Cordylanthus maritimus Subspecies (ssp.) maritimus Salt marsh bird's-beak E 	Found in marshes and swamps, or occasionally in coastal dunes in elevations below 100 feet. Blooms May–October. Threatened by vehicles, road construction, foot traffic, non-native plants, and loss of salt marsh habitat. Photo: Anthony Valois, National Parks Service[9]
Dudleya abramsii ssp. parva Conejo dudleya T 	Found in coastal scrub and grassland vegetation on shallow gravelly, clay, or volcanic soils above 200 feet elevation. Blooms May–June. Threatened by horticultural collecting, recreation, vehicles, and urbanization. Endemic to the Santa Monica Mountains. Photo: Anthony Valois, National Parks Service May, 2007[10]
Dudleya cymosa ssp. Agourensis Agoura Hills dudleya **T**[11] 	Perennial herb that is native to California, specifically in the western Santa Monica Mountains. Photo: National Park Service[12]
Dudleya cymosa ssp. marcescens Marcescent dudleya T[13] 	Found in chaparral or on the lower reaches of sheer volcanic rock surfaces and canyon walls adjacent to perennial streams in coast live oak woodlands. Blooms April–July. Known from fewer than 10 occurrences in the Santa Monica Mountains, where it is endemic. Threatened by development and foot traffic. Photo: Anthony Valois, National Parks Service[14]

[9] Valois, Anthony. National Park Service. June 7th, 2004. Photos. Wildflowers of the Santa Monica Mountains National Recreation Area. Bird's Beak, *Cordylanthus rigidus.* Accessed April 3rd, 2010. www.researchlearningcenter.com/bloom/species/Cordylanthus_rigidus.htm.

[10] Valois, Anthony. National Park Service. May 2007. Photos. Wildflowers of the Santa Monica Mountains National Recreation Area. Cnejo Dudleya, Dudleya abramsii spp. parva. Accessed April 3rd, 2010. www.researchlearningcenter.com/bloom/species/Dudleya_abramsii_parva.htm

[11] www.cnps.org

[12] www.researchlearningcenter.org/bloom/bloom.htm

[13] Federally "Threatened" as per the Endangered Species Act.

SPECIES AND STATUS	SPECIFIC HABITAT REQUIREMENTS[2,3]
Dudleya cymosa ssp. ovatifolia Santa Monica Mountains dudleya T 	Found in chaparral and coastal scrub vegetation, on rock outcroppings along shaded deep canyon bottoms, or on exposed north facing slopes. Blooms March–June. Threatened by development and recreational activities. Endemic to the Santa Monica and Santa Ana Mountains. Photo: Tarja Segar © 2005 Santa Monica Mountains Recreation Area[15]
Dudleya verity Verity's dudleya T 	Found in chaparral, montane woodland, and coastal scrub on volcanic and rocky soils 200-400 feet in elevation. Most common on north facing rock outcrops in coastal sage scrub. Blooms May–June. Threatened by mining, flood control activities, and development. Endemic to the Santa Monica Mountains. Photo: Anthony Valois, National Parks Service May, 2007[16]
Pentachaeta lyonii Lyon's Pentachaeta **E** 	Found only in the Santa Monica Mountains and Simi Hills (in the area of Westlake reservoir and Lake Sherwood), generally in openings or along eroded trails in chaparral, coastal scrub, valley, and foothill grasslands. It is being exterminated by fuel clearance practices.[17] Photo: © 2003 Michael Charters[18]

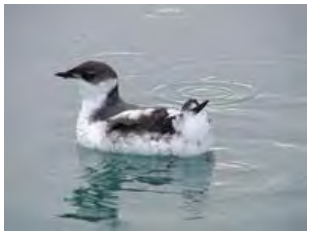
[14] Valois, Anthony. National Park Service. April 30th, 2004. Photos. Wildflowers of the Santa Monica Mountains National Recreation Area. Marcescent Dudleya, *Dudleya cymosa spp. Marcescens.* Accessed April 3rd, 2010. www.researchlearningcenter.com/bloom/species/Dudleya_cymosa_marcescens.htm.

[15] Sagar, Tarja. Photo. © 2005 Santa Monica Mountains Recreation Area. Cal Photos, Photo Database. http://calphotos.berkeley.edu/cgi/img_query?query_src=&seq_num=178481&one=T.

[16] Valois, Anthony. National Park Service. May 2007. Photos. Wildflowers of the Santa Monica Mountains National Recreation Area. Verity's Dudleya, *Dudleya verityi.* Accessed April 3rd, 2010. www.researchlearningcenter.com/bloom/species/Dudleya_verityi.htm.

[17] Betsey Landis, personal communication, June 19, 2010.

[18] http://calphotos.berkeley.edu/cgi/img_query?enlarge=0000+0000+0503+0219

Birds	
Brachyramphus marmoratus Marbled Murrelet T 	**FEEDING:** In summer, forages close to shore (within 500 m; 1640 ft) in shallow water, usually less than 30 m (95 ft) deep. In nonbreeding season, often forages farther from shore. Forages by diving and pursuing small fish, the main food. Invertebrates, including *decapods* and *cephalopods*, comprise a minor part of the diet. Parents feed nestlings small fish. **REPRODUCTION:** Generally nests in dense, mature forests. **HABITAT:** Only an occasional visitor to the SMM. When not feeding, probably spends day on surface of shallow coastal waters close to shore. In addition to requiring shallow coastal waters for feeding, may need a stream near the nest to float fledging young down to the coast. Photo: Thomas Hamer, Hamer Environmental L.P. 2009[19]
Charadrius alexandrinus nivosus Western Snowy Plover T 	**FEEDING**: Eats insects, small crustaceans, and other minute invertebrates. Picks food items from substrate, probes in sand or mud or near shallow water; sometimes uses foot to stir up prey in shallow water. **REPRODUCTION**: Nests on the ground on broad open beaches or salt or dry mud flats, where vegetation is sparse or absent (small clumps of vegetation are used for cover by chicks); nests beside or under object or in open. **HABITAT**: Beaches, dry mud or salt flats, sandy shores of rivers, lakes, and ponds.[20] Photo: Dr. Lloyd Glenn Ingles © 1999 California Academy of Sciences[21]
Empidonax traillii extimus Southwestern Willow Flycatcher E 	**FEEDING:** Eats mainly insects caught in flight, sometimes gleans insects from foliage; occasionally eats berries. In breeding range, forages within and occasionally above dense riparian vegetation. **REPRODUCTION:** Nests primarily in swampy thickets or other areas where vegetation is 4-7 m or more in height. Nests in fork or on horizontal limb of small tree, shrub, or vine, at height of 0.6-6.4 m (mean usually about 2–3 m), with dense vegetation above and around the nest. **HABITAT**: Thickets, scrubby and brushy areas, open second growth, swamps, and open woodland. Habitat patches as small as 0.5 ha can support one or two nesting pairs.[22] If fire destroys the habitat where this species resides it can have negative effects. Photo: © Bob Steele[23]

[19] Hamer, Thomas. Hamer Environmental L.P. 2009. Photo. US Fish & Wildlife Service. Marbled Murrelet Photo Gallery. Accessed April 4th, 2005. www.fws.gov/arcata/es/birds/MM/gallery/mamu_gallery.html.

[20] NatureServe. *Explorer*. www.natureserve.org/explorer/

[21] Ingles, Dr. Lloyd, Glenn. © 1999 California Academy of Sciences. Photo. CalPhotos, Photo Database. *Charadrius alexandinus nivosus,* Western Snowy Plover. Accessed April 3rd, 2010. http://calphotos.berkeley.edu/cgi/img_query?query_src=photos_fauna_sci-Bird&seq_num=423&one=T.

[22] NatureServe.

[23] Steele, Bob. Photo. © Bob Steele Photography, Birds and Other Nature Images. Image ID: wilf_sw_T4176. www.bobsteelephoto.com/Species/wifl_sw.html.

Gymnogyps californianus California Condor E 	**FEEDING:** Strictly a scavenger, eating carrion such as cattle, sheep, deer, and ground squirrel carcasses. Dead cattle have provided the most important food source in recent decades. Searches for food while soaring and gliding. Food must be in open areas to enable landing and take-off. May fly 56 km (35 mi), or more, from roost to feeding sites. **REPRODUCTION:** Nests in caves, crevices, behind rock slabs, or on large ledges on high sandstone cliffs. Nest often surrounded by dense *brush*. A nest is not constructed; egg laid on bare surface. Nesting occurs within the Coast and Transverse Ranges of Ventura and Santa Barbara. **HABITAT:** Traditional roosting sites are ledges or cavities on cliffs. Uses water for drinking and bathing. Requires vast expanses of open savannah, grasslands, and foothill chaparral, with cliffs, large trees, and snags for roosting and nesting. This species is historically seen in the Santa Monica Mountains but has had no recent sightings. Photo: © 2006 Joseph Dougherty/ecology.org[24]
Haliaeetus leucocephalus Bald Eagle R 	**FEEDING:** Requires large bodies of water, or free-flowing rivers with abundant fish, and adjacent snags or other perches. Swoops from hunting perches, or soaring flight, to pluck fish from water. Groups may feed gregariously, especially on spawning fish. Scavenges dead fish, water birds, and mammals. Open, easily approached hunting perches and feeding areas used most frequently. **REPRODUCTION:** Nests in large, old-growth, or dominant live tree with open branchwork, especially ponderosa pine. Often chooses largest tree in a stand on which to build stick platform nest. Nest located usually located near a permanent water source. **HABITAT:** Perches high in large, stoutly limbed trees, on snags or broken-topped trees, or on rocks near water. Roosts communally in winter in dense, sheltered, remote conifer stands. This species is historically seen in the Santa Monica Mountains but has had no recent sightings. Photo: Gerald and Buff Corsi © 2004 California Academy of Sciences[25]

[24] Dougherty, Joseph. Photo. © 2006 Joseph Dougherty/ecology.org. CalPhotos Photo Database. *Gymnogyps californianus* California Condor. Accessed April 3rd, 2010. http://calphotos.berkeley.edu/cgi/img_query?query_src=photos_fauna_com-Bird&seq_num=181842&one=T.

[25] Corsi, Gerald and Buff. Photo. © 2004 California Academy of Sciences. CalPhoto, Photo Data Base. *Haliaeetus leucocephalus.* Accessed April 3rd, 2010. http://calphotos.berkeley.edu/cgi/img_query?query_src=photos_fauna_com-Bird&seq_num=150905&one=T.

Pelecanus occidentalis californicus Brown Pelican E 	**FEEDING**: Forages mainly in early morning or late afternoon, or when tide is rising. Feeds almost entirely on fish, caught by diving. May completely, or only partially, submerge and water may be shallow or deep. Occasionally feeds on crustaceans, carrion, and young of its own species. **REPRODUCTION**: The nest is a small mound of sticks or debris on rocky, or low, brushy slopes of undisturbed islands; usually on the ground, but less often in bushes. **HABITAT**: Usually rests on water or inaccessible rocks (either offshore or on mainland), but also uses mud flats, sandy beaches, wharfs, and jetties. Evidently does not roost overnight on water, but concentrates at a few traditional roosts on mainland or islands. Needs undisturbed islands adjacent to good marine fishing areas. Abundant in the Santa Monica Mountains. Photo: Gerald and Buff Corsi © 1999 California Academy of Sciences[26]
Polioptila californica California Gnatcatcher T 	**FEEDING:** Gleans insects and spiders from foliage of shrubs, especially California buckwheat and coastal sage. Also eats a few seeds. **REPRODUCTION:** Weaves a small, deep cup from hemp-like fibers, leaves, plant down, spider silk, in a shrub 0.6–0.9 m (2–3 ft) above ground. **HABITAT:** Shrubs provide roosting, nesting, and other cover. Is most numerous in low, dense, coastal scrub habitat in arid washes, on mesas, and on slopes of coastal hills. California buckwheat, coastal sage, and patches of prickly pear are particularly favored. Negatively impacted by fire. Records of this species in the Santa Monica Mountains are non-existent but if its habitat of coastal sage scrub is affected by fire it could have adverse affects on this species population. Photo: Peter Knapp[27]
Rallus longirostris levipes Light-footed Clapper Rail E 	**FEEDING:** Eats mainly crabs; also other crustaceans, small fishes, tadpoles, snails, insects, and some plant material. Probably probes in mud or sand in or near shallow water, or picks items from substrate. **REPRODUCTION:** Nests under clump of pickleweed, on ground, or in cordgrass slightly above ground level. **HABITAT:** Cordgrass-pickleweed saltmarsh. Size of breeding populations is closely associated with above-ground biomass of Spartina foliosa; keeping the salt marsh open to the sea is critically important.[28] Photo: © 2009 Steve Scholl[29]

[26] Corsi, Gerald and Buff. Photo. © 1999 California Academy of Sciences. CalPhoto, Photo Data Base. *Pelecanus occidentalis.* Brown Pelican. Accessed April 3rd, 2010. http://calphotos.berkeley.edu/cgi/img_query?query_src=photos_fauna_com-Bird&seq_num=456&one=T.

[27] Knapp, Peter. Photo. California Patners in Flight Coastal Scrub and Chaparral Bird Conservation Plan. *Poplioptila californica* California Gnatcatcher. Accessed April 3rd, 2010. www.prbo.org/calpif/htmldocs/species/scrub/california_gnatcatcher.html#top.

[28] NatureServe.

[29] Scholl, Steve. Photo. © 2009 Steve Scholl. CalPhotos Photo Database. *Rallus longirostris levipes* Light-footed Clapper Rail. Accessed April 3rd, 2010. http://calphotos.berkeley.edu/cgi/img_query?query_src=photos_fauna_com-Bird&seq_num=278012&one=T.

Sterna antillarum browni California Least Tern E 	**FEEDING:** Feeds primarily in shallow estuaries or lagoons where small fish are abundant. Hovers, and then plunges for fish near the surface, without submerging completely. Considerable feeding also takes place near shore in the open ocean, especially where lagoons are nearby, or at mouths of bays. **REPRODUCTION:** Nests in loose colonies in areas relatively free of human or predatory disturbance. Abandons nesting areas readily if disturbed. Courtship may take place away from nest colony, typically on a beach or exposed tidal flat. Nests on barren to sparsely vegetated site near water, usually on sandy or gravelly substrate. On hard soil, may use artificially created depressions such as a dried boot impression. **HABITAT:** Adult roosts primarily on the ground. Young chicks, 3 days old and older, are brooded less often by parents and require wind blocks and shade. Requires unpolluted feeding areas in lagoons and estuaries all year. Prefers undisturbed nest sites on open, sandy, or gravelly shores near shallow-water feeding areas in estuaries. Photo: © 2009 Benjamin Smith[30]
Vireo bellii pusillus Least Bell's Vireo E 	**FEEDING**: Eats almost exclusively insects, also spiders, snails, fruits; forages in dense brush, occasionally in tree tops. Gleans prey from leaf and bark substrates, also obtains some prey by hovering and occasionally by hawking. **REPRODUCTION**: Nests in shrub or low tree, usually averaging about 1 m above ground, usually in horizontal or downsloping twig fork, typically near edge of thicket. Usually returns to same nesting territory in successive years. **HABITAT**: Dense brush, mesquite, willow-cottonwood forest, streamside thickets, and scrub oak, in arid regions but often near water, moist woodland, bottomlands, woodland edge, scattered cover and hedgerows in cultivated areas. Willow-dominated riparian woodlands, open woodland, brush in winter.[31] If fire destroys the riparian habitat where this species resides it can have negative effects on the population. Photo: James Gallagher, Sea and Sage Audubon[32]

[30] Smith, Benjamin. Photo. © 2009 Benjamin Smith. CalPhotos Photo Database. *Strenula antillarum browni* California Least Tern. Accessed April 3rd, 2010. http://calphotos.berkeley.edu/cgi/img_query?query_src=photos_fauna_sci-Bird&seq_num=283725&one=T.

[31] NatureServe.

[32] Gallagher, James. Sea and Sage Audubon. California Patners in Flight Coastal Scrub and Chaparral Bird Conservation Plan. *Vireo bellii pusilius* Least Bell's Vireo. Accessed April 3rd, 2010. www.prbo.org/calpif/htmldocs/species/riparian/least_bell_vireo.htm.

Amphibians	
Bufo californicus Arroyo Toad E[33] 	**FEEDING:** Adults of this species feed on snails, Jerusalem crickets, beetles, ants, caterpillars, moths, and occasionally they cannibalize newly metamorphosed individuals. Southwestern toads usually feed during the night but may occasionally feed during the day. Individuals walk instead of hop when foraging for food. **REPRODUCTION:** Eggs are laid on the bottom of quiet parts of clear streams or shallow ponds, among leaves, gravel, or sticks. Clear standing water is required for egg deposition. **HABITAT:** Often found near rivers with sandy banks, willows, cottonwoods, and sycamores in valley-foothill and desert riparian habitats. Found in loose gravelly areas of streams in drier portions of its range. Photo: © 2006 William Flaxington[34]
Rana draytoni[35] California Red-legged Frog T 	Red-legged frogs have been largely extirpated from the Santa Monica Mountains. A small population was recently discovered in the eastern end of the Simi Hills and is in danger of extinction from urban encroachment. Deep pools are a necessary habitat component for this species. Photo: © 2003 Pierre Fidenci[36]

[33] http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=D020

[34] Flaxington, William. Photo. © 2006 William Flaxington. CalPhotos Photo Database. *Bufo californicus* Arroyo Toad. Accessed April 3rd, 2010. http://calphotos.berkeley.edu/cgi/img_query?query_src=photos_fauna_sci-Amphibian&seq_num=195677&one=T.

[35] Description from: NPS (2005), Final EIR for a Fire Management Plan, SMMNRA.

[36] Fidenci, Pierre. Photo. © 2003 Pierre Fidenci. CalPhotos Photo Database. *Rana aurora draytonii* Red-legged Frog. Accessed April 3rd, 2010. http://calphotos.berkeley.edu/cgi/img_query?query_src=photos_fauna_sci-Amphibian&seq_num=130344&one=T.

Fish	
Eucyclogobius newberryi Tidewater Goby E 	**FEEDING**: Benthic feeder on small crustaceans (mysids, ostracods, amphipods), insects (chironomid larvae, diptera larvae), and mollusks. **REPRODUCTION:** Spawns on substrate of coarse sand, in burrow dug by male usually in water 25–50 cm deep. Larvae are found midwater around vegetation until they become benthic. Spawns throughout much of the year. **HABITAT:** Benthic. A strictly estuarine species found in Malibu and Topanga lagoons, possibly also in the lower reaches of streams and uppermost portions of large bays. Most abundant in the upper ends of lagoons created by small coastal streams. In lower sections of coastal streams, occurs in fresh to brackish water. Occurs in vegetated pools of slow (but not stagnant) areas of streams. Generally occurs in water 25–100 cm deep. Able to complete life cycle in fresh or brackish water. Prefers mud substrates. Does not have a marine life history phase; hence, frequency of genetic exchange among different coastal lagoon populations is severely restricted, as is the potential for recolonization of a locality following extirpation.[37] Photo: © 2007 Bradford Norman[38]
Oncorhynchus mykiss Southern California Steelhead Trout E 	**REPRODUCTION:** Steelhead typically spend two years in fresh water, migrate to marine waters where they spend 2–3 years, then return to natal stream to spawn. Known spawning streams include Malibu, Topanga and Arroyo Sequit. **HABITAT:** Spawning streams are relatively warm, and sand berms across the mouths of stream may be long-lasting.[39] Photo: © 1999 Aaron Nadig[40]
Invertebrates	
Euphydryas editha quino Wright's Checkerspot Butterfly E 	Believed to be locally extirpated. The Quino Checkerspot was once widespread throughout the coastal sage scrub areas of Southern California and Northern Baja California, it has been in rapid decline and is now limited to a few populations in Riverside and San Diego Counties.[41] Photo: Guy Bruyea[42]

[37] NatureServe.

[38] Norman, Bradford. Photo. © 2007 Bradford Norman. CalPhotos Photo Database. *Eucyclogobius newberryi* Tidewater Goby. Accessed April 3rd, 2010. http://calphotos.berkeley.edu/cgi/img_query?query_src=photos_fauna_sci-Fish&seq_num=208799&one=T.

[39] NatureServe.

[40] Nadig, Aaron. Photo. © 1999 Aaron Nadig. CalPhoto Photo Database. *Onocorhynchus mykiss* Steelhead Trout. Accessed April 3rd, 2010. http://calphotos.berkeley.edu/cgi/img_query?query_src=photos_fauna_sci-Fish&seq_num=2090&one=T.

[41] www.sdnhm.org/fieldguide/inverts/euph-edi.html

[42] www.fws.gov/carlsbad/TEspecies/Documents/QuinoDocs/Quino2010MonRef/Quino_2010_Ref_Info.htm

Streptocephalus wootoni Riverside Fairy Shrimp E[43] 	The Riverside fairy shrimp is a small aquatic crustacean that inhabits vernal pools, pool-like ephemeral ponds, water sheds, hydrologic regimes, and human-modified depressions from coastal southern California to northwestern Baja California, Mexico.[44] Photo: Center for Biological Diversity [45]

[43] www.fws.gov/ecos/ajax/speciesProfile/profile/speciesProfile.action?spcode=K03F

[44] www.epa.gov/fedrgstr/EPA-IMPACT/2000/September/Day-21/i24198.htm

[45] www.biologicaldiversity.org/species/invertebrates/Riverside_fairy_shrimp/

PUBLIC DRAFT

A WORKSHOP FOR

COMMUNITY WILDFIRE PROTECTION PLAN PROJECTS

Compliance with Federal Environmental Regulations

Pasadena, CA
March 27, 2008
Eaton Canyon Nature Center

Table of Contents

Introduction

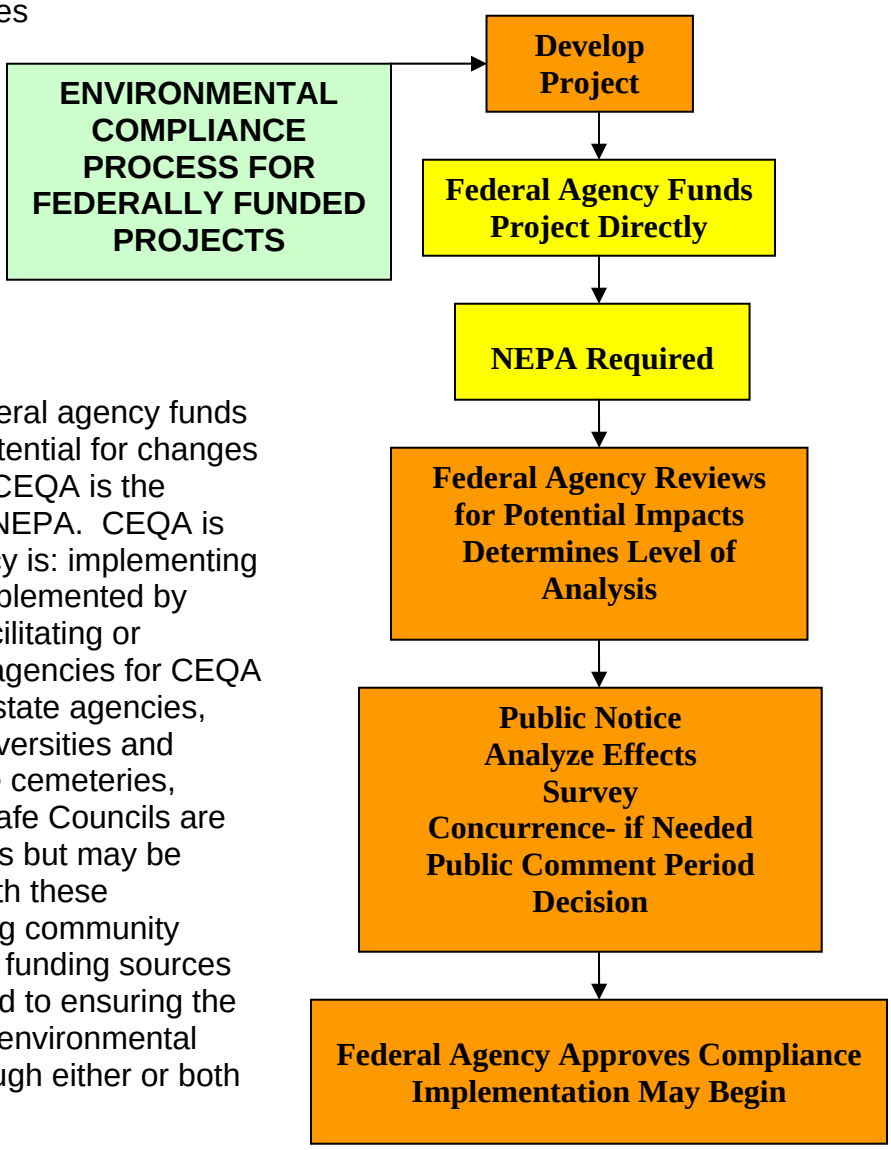
Southern California is one of the most biologically diverse areas in the world, due to the wide variety of favorable habitats. This same desirability has attracted over 18.5 million people to live in the same place, a number that continues to grow. Many plant and wildlife species have declined radically in response to increased human development, which has reduced and altered their habitats. As a result, there are now more threatened or endangered species in Southern California than in any other region in the continental United States. Laws, such as the Migratory Bird Treaty Act and the Endangered Species Act, exist to ensure that wildlife species are considered and managed to provide for their continued existence. The US Fish & Wildlife Service and the California Department of Fish and Game are responsible for administering these laws and for looking ahead to prevent further wildlife population declines that could lead to species' extinctions.

Along with increased land development came an associated increased danger of wildland fire damage to properties, wildlife habitats, and native vegetation. One method of reducing fire risk to property is to reduce the vectors for fire spread by managing vegetation around homes and communities. Local fire agencies have developed Brush Management Guidelines for reducing fire hazards, and grants are available through the Grants Clearinghouse to fund fuel reduction projects. However, vegetation treatments usually change or remove wildlife habitat and can cumulatively add up to losses of thousands of acres of habitat and native vegetation as home owners and communities implement vegetation treatment projects. All projects must comply with state and federal environmental laws in order to qualify for and obtain grant funding from the Grants Clearinghouse. In some areas, Habitat Conservation Plans have been developed in coordination with the US Fish and Wildlife Service to guide vegetation management while maintaining essential habitat for our native plants and wildlife populations.

As fires occur throughout Southern California, we have learned valuable lessons about yard and home maintenance, and defensible space management that can help increase fire safety for communities, families, and firefighters. This document provides guidelines to protect lives and property from the threat of fire, while providing Best Management Practices (BMPs) to assess and minimize impacts to sensitive species and other valuable resources. These BMPs can help you more easily meet the regulatory requirements for your FireSafe projects, secure funding, and implement your projects more economically and expeditiously. Contacts and websites are provided for more information.

What You Should Know About Federal Regulations

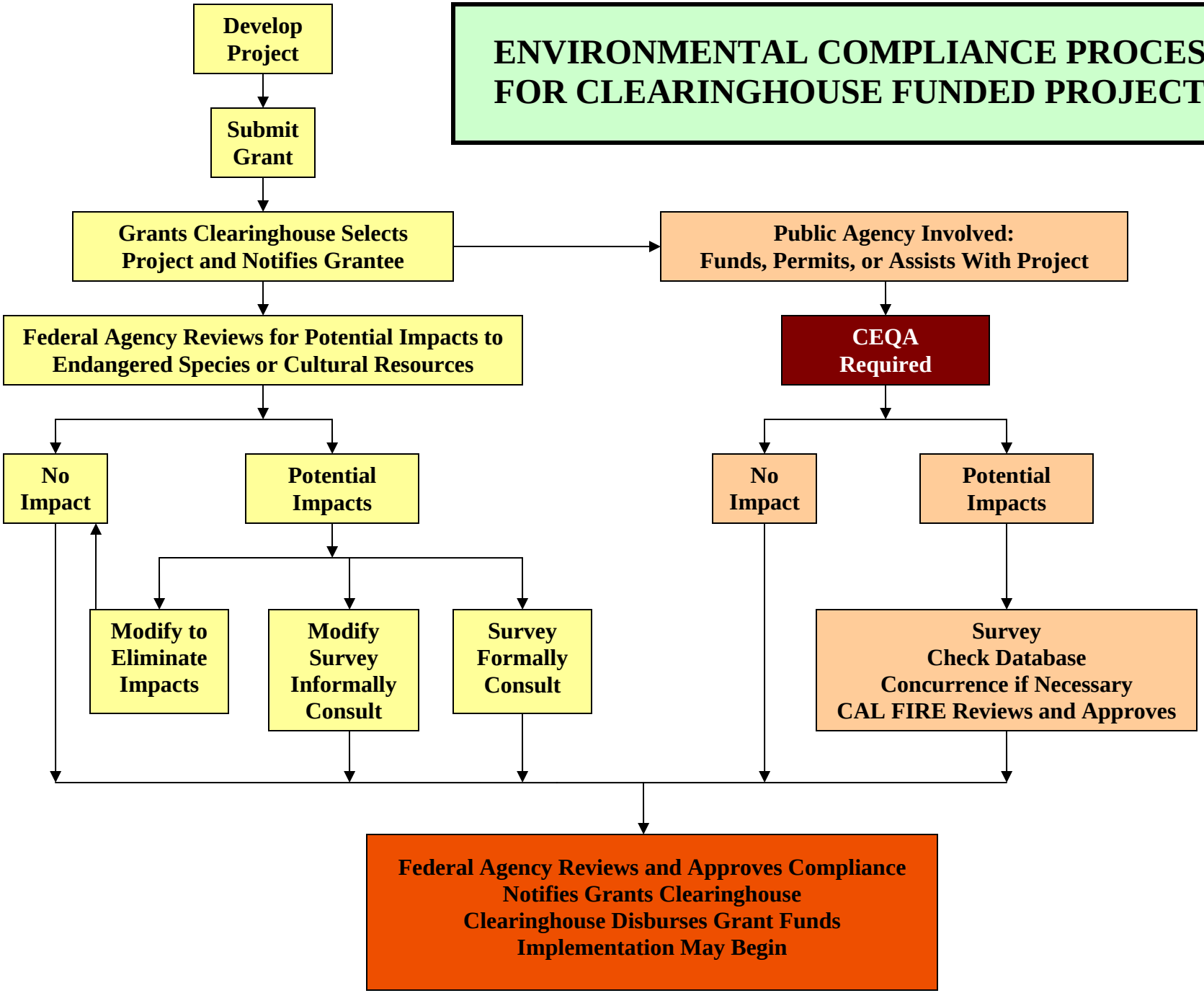
NEPA (National Environmental Policy Act) and CEQA (California Environmental Quality ACT) are regulations, laws and codes governing projects that have the potential to impact environmental resources



NEPA and CEQA

NEPA is triggered when a federal agency funds or implements actions with potential for changes in the physical environment. CEQA is the California state equivalent of NEPA. CEQA is triggered when a public agency is: implementing a project, funding a project implemented by others, issuing a permit, or facilitating or assisting in a project. Public agencies for CEQA include the following entities: state agencies, counties, cities, California Universities and special districts, which include cemeteries, irrigations districts etc. Fire Safe Councils are not considered public agencies but may be responsible for compliance with these regulations when implementing community protection projects. Grants or funding sources for these projects are likely tied to ensuring the environment is protected and environmental compliance is completed through either or both NEPA and CEQA.

ENVIRONMENTAL COMPLIANCE PROCESS FOR CLEARINGHOUSE FUNDED PROJECTS



Biological and Cultural Considerations

The following pages briefly describe the federal regulations that protect sensitive biological and cultural resources in San Diego County. These pages aim to help users comply with these laws when carrying out small scale hazardous fuel treatments.

Federal Endangered Species Act

- Establishes a broad framework to save species from extinction.
- Requires the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) to list species as Threatened or Endangered, and to designate Critical Habitat and develop Recovery Plans for those listed species.
- Threatened species are those experiencing serious threats that may eventually lead to extinction, but the situation is not critical yet.
- Endangered species are those on the brink of extinction.
- Prohibits anyone from "taking" (i.e. harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect) a Threatened or Endangered animal species. "Harm" also includes significant habitat modification or degradation which kills or injures species by significantly impairing essential behavioral patterns like breeding, feeding or sheltering.
- Prohibits intentional removal or damage of Endangered plant species.
- If you think you may affect a listed species or its habitat, you must consult with USFWS or NMFS.

Least Bell's Vireo

Why Should I Be Concerned About Endangered Species?

Wildlife and plants "are of esthetic, ecological, educational, historical, recreational, and scientific value to the Nation and its people" (Endangered Species Act).

- California has 309 federally listed species.
- 101 million acres in California are designated Critical Habitat.
- 47 species have designated Critical Habitat in California.
- San Diego County has 39 federally listed species and 3 species proposed for listing.

Section 7 Consultation with U.S. Fish and Wildlife Service and/or National Marine Fisheries Service

This type of consultation pertains to any federally funded or permitted activity that may adversely affect federally-listed Threatened or Endangered species or Critical Habitat. To determine whether a project has the potential to adversely affect federally-listed species, speak to a professional biological consultant or USFWS biologist.

U.S. Fish and Wildlife Service or National Marine Fisheries Service Jurisdiction

USFWS has jurisdiction over terrestrial wildlife, freshwater aquatic species, and plant species, and NMFS has jurisdiction over marine and anadromous aquatic species.

Permit Types

No Effect, Technical Assistance Letter: This is available for projects that have been determined to have no effect on federally protected species or habitats, or when federally protected species or habitats are determined not present in the action area.

May Affect, But Not Likely to Adversely Affect, Letter of Concurrence: This is available for projects that are determined to have a potential to affect federally protected species or habitat, but with implementation of avoidance and minimization measures, the project is not likely to adversely affect the species or habitat. The agency with jurisdiction (USFWS or NMFS) will issue a Letter of Concurrence stating the project may move forward with implementation of the measures.

Likely to Adversely Affect, Biological Opinion and Incidental Take Permit: USFWS or NMFS will require a biological opinion and incidental take permit when it determines that a project is likely to adversely affect any listed species or habitat.

Required Items for the Application Package

- Complete project description (existing conditions, proposed activities, analysis of impacts, proposals for avoidance, minimization and/or mitigation)
- Description of action area
- Conceptual engineering plans
- Maps of species and habitats in project area
- Biological Assessment
- Analyses of potential impacts: direct effects, indirect effects, cumulative effects

Section 10 Consultation with U.S. Fish and Wildlife Service and/or National Marine Fisheries Service

Activities subject to this type of permit include any private activity occurring on private land that may adversely affect federally-listed species or Critical Habitat. To determine whether a project has the potential to adversely affect federally-listed species, speak to a professional biological consultant or USFWS biologist.

U.S. Fish and Wildlife Service or National Marine Fisheries Service Jurisdiction

USFWS has jurisdiction over terrestrial wildlife, freshwater aquatic species, and plant species, and NMFS has jurisdiction over marine and anadromous aquatic species. The Section 10 process can be very lengthy and complicated. If it is possible to avoid impacting listed species or to obtain federal funding or other federal approval for your project, it is advisable to do so to avoid the Section 10 process.

Permit Types

Prior to even applying for a permit, the Applicant will be required to work with USFWS/NMFS to develop project descriptions, determine baseline conditions of the site, and develop land use objectives. The Section 10 process then requires the applicant to design a Habitat Conservation Plan (HCP) and provide a long-term commitment to species conservation. During the development of the HCP, the Applicant and USFWS/NMFS negotiate a Safe Harbor Agreement that provides assurance to USFWS/NMFS that the projects will have a “net conservation benefit” while also providing assurance to the Applicant that there will be “no surprises.” The no surprises clause assures the Applicant that if unforeseen circumstances arise, USFWS/NMFS will not require the commitment of additional land, water, or financial compensation or additional restrictions on the use of land, water or other natural resources beyond the level otherwise agreed to in the HCP without the consent of the Applicant and as long as the HCP conditions have been met.

It is only after development of the HCP and the Safe Harbor Agreement that the Application finally applies for the Incidental Take Permit under Section 10, which is called the “Enhancement of Survival Permit.” USFWS and NMFS will then conduct their own internal Section 7 Consultation process (see the Section 7 Consultation Process above) and a public review period. Upon completion, a 10(a)(1)(B) permit will be issued.

Required Items for the Application Package

- Complete project description (existing conditions, proposed activities, analysis of impacts, proposals for avoidance, minimization and/or mitigation)
- Proposed management activities and monitoring program of management practices
- Maps of species and habitats in project area
- Biological Assessment
- Analyses of potential impacts: direct effects, indirect effects, cumulative effects
- Habitat Conservation Plan
- Enhancement of survival application form

Who Do I Contact for Either Section 7 or Section 10 Consultation?

- **USFWS**:
  - Carlsbad Office: (760) 431-9440, http://www.fws.gov/carlsbad (for lands in LA County east of Hwy 405 and south of the Angeles National Forest) or
  - Ventura Office: (805) 644-1766, http:/www.fws.gov/ventura (for lands in Ventura County and lands in LA County west of Hwy 405 and north of the Angeles National Forest)
  - Sacramento Office: (916) 414-6600 http://www.fws.gov/sacramento/es/default.htm

- **NMFS**:
  - Darren Brumback NOAA Fisheries, Long Beach (562) 980-4060
  - Long Beach Office of Protected Species Management: (562) 980-4020
  - For Endangered Species Permits and Conservation Plans apply online at: http://www.nmfs.noaa.gov/pr/permits/esa_permits.htm

- Check out the homeowner's guide http://www.wildfirezone.org/resources.asp

Migratory Bird Treaty Act

- Was enacted to put an end to the commercial trade of birds and their feathers.
- Prohibits killing, possessing, or trading migratory birds.
- Applies to whole birds, parts of birds, bird nests and eggs.
- Applies to many common bird species and private, state and federal lands.
- Does not provide protection of habitat of migratory birds, but does prohibit the destruction of active bird nests in active use without a permit from U.S. Fish and Wildlife Service.
- It is easiest to avoid active nests by working during the non-breeding season. This means avoiding vegetation removal between March 1 and August 31
- If you want to work during the nesting season, you should hire a biologist to survey for nesting birds and mark sites to be avoided during vegetation removal. Leave a buffer of vegetation around each nest to avoid nest abandonment.

More than 800 migratory birds are listed under the Migratory Bird Treaty Act. The Eagle Protection Act also protects bald and golden eagles.

Mourning Dove

Tri-Colored Blackbird

U.S. Fish and Wildlife Service Jurisdiction

Birds protected under the Migratory Bird Treaty Act include all common songbirds, waterfowl, shorebirds, hawks, owls, eagles, ravens, crows, native doves and pigeons, swifts, martins, swallows and others, including their body parts (feathers, plumes etc), nests, and eggs. A complete list of protected species is found at 50 CFR 10.13. Activities related to fire management which are most likely to result in take of migratory birds include, but are not limited to, clearing or grubbing, tree pruning or limbing, prescribed burning, and vegetation removal in nesting habitat during the nesting season when migratory bird eggs or young are likely to be present. Section 7031 of the MBTA prohibits taking any migratory bird, part, nest or eggs. Take is defined as “to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or any attempt to carry out these activities.” A take does not include habitat destruction or alteration, as long as there is not a direct taking of birds, nests, eggs, or parts thereof.

Who Do I Contact?

- USFWS:
  - Carlsbad Office: (760) 431-9440, http://www.fws.gov/carlsbad (for lands in LA County east of Hwy 405 and south of the Angeles National Forest) or
  - Ventura Office: (805) 644-1766, http:/www.fws.gov/ventura (for lands in Ventura County and lands in LA County west of Hwy 405 and north of the Angeles National Forest)
  - Sacramento Office: (916) 414-6600, http://www.fws.gov/sacramento/es/default.htm

More information is available at http://migratorybirds.pacific.fws.gov/mbta.htm.

National Historic Preservation Act

Manuel Garfias Adobe C.C. Pierce and Company

- ❖ Intended to preserve historic and archaeological sites in the U.S.
- ❖ Requires the National Park Service to maintain a National Register of Historic Places that identifies districts, sites, buildings, structures and objects worthy of preservation.
- ❖ Properties on the list are not automatically protected from damage or destruction, but federally-funded (or permitted) projects that will impact sites listed, or eligible for listing, must complete the "Section 106 Review Process" to minimize potential harm and damage to listed properties.

Why Care About Cultural Resources?

"Historical and cultural foundations of the Nation should be preserved as a living part of our community life and development in order to give a sense of orientation to the American people" (National Historic Preservation Act).

Different cultural resources:
• Prehistoric: pre-1800
• Historic Buildings: Greater than 45 years old
• Historic Period/Era: after 1800
• Paleontology: "Dead Critters"

ACHP and SHPO Jurisdiction (Advisory Council on Historic Preservation and State Historic Preservation Office)

The National Historic Preservation Act created the Advisory Council on Historic Preservation (ACHP), an independent Federal agency, which is authorized to review and comment on all actions licensed by the Federal government which will have an effect on properties listed in the National Register of Historic Places, or eligible for such listing. Any project involving a federal action must seek ACHP comments and complete Section 106 review (16 U.S.C. 470(f)). The Federal agency involved in the proposed project or activity is responsible for initiating and completing the review process. The agency must confer with the State Historic Preservation Officer (an official appointed in each State or territory to administer the National Historic Program) and the NHPA. The National Register is an inventory of the United States' historic resources and is maintained by the National Park Service. The inventory includes buildings, structures, objects, sites, districts, and archeological resources.

Permit Types

The agency consults to resolve adverse effects with the SHPO/THPO* and others, who may include Indian tribes, local governments, permit or license applicants, and members of the public. ACHP may participate in consultation when there are substantial impacts to important historic properties, when a case presents important questions of policy or interpretation, when there is a potential for procedural problems, or when there are issues of concern to Indian tribes. Consultation usually results in a Memorandum of Agreement, which outlines agreed-upon measures that the agency will take to avoid, minimize, or mitigate adverse effects. In some cases, the consulting parties may agree that no such measures are possible, and adverse effects must be accepted in the public interest.

Required Items for the Application Package

- Complete project description (existing conditions, proposed activities, analysis of impacts, proposals for avoidance, minimization and/or mitigation
- Area of potential effect map
- Assessment of historic properties significance
- Apply criteria of adverse effect
- Proposed avoidance, minimization and mitigation measures

Who Do I Contact?

- ACHP: http://www.achp.gov/nhpa.html
- SHPOL http://ohp.parks.ca.gov/
- Contact: calshpo@parks.ca.gov or call 916-653-6624

Best Management Practices for Sensitive Species

Why should you care about BMPs?

Because you want increased fire safety for your house, but you also want a beautiful place to live! Well managed defensible space minimizes the amount of work necessary to maintain fire safety, while retaining valuable trees and shrubs which maintain high property values and aesthetics. Any real estate agent can tell you that a well landscaped property is worth much more than a home surrounded by bare soil and weeds. And lastly, we know you love wildlife and nature. With the management practices listed below, you can make a difference and keep some habitat for them too.

General Best Management Practices (BMPs) Before You Start Vegetation Treatments:

1. Do a site inventory- know what is in your project area:
    a. Are the current plants native or non-native? ie: Laurel sumac, elderberry, California sagebrush and buckwheat are valuable native species; ice plant, pampas grass, fan palm and mustard are non-natives.
    b. Do you have any special or sensitive habitats? ie: Coastal sage scrub? Riparian areas? Vernal pools? These may not be readily evident at dry times of the year. (See descriptions and photos in Section below on BMPs for sensitive species.)
    c. Are there any sensitive species likely to occur in your treatment area?
        i. Depending on your habitat type, see Section below on BMPs for sensitive species to get an idea of what species to consider.
        ii. Call US Fish & Wildlife Service in Carlsbad or Ventura for info, (see contacts above), especially if you suspect threatened or endangered species may be present.
        iii. Call CA Dept. of Fish and Game, South Coast Region, at (858) 467-4201. They can answer many questions about all types of wildlife.
        iv. The Protocol Guidelines for surveying species can be obtained from http://www.dfg.ca.gov/whdab/natspec.pdf. (You can type survey protocol in the search window). Some species need to be surveyed several times over several weeks or months in order to be officially recognized as not being present.
    d. Is there any designated Critical Habitat for species in or near your project?
        i. You can check the US Fish and Wildlife Interactive Website at http://www.fws.gov/carlsbad/TEspecies/ListingCH.html
        ii. You can check the Dept. of Fish and Game interactive website at http://imaps.dfg.ca.gov/viewers/biospublic/app.asp
    e. You may want to design or modify the fuel treatment technique or timing to avoid additional costs associated with species surveys or avoidance

measures that could be necessary in certain areas (See Section below on BMPs for sensitive species).

2. Find out if your property is in an area with an established Habitat Conservation Plan since that would inform you what environmental compliance is already taken care of. The FWS contacts above can help you with this.

    a. To see what a Habitat Conservation Plan says and covers, see http://ecos.fws.gov/conserv_plans/servlet/gov.doi.hcp.servlets.PlanReportSelect?region=8&type=HCP. Once you select a plan, you can click on any species listed there to get all the information about that species.

    b. If you are outside of an established Habitat Conservation, you need to comply with all the existing Federal laws, such as the Endangered Species Act and the Migratory Bird Treaty Act. Contact the US Fish & Wildlife Service (above) for more information. You might also check with your developer, who should have already done all the environmental compliance under the state Bates Bill.

California Gnatcatcher

3. Find out the fuel reduction requirements for your area. CAL FIRE and your local fire department can direct you to this information, and tell you how it applies to your property. For information describing techniques and showing what defensible landscapes look like, see:

    a. The Safe Landscapes Project has very informative downloadable calendars for defensible spaces for Ventura and Los Angeles Counties, Landscaping for Wildfire Protection, and fact sheets on Making Your Property Fire-safe & SAFE Landscapes in the WUI. These are available at The University of California, Agriculture Extension web site at http://celosangeles.ucdavis.edu/Natural_Resources/Wildland_Fire.htm. The site also contains links for further assistance.

    b. The Ventura County Wildfire Action Plan is available at http://fire.countyofventura.org/publicinformation/publications/PDFs/Wildfire_Action_Plan_082108_web.pdf. See also a brochure Commitment to Defense, Protect Your Home Against Wildlfire, at

http://fire.countyofventura.org/departmentservices/fireprevention/standards/standardsPDF's/commitmenttodefense.pdf

c. CALFIRE websites have:

   i. Factsheets such as: “Make Your Home FIRESAFE - A Quick Checklist”, a “Homeowner’s Checklist for How to Make Your Home Fire Safe”, and “Before, During, and After a Wildlfire”, available at the website http://www.fire.ca.gov/communications/downloads/fact_sheets. Scroll down to Public Information at the bottom of the page for a list of titles. Some are available in Spanish, as well.

   ii. Learn How You Can Create Defensible Space Around Your Home at the website http://www.fire.ca.gov/communications/communications_firesafety_100feet.php, including links to:

      1. Why 100 Feet Flyer
      2. Why 100 Feet Brochure
      3. Homeowners Checklist
      4. Defensible Space Movies and Song

d. The Los Angeles and San Gabriel Rivers Watershed Council’s quarterly magazine “Water Wise” has information for firesafe landscapes and unimproved properties in Los Angeles County at http://www.lasgrwc.org/newsletters/Summer2008.pdf

e. The Fire Safe Council of San Diego web site has many valuable resources at http://www.firesafesdcounty.org which are valuable for other southern California counties as well. Navigate to How To, then Defensible Space. This site has links to:

   i. California General Guidelines for Creating Defensible Space a very helpful document with photos and diagrams for oak woodlands, chaparral, and conifer habitats.

   ii. City of San Diego Brush Management Regulations - has a nice diagram of what a pruned tree or large shrub should look like, and how to trim the plants outside of the 30 feet adjacent to the house.

f. The overall Fire Safe Council website has brochures that demonstrate defensible space management around homes in grasslands, brush lands, and forested lands at http://www.firesafecouncil.org/education/index.cfm.

g. The Wildfire Zone website has a list of publications at http://www.wildfirezone.org/resources.asp. Be sure to see the Homeowners Guide to Fuel Modification: Reducing Combustible Vegetation Around Your Home as well as several other useful links.

h. The California Chaparral Institute website at http://www.californiachaparral.com/bprotectingyourhome.html has several suggestions for working with nature to reduce fire hazard, with photos showing types of clearing to avoid.

i. Information on invasive plants to avoid is available at the California Invasive Plant Council at www.cal-ipc.org and the Los Angeles and San Gabriel Rivers Watershed Council at www.weedwatch.org.

j. The California Native Plant Society's website at http://www.cnps.org/ has information about the benefits of native plants and where to get them.

k. The San Diego Chapter of the California Native Plant Society at http://www.cnpssd.org/fire/ReduceFireRisk.pdf has a very informative document that discusses native landscaping for reducing fire risk near wildlands and canyons in that county.

4. Go out and actually measure how far the 30-foot primary defensible space zone is from your structure. Many people are surprised at how small that distance really is! This could mean less work for you, and fire science has already determined that this distance is effective. (Check with your local Fire Department in case they recommend a greater distance.)

5. Measure out how far the 100-foot secondary defensible space zone really is from your structure. Again, it isn't as far as many people think. However, remember that on a slope you will have to figure out how far to go to get a 100 foot horizontal distance from your structure. The steeper the slope and the greater the amount of fuels below your structure, the greater this distance will be. Your local fire department can help you determine what is necessary. You are not responsible or authorized to work beyond your property line unless provided permission by the other landowner.

6. Plan to remove the minimum amount of vegetation necessary to comply with the requirements within the 30-100 foot zone.

    a. More is not necessarily better! By removing too much vegetation, you will be creating a large weedy or grassy area that will dry out and create warmer temperatures around your home. These fine fuels under more heat can carry flames much more quickly right up to your home! Leaving soil cover in the form of trimmed up and well spaced plants, bushes, and trees will keep your property cooler, will reduce the potential for weed growth, will break up the path for fire to travel, and will make your property look much nicer. All these things are more favorable to wildlife as well.

    b. If possible, leave a buffer of less treated vegetation around sensitive habitats. This will help maintain the normal conditions within the sensitive habitat and make it more useful to wildlife.

    c. Plan to use methods that leave plant root structures and short vegetation intact to stabilize the soil.

7. Plan to work outside of riparian areas or vernal pool habitat.

8. Plan to keep the oldest and biggest trees or bushes if possible, especially if their numbers are limited across the landscape. Many animals use these for nesting and shelter.

9. Plan to remove invasive plant species first. These are plants are non-native plants that spread aggressively and crowd out the native plants. Pampas grass, mustard and ice plant are examples. Most are highly flammable, carry fire very quickly, and provide poor habitat for native plant and wildlife species.

a. See California Invasive Plants Council website at http://www.cal-ipc.org/ and click the management tab for more information on invasive plants and how to deal with them.

b. On the website http://www.plantright.org/ you can click on south coast to see what the common invasive species in this area are and what native plants can be planted to replace them.

10. Plan to reduce non-native plants next. Non-native plants are ones that you wouldn't see in an unaltered natural landscape. They are also introduced species that were usually planted for landscaping but may have gotten established outside of gardens. They are not aggressive growers, and don't usually crowd out the native plants, but they typically use more water, and provide less useful habitat for wildlife.

11. Plan to treat native plants last. These provide the best habitat you can leave for wildlife. Native plants require less water, are most resistant to weather and insect damage, and provide natural food, cover, and nesting structures for wildlife, such as butterflies and birds. Irrigated vegetation attracts nonnative plants and insects which are a threat to native species.

12. Plan to do your fuels reduction well before fire season, and prior to the bird nesting season (which is typically March 1 through August 31).

    a. The best times to work are in late fall and during the winter months, to avoid impacting active nests and young birds. This will ensure that you meet the Migratory Bird Treaty Act, and will reduce impacts to many other wildlife species.

    b. If you suspect that sensitive plants could occur on your site, plan for funding a botanist to conduct surveys. Plant surveys generally need to occur during a certain time of the year in order to detect the plants, typically (but not always) in spring time.

13. Decide how you will get rid of cut vegetation. It is best not to leave it on site for long or wildlife species will start utilizing the piles for shelter. You may need to arrange for hauling or chipping equipment. If you are planning to pile vegetation for later burning, the local fire departments will need to be involved. Contact them for information. Burning piles is usually conducted during the winter, after rains have lessened fire danger, so planning your project at that time will lessen the amount of time that piles are present. In a WUI treatment area around your community, and where they will not pose a fire threat, consider leaving a few piles permanently near a natural area and or water source as wildlife habitat.
14. Area-wide projects should consider strategic placement and types of treatments to achieve effective fuel reduction, while maintaining wildlife travel corridors and islands of vegetative cover. Animals use corridors of remaining habitat to find mates and let young move away to find their own territories.
15. In areas with large snags and large downed woody materials, leave as much as possible while maintaining fire safety. Large snags and downed logs provide shelter and nest sites for many types of wildlife.

General Best Management Practices (Bmps) During Project Implementation:

1. If you have sensitive species of wildlife or plants in your treatment area make sure that the people doing the vegetative treatments are aware of what they are, and what BMPs or mitigation measures were recommended!
2. Conduct vegetation trimming, chipping, and any pile burning outside of the bird breeding season, which is generally March 1 through August 31, to avoid impacting active nests and young birds.
3. It is best to flag or fence sensitive areas, because they can easily be overlooked or trampled during work activities, especially when several people are working at once.
4. Conduct vegetation trimming during the cooler parts of the day and year. Metal tools striking rocks can cause a fire in dry grasses and weeds.
5. Limit the number of access routes, staging areas, and the total area of the treatment activities to the minimum necessary to achieve the treatment goal. Soil compaction from parked vehicles can prevent desired revegetation.
6. Vehicles should stay on established roadways and if driving on dirt roads, should observe a 15-mph speed. This reduces soil impacts, dust, and noise disturbances.
7. Remove invasive plant species first, then non-natives. This will set the stage for how much further trimming needs to be done.
8. Avoid ground disturbance which can damage or destroy ground burrows, holes and tunnels which provide shelter for many small animals (snakes, lizards, toads, rodents, squirrels). One way to do this is to mow or trim vegetation a few inched above ground so that the roots and soil are undisturbed. An added benefit- soil will be less likely to erode and cause bigger problems for you later.
9. Remove dead branches and dying vegetation. Remember, some native vegetation may look dead during the summer and fall, when it's actually just dormant. Be sure to use a professional for large trees for your own and your property's safety. If you chose to limb smaller trees yourself, see proper tree

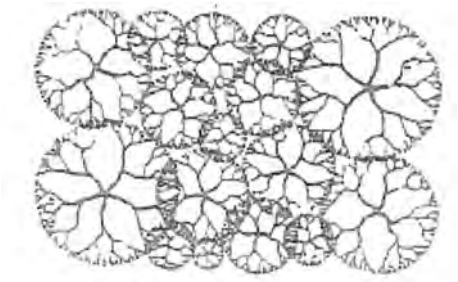
limb trimming techniques at http://www.wildfirezone.org/resources.asp and select Tree Pruning- Prune Mature Trees Properly for Optimum Tree Health.

10. Trim up the lower branches of all the trees and shrubs that you are planning to keep.

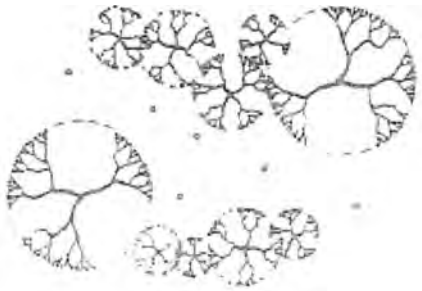
Chaparral Shrub Before Pruning

Chaparral Shrub After Pruning

11. Finally, begin to remove other vegetation, but go lightly. You can always remove more later if necessary, but you'll be kicking yourself if you took too much and the site looks horrible.



100% vegetation coverage- no spaces between plants



Vegetation reduced to 50% by thinning some trees and bushes and pruning canopy cover

12. Review the documents showing vegetation reduction guidelines (#3 in the Pre-Project BMPS section) with the people who will actually do the work. Some contractors may not be aware of new trimming concepts, or may not know what you are aiming for in vegetation reduction. Ensure that they are familiar with your plans. Show them diagrams, walk the project and point out your objectives, measure distances on the ground so all can see what you are planning, mark and discuss all sensitive areas or mitigation measures (such as riparian areas, retention of particular types of plants or structures).
13. Cut vegetation piles and chipped materials should not be placed within 20-feet of sensitive plants or riparian zones. They can change the character of the soil and affect the survival or use of sensitive areas. To minimize harming wildlife species that might seek shelter in vegetation debris piles:
    a. Stack and remove piles by hand. Heavy equipment can cause more damage.
    b. Stack debris piles away from riparian areas and natural habitats, so wildlife would have to cross an open area to get to it. This will lessen the number of potential wildlife visitors.
    c. Construct piles with smaller pieces on the bottom and larger pieces on top to help compact the pile and lessen opportunities for tunnels and shelters.

d. Remove or treat piles as soon as possible, before wildlife take up residence.

e. Chipped materials should not be piled deeper than 6 inches, preferably less. Deep drifts of chips can allow fire to smolder beneath the surface and flare up later.

f. One option for removing some vegetation may to recycle green waste.

14. When utilizing grazing practices, monitor herds closely to avoid overgrazing (creating open bare soil patches, and removing more than 50% of the plant shade on the ground). Too much vegetation removal may cause wildlife and watershed impacts.

15. Properly contain and remove trash items from the work sites daily to avoid attracting undesired wildlife.

16. Loose surface litter, such as fallen leaves or needles, twigs, bark, cones, and small branches, are permitted to be kept to a depth of 3 inches. This will help maintain soil cover and reduce soil erosion.

17. Where erosion control measures are needed:

    a. Use only native plant seeds or stocks unless otherwise approved by a permitting agency. Avoid introducing exotic plant species to the maximum extent possible. Prevent the spread of weeds by regularly cleaning equipment, vehicles, footwear, and tires.

    b. Use only coconut coir matting or tackified hydroseeding compounds instead of plastic monofilament netting for erosion control to avoid wildlife entanglement or entrapment.

18. Bird nest boxes and a variety of bird feeders (seeds, nectar) can provide shelter and food for birds with reduced habitat after fuel reduction projects.

19. Take a moment to review the project and take pictures of the finished result. You may find that your project is a good example to others! You may see some unintended results to avoid in the future. You can also get a better idea of how your defensible area changes over time, and how often it will need to be maintained.

Best Management Practices in Sensitive Habitats for Threatened and Endangered Species and Migratory Birds

Coastal sage scrub habitat - This is the shorter type of chaparral seen within the reach of coastal moisture, that usually includes California sagebrush, buckwheats, sages, sumacs, some chamise, and elderberry bushes.

Coastal California gnatcatcher (non-migratory bird)

a. Remove the absolute minimum amount of sage scrub necessary to meet defensible space guidelines.

b. Conduct necessary vegetation removal during late fall and winter in order to avoid the breeding season, March 1 through August 31, unless protocol surveys establish that there is no California gnatcatcher breeding occurring in or near the proposed vegetation removal during the proposed period of implementation.

c. Consider maintaining swaths of sage scrub as connections between habitat areas.

d. Critical habitat has been designated. Check interactive websites listed above in the Planning Section BMPs.

e. Replant denuded/bare sites with native forbs or low growing shrubs which can keep down non-native plant species. Container plants are best. Check with a nursery, online habitat descriptions for the threatened and endangered species you are concerned with, or the wildlife agencies on appropriate plants.

Arroyo Toad Bob Steele

Arroyo Toad

a. When within 5/8 mile (1 km) of suitable arroyo toad habitat (generally a stream with very flat gradient and sandy banks):

   i. Consider the potential for toads to be burrowing on your property during the non-breeding period-summer through winter. Check with US Fish and Wildlife Service or the Dept. of Fish and Game.

   ii. Avoid ground disturbance to minimize the chance of crushing or digging one up and killing it.

b. See other guidelines under arroyo toads in Streams Section below.

<u>Streams, ponds, and riparian areas</u> – Riparian areas are zones of greater moisture along streams or ponds that have lush green vegetation due to the presence of water.

Red-legged frog

a. Protect stream or pond banks, riparian vegetation, and tree cover. Generally, maintain a no-activity buffer of about 100 feet from the water body, if possible. Steep slopes may necessitate a greater distance.

b. Ensure that vegetation removal upslope from riparian areas won't cause soil erosion or sedimentation into the water bodies, or change the amount of water reaching the riparian zone.

c. Conduct activities near riparian zones between September and February to avoid disturbance during the peak periods of red-legged frog breeding and egg-laying.

d. Keep as much ground cover, such as living plants, litter, slash and duff, as possible.

e. Watch out for frogs basking along the edges of water when workers or equipment is crossing a creek.

f. Critical habitat has been designated. Check interactive websites listed in Planning Section BMPs.

Arroyo toad

a. When within 5/8 mile (1 km) of suitable arroyo toad habitat (generally a stream with very flat gradient and sandy banks):
   i. Consider the potential for toads to be burrowing on your property during the non-breeding period-summer through winter. Check with US Fish and Wildlife Service or the Dept. of Fish and Game.
   ii. Avoid ground disturbance to minimize the chance of crushing or digging one up and killing it.

b. Protect stream banks and riparian vegetation and stream tree cover

c. Watch out for young toads when equipment is crossing a dry creek where toads reproduced earlier in the year.

d. Minimize the introduction of non-native plant and animal species to both riparian areas and upland foraging habitat.

e. Critical habitat has been designated. Check interactive websites listed in the Planning Section BMPs.

Southwestern willow flycatcher Bob Steele

Southwestern willow flycatcher

a. Conduct vegetation removal near dense riparian vegetation (especially willows) during winter and early spring to avoid project activities to breeding habitat along streams during the breeding season, from mid May to about September.

b. Notify FWS if cowbirds become more prevalent in the project area.

c. Grazing activities should not occur in suitable habitat (high density of shrubs in riparian areas) until after the breeding season.

d. Critical habitat has been designated. Check interactive websites listed in the Planning Section BMPs.

Least Bell's vireo

a. Same as for flycatchers, except that the breeding season begins early May.
b. Critical habitat has been designated. Check interactive websites listed in the Planning Section BMPs.

Fish: Unarmored threespine stickleback, steelhead trout, tidewater goby

a. Protect stream banks, riparian vegetation, and stream tree cover.
b. Ensure that vegetation removal upslope from riparian areas won't cause soil erosion or sedimentation into the water bodies, or change the amount of water reaching the riparian zone.
c. Critical habitat has been designated. Check interactive websites listed in Planning Section BMPs.

Unarmored threespine stickleback

Dry, open habitats, desert grasslands or openings

Blunt-nosed leopard lizard, desert tortoise

a. Avoid vegetation removal during hot weather and periods of the day to avoid accidentally igniting dry grasses. (This can happen with just a spark from striking a rock with a shovel!)
b. Avoid crushing or blocking burrows
c. Critical habitat has been designated. Check interactive websites listed above in the Planning Section BMPs.

Vernal pools - Small, shallow, collections of rainwater, typically in relatively flat grasslands or chamise chaparral, that dry up for most of the year.

Riverside fairy shrimp, San Diego fairy shrimp

a. Avoid trampling or disturbing soil in vernal pools
b. Ensure that activities do not fill in pool areas, or compact the pool soils.
c. Utilize hand trimming only to remove flammable vegetation within 50 feet of vernal pools
d. Critical habitat has been designated. Check interactive websites listed in the Planning Section BMPs.

Best Management Practices for Migratory birds

Migratory birds are everywhere! All lands. Over 900 birds and their nests are protected by this act. You can see the full list of birds that are covered at: www.fws.gov/migratorybirds/intrnltr/mbta/mbtintro.html.

a. Fire safety is the number one priority. However, an easy way to ensure complying with the Migratory Bird Treaty Act is to avoid trimming vegetation during the bird nesting season (which is typically March 1 through August 31). The best times to work are in late fall and during the winter months, to avoid impacting active nests and young birds.

b. A far more expensive route is to hire a biologist to survey for migratory bird nests in and adjacent to your project area directly before performing vegetation removal.

c. If migratory birds or their nests are detected:

    1. No active nests (ones with eggs or fledglings) may be destroyed.
    2. The species may not be killed, harmed, or harassed to a point that it abandons an active nest. Check with the local wildlife agencies to determine how much of a vegetative buffer should be maintained around an active nest to minimize risk of abandonment. Some species are more sensitive to human disturbance than others.
    3. Flag the distance of vegetation that will not be cut around all migratory bird nests, and instruct workers to only trim vegetation outside of the flagged areas.
    4. Hand treatments (for example, using clippers or a hand saw) are less disturbing than noisy chainsaws.
    5. Disturbance of or removal of an MBTA species' nest can occur after the nest is no longer being used, (with the exception of the nests of bald eagles, golden eagles and large birds of prey.) Contact your local wildlife agency for further information.

Best Management Practices for Threatened, Endangered, and Sensitive Plant Species

There are several listed species of plants that are difficult to identify and may not even be readily apparent at certain times of the year. It is best to contact the Fish and Wildlife Service or CA Dept Fish and Game to inquire about the potential for listed plant species at your project site and they will provide you with any recommended specific BMP's. Some species don't mind being trimmed or burned, while others do. To avoid impacting threatened, endangered, or sensitive plant species:

a. Make use of a professional botanist: private consultant, agency botanist, Fish and Wildlife Service, or CA Dept of Fish and Game.

b. Generally a 20 foot buffer will be adequate for avoiding adverse impacts; however, pay attention to altered patterns of water runoff and infiltration that could occur in this or other seasons as a result of the defensible zone treatments. Changed moisture patterns can greatly impact plant survival, health, and reproduction.

Additional Information

- US Fish and Wildlife Service's Survey Guidelines for plants species can be obtained from http://ventura.fws.gov/SurveyProt/Botanical_surv.htm.
- Information about species can be found at http://sacramento.fws.gov/es/spp_info.htm or http://endangered.fws.gov/wildlife.html.
- Information about the Section 10 of the Endangered Species Act of 1973, as amended, can be found out http://sacramento.fws.gov/es/hcp.htm or contact your local US Fish and Wildlife Service office.
- Information about the Migratory Bird Treaty Act can be found at http://migratorybirds.pacific.fws.gov/mbta.htm.
- To see what your Habitat Conservation Plan says and covers, see http://ecos.fws.gov/conserv_plans/servlet/gov.doi.hcp.servlets.PlanReportSelect?region=8&type=HCP. Once you get to your plan, you can click on the species listed there, and you will get all the information about that species.
- To see photos of any plants or animals, go to http://calphotos.berkeley.edu//flora/ or http://calphotos.berkeley.edu//fauna/

This page is inserted to facilitate double-sided printing of the document.

PUBLIC DRAFT

Best Management Practices for Cultural Resources

A GUIDE FOR CALIFORNIA FIRE SAFE COUNCIL MANAGERS AND LANDOWNERS FOR COMMUNITY WILDFIRE PROTECTION PLANS

Source: US Fish and Wildlife Service, www.fws.gov/cno/docs/fire/BMPsCulturalResources_SD_CWPP.pdf

TABLE OF CONTENTS

What is the Purpose of this Guide?

This guide provides basic information about archaeology and cultural resources in order to help the Fire Safe Council Community Wildfire Protection Plan (FSCCWPP) partners and landowners in San Diego County understand and appreciate the value of cultural resources, to help them better plan their projects, and to identify those cases when professional help is needed.

What are Best Management Practices?

Best Management Practices (BMPs) are practices and procedures that help to avoid, reduce or mitigate any adverse effects to protected resources (i.e. cultural resources) resulting from project implementation (i.e., fuels treatments). Although there are no formal BMPs in place for cultural resources, this guide looks at those FSCCWPP activities that may impact cultural resources and provides suggestions for protecting these resources.


What is Archaeology?

Archaeology is the scientific study of historic or prehistoric peoples through the excavation and evaluation of sites and artifacts. *Historic* refers to any site or artifact dating since European arrival and older than 50 years old, while *prehistoric* refers to Native American sites and artifacts dating to the time before European arrival. *Sites* are places where people left some sign of their presence. *Artifacts* are portable objects, such as stone tools, pottery, or glassware, and non-portable objects, such as fire pits, stone foundations, or rock art. All archaeological sites have the potential to tell us something about past people and the environments in which they lived.

What are Cultural Resources?

Cultural resources is a broad term that encompasses all *physical remains* of past human life that must be at least 50 years of age (50 years provides the historical perspective necessary to evaluate the significance of these physical remains). Examples include prehistoric Native American villages and seasonal campsites, milling stations, rock art, homesteads, logging camps, and emigrant trails. More importantly, cultural resources are *nonrenewable,* that is, unlike plants, a cultural site will not grow back. When the artifacts and surrounding material are disturbed, archaeological information is destroyed.

Cultural resources greater than 50 years of age are deemed to be important or significant if they are eligible or listed on the National Register of Historic Places (NRHP), at which point they become protected by federal or state law. A cultural resource is significant if it meets one or more of the following four criteria under the NRHP.

A. It is associated with events that have made significant contributions to broad patterns of our history.
B. It is associated with the lives of persons significant in our past.
C. It embodies distinctive characteristics of construction type, works of a master, high artistic value.
D. It has yielded, or is likely to yield, information important in prehistory and history.

The California Register of Historical Resources (CRHR) was created to identify resources deemed worthy of preservation at the State level and was modeled closely after the NRHP. The criteria for evaluation

are nearly identical to the four criteria of the NRHP, but focus upon resources of statewide, rather than national, significance.

The Value of Cultural Resources

California has a tremendously rich cultural history spanning 11,000 years from the earliest inhabitants with no written records to Spanish settlements and various Gold Rush activities. While the value of archaeological sites is partly scientific, revealing new information about the past, it also provides opportunities for recreation and education.

A Glimpse into the Past

Prehistoric Era

Studies of the archaeological record of the San Diego area have identified three different time periods: the San Dieguito, La Jollan, and Late Prehistoric (Yuman). During the San Dieguito period, the earliest inhabitants were hunters and gatherers who first occupied the area about 11,000 years ago. Subsequent environmental changes caused a major shift in subsistence strategies during the La Jollan Period (ca. 8000 – 1100 years ago). During this time, the inhabitants relied on plants, shellfish and fish, leading to a more sedentary lifestyle. During the Late Prehistoric Yuman Period (beginning 1100 years ago), further adjustments were made in which the inhabitants focused on a variety of seasonally available plant and animal resources.

Historic Era

The historic period of San Diego County spans the late 1700s to early 1900s and is associated with Spanish, Mexican and American occupation and land use.

The Spanish period (1769-1821) was a time of exploration, the establishment of the San Diego Presidio and the San Diego and San Luis Rey Missions, and the introduction of agriculture to the region.

The Mexican period (1821-1846) includes the retention of Spanish laws and practices before secularization of the Mission San Diego de Alcala in 1834. Vast tracts of land were granted and the Rancho era began. The Pueblo of San Diego was established and transportation routes were expanded.

The American Period (1848 – present) began when Mexico ceded California to the United States under the Treaty of Guadalupe Hidalgo. Much of the land that once constituted rancho holdings became public land, available for settlement by emigrants to California. As more Americans ventured into the area at the end of the 19th century, the old Spanish land grants were gradually broken up and the land changed hands many times.

A Brief Legislative History

Did you know that Federal laws have been in place since 1906 to protect and preserve important cultural resources? Since then, a number of additional laws and regulations have been developed at the federal, state and local levels to ensure that cultural resources are considered during planning and permitting of projects. These laws have helped reduce the loss of cultural resources on public lands where projects are under review. On private lands where regulations do not apply, the conservation of

archaeological sites depends on informed and caring landowners.

The main federal and state laws and guidelines for protecting important cultural resources are summarized below.

What is the National Historic Preservation Act?

The key legislation that Federal agencies must follow for the protection and preservation of cultural resources is the **National Historic Preservation Act of 1966, as amended (NHPA).** This Act was established as a result of the rapid loss of a number of archaeological sites due to development, erosion, and looting.

The main component of NHPA is:

- ***Section 106****,* which requires Federal agencies to consider the effects of their actions (undertakings) on important cultural resources.

What is an Undertaking?

An ***undertaking*** can be a project, activity, or program funded by a Federal agency, including:

- those carried out by or on behalf of the agency;
- those carried out with Federal financial assistance;
- those requiring a Federal permit, license, or approval; and,
- those subject to State or local regulation with approval by a Federal agency.

Any project that meets the definition of an ***undertaking*** triggers compliance with the NHPA. If your project is an undertaking, then the steps of Section 106 apply (see Flowchart, p. 9).

What is the California Environmental Quality Act?

The California Environmental Quality Act (CEQA) is the principal statute requiring an environmental assessment of projects in California. The purpose of CEQA is to evaluate whether a proposed project may have an adverse effect on the environment, and if so, if that effect can be reduced or eliminated by pursuing an alternative course of action or through mitigation.

The basic goal of CEQA is to develop and maintain a high-quality environment now and in the future. The specific goals are for California's public agencies to:

1. Identify the significant environmental effects of their actions; and, either
2. Avoid those effects, where feasible; or
3. Mitigate those significant environmental effects, where feasible.

CEQA applies to projects proposed to be undertaken or requiring approval by state and local public agencies. *Projects* are activities which may have a physical impact on the environment.

How Does this Concern You? And What You Can Do.

A number of cultural resources exist on privately owned lands. Many of these are unrecorded sites unknown to the landowner, and can only be located by an on-the-ground search of the area made by people trained to recognize them.

Landowners who have cultural resources on their property are stewards of California's past. The guardianship of these sites provides future generations with the

Source: US Fish and Wildlife Service, www.fws.gov/cno/docs/fire/BMPsCulturalResources_SD_CWPP.pdf

opportunity to learn from and experience our history.

Cultural resources can be damaged or destroyed during **CWPP activities** if they are not identified and protected before the project begins. If you have a **CWPP project** that uses funds from a federal, state or local agency, then the project is an *undertaking* that is subject to **Section 106** of the NHPA or **CEQA.** In this case, you might be required to comply with state or federal legislation, which may require the identification, evaluation, and/or mitigation of effects on the cultural resource present.

Protecting cultural resources does not need to cost the landowner a lot of money, often none whatsoever. Protected resources include both historic and prehistoric sites as well as locations of cultural significance to local Native Americans that do not necessarily have visible artifacts or features.

What Should You Do if You Find an Archaeological Site?

If you find what may be an archaeological site, artifact or feature, do not disturb it. Contact the California State Historic Preservation Office in Sacramento and report your find. If you are unsure about a possible site, you can ask a professional archaeologist to look at it. There are state and federal laws with civil and criminal penalties that protect sites.

If you encounter human remains on your property, you are subject to State Health and Safety Code Section 7050.5, which states that “every person who knowingly mutilates or disinters, wantonly disturbs, or willfully removes any human remains in or from any location other than a dedicated cemetery without authority of law is guilty of a misdemeanor.” Call the county coroner upon discovery of human remains; no further disturbance should occur to those remains until the coroner has made the necessary findings as to origin and disposition pursuant to California Public Resources Code 5097.98.



Types of Artifacts

Among the most common items at many prehistoric sites are stone tools. These tools were used for a variety of tasks, including hunting , skinning and butchering of animals, and the pounding or grinding of seeds, nuts, and other plant foods (stone mortars and pestles, flat grinding slabs, and hand-held grinding stones). Other tools were made of wood, shell, and other organic materials.


Artifacts found in historic sites tend to be items such as cans, glassware, ceramic and pottery and glassware that are associated with logging camps, emigrant trails, homesteads, and Gold Rush-era mining towns and features.

Source: US Fish and Wildlife Service, www.fws.gov/cno/docs/fire/BMPsCulturalResources_SD_CWPP.pdf

Best Management Practices for Protecting Cultural Resources

What are CWPP activities?

Treatment types are fuel-reduction activities that involve hand labor, mechanical treatment, chemical treatment, prescribed burning, grazing.

Which CWPP activities may impact cultural resources?

This depends on methods used for each activity. In general, treatment types that involve hand labor (trimming, thinning brush and tree, debris removal by hauling) will least likely impact cultural resources. Ground disturbing activities using mechanized equipment have a greater potential to impact cultural resources.

- For non ground disturbing activities within the 100' to 300' feet defensible space with no known cultural resources, no impacts are to be expected.

- Activities within the 1.5 mile Wildland Urban Interface zones in unsurveyed areas: potential for impacts exist.

CWPP Project Planning

It is likely that the greatest threats to cultural resources are on private lands where surveys have not been conducted. Here's what you can to do to help.

Determine if there are cultural resources on or near the property

- ✓ gather information from local or regional sources

If compliance is needed, work with qualified professionals to

- ✓ evaluate potential impacts of proposed activity
- ✓ conduct cultural resource inventories to identify sites
- ✓ develop avoidance measures
- ✓ consult with SHPO and tribes as per agency protocols

See flowcharts (p. 9, 10, 13) and text for federal or state processes.

Protection Measures for Cultural Resources

- ✓ avoid impacts to known cultural resources
- ✓ exclude the area containing the cultural resources from prescribed burn locations
- ✓ clearly mark the boundaries of the cultural resources when included in the prescribed burn area
- ✓ create buffers (protective space) around cultural resources
- ✓ keep roads, skid trails, and landings away from cultural resources
- ✓ take measures to reduce soil disturbance in cultural resource areas

Source: US Fish and Wildlife Service, www.fws.gov/cno/docs/fire/BMPsCulturalResources_SD_CWPP.pdf

Recommendations for Fire Safe Councils

FSC projects are subject to CEQA and NHPA where federal, state or local governments are funding, permitting or assisting them.

Plan Early and Often

- engage agency cultural resources specialists in project planning
- include cultural resources in CWPP

Provide Good Project Descriptions

- where will the treatments occur?
- what treatments will occur?
- fuel models, fuel loads, burn prescriptions
- location of known cultural resources
- planning early and often results in good understanding of project specifics among agency personnel

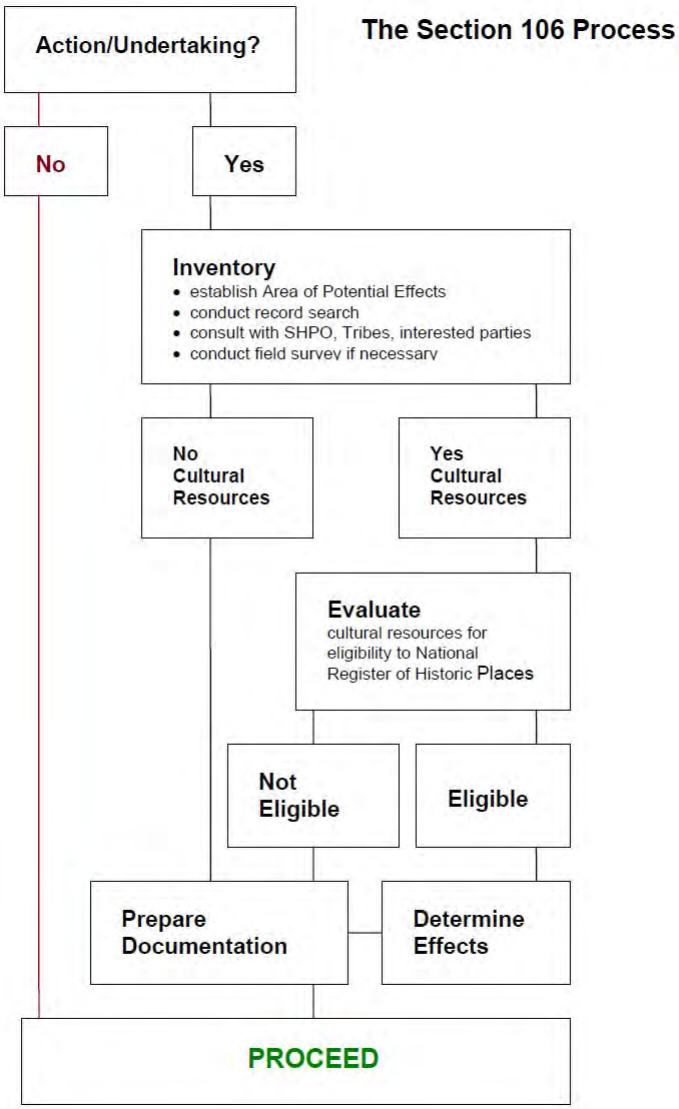
Ensure Compliance is Covered

- negotiate with agency to determine how compliance obligations will be met
- if necessary, determine in consultation with the agency, the amount of cultural resource compliance funding is needed and include in grant proposal

Examples of Exemptions

- timber stand improvement, where ground is not disturbed
- mulching, hand application
- shaded fuel breaks, thinning and pruning trees along sides of a road
- disposal of piled brush (except burning)
- hand lines
- road maintenance
- previously surveyed areas
- other practices such as use of heavy equipment, to be considered on a case-by-case basis

Source: US Fish and Wildlife Service, www.fws.gov/cno/docs/fire/BMPsCulturalResources_SD_CWPP.pdf



The basic steps in the Section 106 process that archaeologists follow:

1. Is the project an undertaking?
- No: proceed with project
- Yes: establish area of potential effects, conduct record search, consult with SHPO/Tribes, conduct field survey

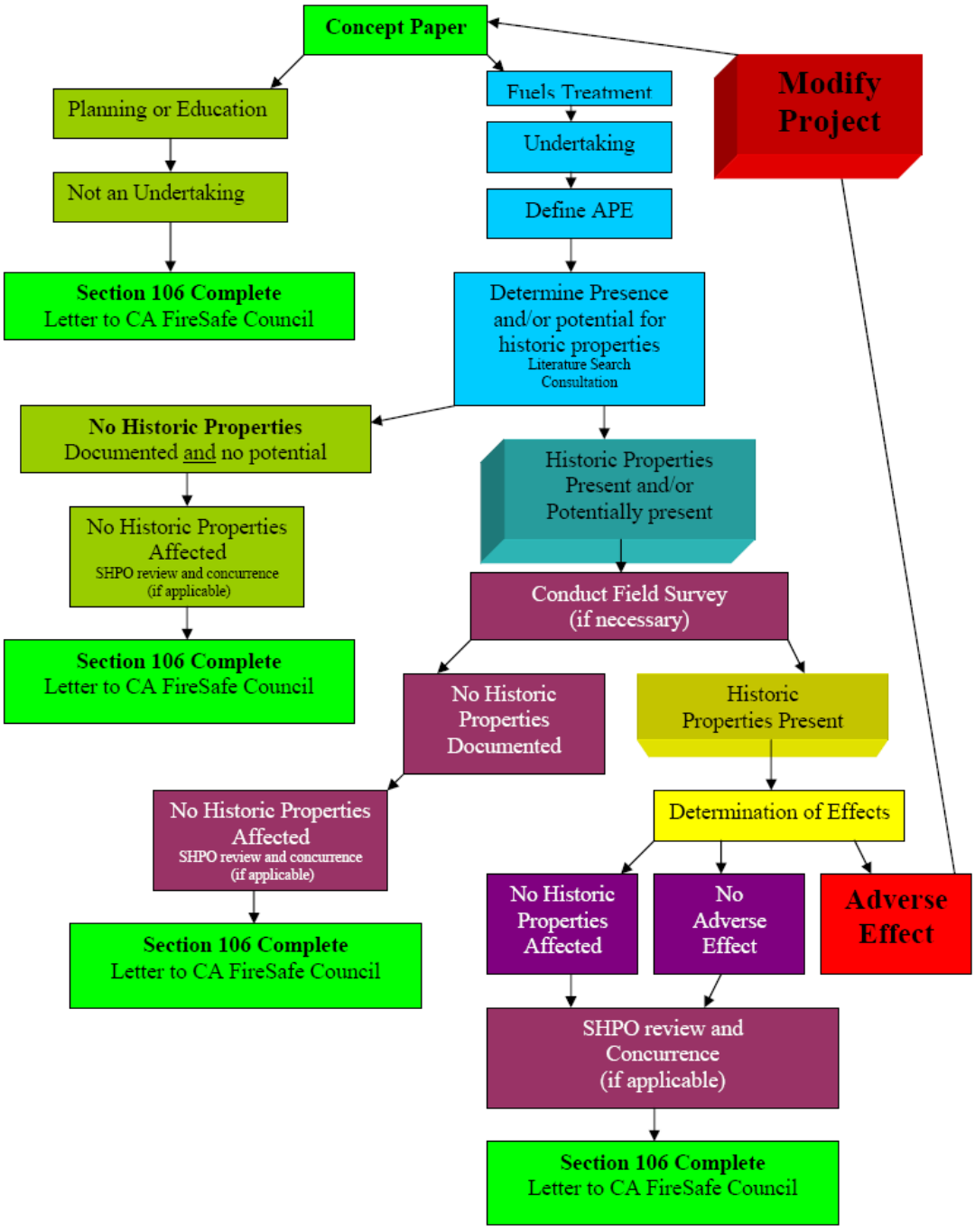
2. Cultural resources present?
- No: prepare report, consult with SHPO, proceed with project
- Yes: evaluate cultural resource for National Register of Historic Places eligibility by applying criteria

3. Cultural resources eligible?
- No: prepare report, consult with SHPO, proceed with project
- Yes: determine effects

4. Will there be an effect?
- No: prepare report, consult with SHPO, proceed with project
- Yes: resolve adverse effects, consult with SHPO/THPO, develop MOA, invite Advisory Council on Historic Preservation to comment

Source: US Fish and Wildlife Service, www.fws.gov/cno/docs/fire/BMPsCulturalResources_SD_CWPP.pdf

Federally Funded Projects: NHPA Section 106 Compliance Process



Source: US Fish and Wildlife Service, www.fws.gov/r10/docs/fire/BMPsCulturalResources_SD_CWPP.pdf

Building Blocks for Streamlining Grant Application Review related to Environmental Compliance

Types of Inventory

There are three types of inventory: existing information inventory; probabilistic field survey; and intensive field survey

A review of existing information inventory

This is called prefied research. This is a professionally prepared study that includes a compilation and analysis of all reasonably available cultural resource data and literature, and a management-focused, interpretive, narrative overview, and synthesis of the data.

The purpose of prefield research is to provide cultural resource specialists and managers with an informed basis for understanding the study area. This step involves the following:

- Access California Historical Resources Information Center for site records. Review site records and maps.
- Determine level of previous survey. This will determine the necessity for new cultural resource survey to improve the state of knowledge, especially where there are substantial data gaps.
- Determine site types and probable importance of cultural resources presently known to exist within the study area.
- Determine natural settings where the various known kinds of cultural resources might be expected to occur or not to occur within the study area, based on present information.
- Determine potential for and probable consequences of conflict between the known kinds of cultural resources and the various types of land and resource uses proposed in the study area.

Probabilistic Field Survey

This type of survey may be appropriate when existing information about the project area or similar environments indicates that a properly designed sample survey would adequately address the relevant research questions about past human use of the area. This survey is generally not appropriate where designing a sample and executing a discontinuous survey may prove more demanding and time-consuming than a continuous intensive survey.

A survey may be appropriate when:

- comparing alternative locations for proposed undertakings
- testing hypotheses about presence or absence of significant prehistoric and historic archaeological and architectural properties
- the regional inventory suggests that there is a low probability of finding significant historic properties in the study area
- the regional inventory suggests a significant correlation between certain site types and environmental variables can be tested through sampling the study area.

Intensive Field Survey

Intensive survey is most useful when it is necessary to know precisely what historic properties exist in a given area or when information sufficient for later evaluation and treatment decisions is needed on individual historic properties.

- Intensive Field Survey is a professionally conducted, thorough pedestrian survey of an entire target area (except for any subareas exempted), intended to locate and record all historic properties.

Source: US Fish and Wildlife Service, www.fws.gov/r1o/docs/fire/BMPsCulturalResources_SD_CWPP.pdf

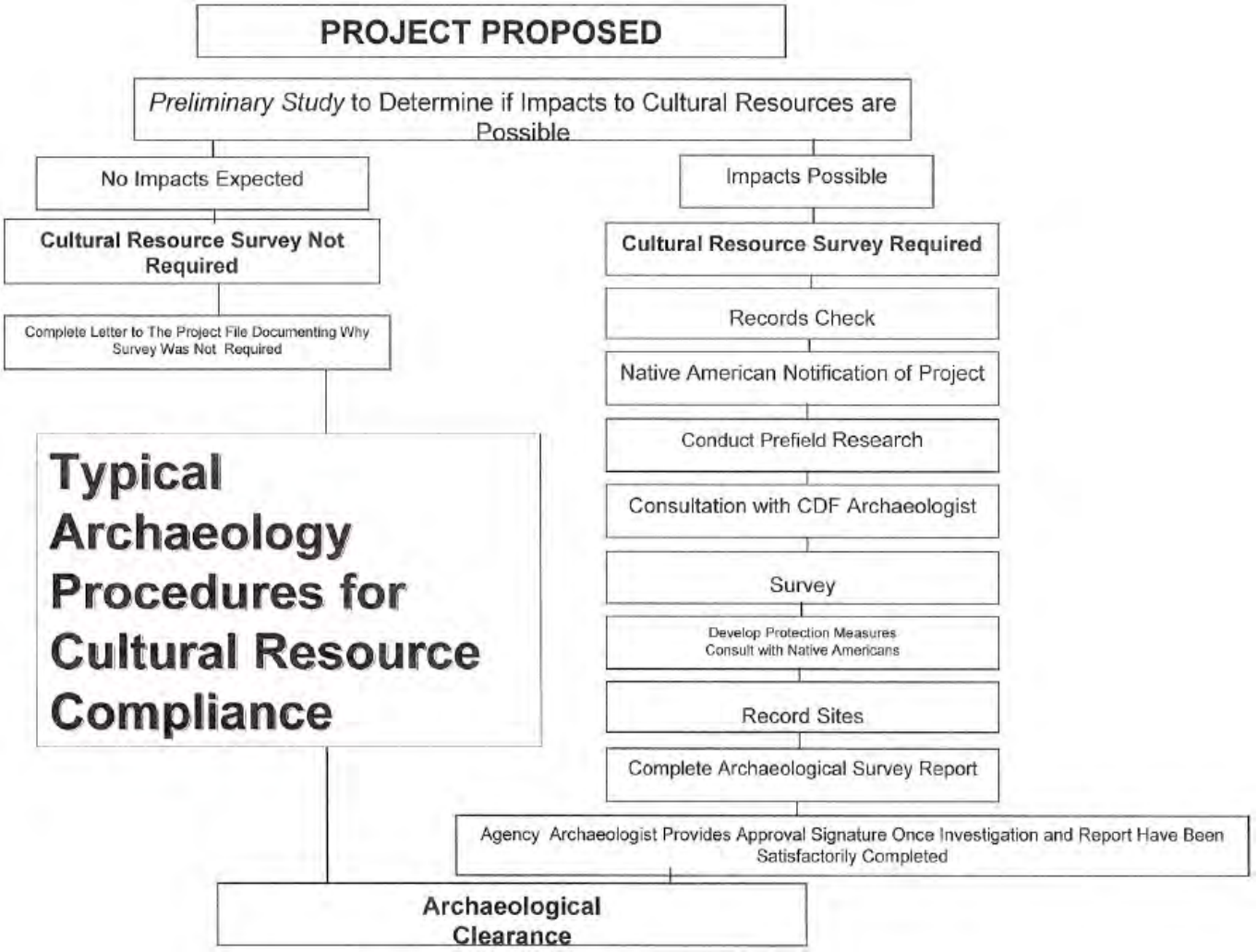
Section 106 timelines

Example: For a typical 50-100 acre fuel treatment unit

1. Identification and assessment of effects
   - 30 days: consultation with State Historic Preservation Office, Tribes, other interested parties
   - 1-2 days pre-field research
   - 1-3 days field survey (assume 60-80 acres/person/day)
2. Prepare documentation
   - 1-3 days
3. State Historic Preservation office Consultation
   - 30 days to concur/not concur

Source: US Fish and Wildlife Service, www.fws.gov/r2o/docs/fire/BMPsCulturalResources_SD_CWPP.pdf

State Funded Projects: CEQA Process for Cultural Resource Compliance



Source: US Fish and Wildlife Service, www.fws.gov/r3/docs/fire/BMPsCulturalResources_SD_CWPP.pdf

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H. Fire-Safety Information for Santa Monica Mountains Residents

H.1. Fire-Safety Internet Links

The following list of Internet links is provided for additional fire-safety information. It can also be found online at www.forevergreenforestry.com/SMM_FireSafe.html.

- Ready! Set! Go! 2009 (LA County Version): www.fire.lacounty.gov/safetypreparedness/ReadySetGo/pdf/Ready%20Set%20Go%2009.pdf
- Ready! Set! Go! 2009 (Ventura County Version): http://fire.countyofventura.org/LinkClick.aspx?fileticket=9hQO1rR_ezw=&tabid=231
  This Personal Wildfire Action Plan offers tips and tools so residents can successfully prepare for a wildfire. It provides guidance on retrofitting your home with fire-resistive features and will help you create the necessary defensible space around your home (3.63 MB, 12 pgs.).
- CALFIRE: 100' of Defensible Space is the Law: http://www.fire.ca.gov/communications/downloads/fact_sheets/DefensibleSpaceFlyer.pdf
- CALFIRE: Fire Safety Education: www.fire.ca.gov/communications/communications_firesafety.php
- California Fire Safe Council: www.firesafecouncil.org/
- Fire History Map: http://forevergreenforestry.com/documents/Malibu_Fire_History_Map_1988-2007.pdf
- Firewise - Resources for the Homeowner: www.firewise.org/resources/homeowner.htm
- Homeowner's Wildfire Mitigation Guide: http://groups.ucanr.org/HWMG/index.cfm
- Take Responsibility...: http://takeresponsibility.cafirealliance.com/
- The Wildland-Urban Interface Fire Problem - Jack Cohen: www.foresthistory.org/Publications/FHT/FHTFall2008/Cohen.pdf
- Wildland-Urban Fire, A different approach - Jack Cohen: http://forevergreenforestry.com/documents/Wildlandurbanfire-approach.pdf
- Wildfire Zone: http://wildfirezone.org/
- Holiday Safety Precautions: www.disasterprepped.com/holiday_safety.php

Fire Safe Landscaping

- A California-Friendly Guide to Native and Drought-Tolerant Gardens: http://forevergreenforestry.com/documents/ACalifornia-FriendlyGuidetoNativeandDroughtTolerantGardens.pdf
- Best Management Practices - "Lollipopping Trees": http://forevergreenforestry.com/documents/BestManagementPracticesExample.pdf
- California Invasive Plant Council - Don't Plant a Pest: www.cal-ipc.org/
- Fire-Resistant California-Friendly Plants: www.laspilitas.com/classes/fire_burn_times.html
- Home Landscaping for Fire: http://firecenter.berkeley.edu/docs/CE_homelandscaping.pdf
- Invasive Plants and Wildfire in Southern California: www.wildfirezone.org/assets/images/resource_docs/pr_flyr_final.pdf
- Leaf burn times of California native plants: www.laspilitas.com/classes/fire_burn_times.html
- Living in the Wildland-Urban Interface: http://takeresponsibility.cafirealliance.com/wildland.php
- Oak Tree Care and Maintenance Guide:

http://fire.lacounty.gov/Forestry/EnvironmentalReview_OakTreeCareAndMaint.asp

- SAFE Landscapes Project: http://groups.ucanr.org/SAFE/
- Guide to Bird-Friendly Tree and Shrub Trimming and Removal: http://forevergreenforestry.com/documents/TreeTrimmingGuidelines_2009_000.pdf
- Guide to Bird-Friendly Tree and Shrub Trimming and Removal (Spanish): http://forevergreenforestry.com/documents/TreeTrimmingGuidelines_Spanish.pdf

Hardened (Fire-Safe) Homes

- Builder's Wildfire Mitigation Guide: http://firecenter.berkeley.edu/bwmg/default.html
- CA Fire Marshal: Wildland-Urban Interface (WUI) Building Code Information: www.fire.ca.gov/fire_prevention/fire_prevention_wildland_codes.php
- CA Fire Marshal: Approved WUI Building Materials: www.osfm.fire.ca.gov/strucfireengineer/strucfireengineer_bml.php
- CA Fire Marshal: WUI Products Handbook: www.osfm.fire.ca.gov/strucfireengineer/strucfireengineer_bml.php
- California Wildfires: the 'fire-proof' house: http://news.bbc.co.uk/2/hi/americas/8388620.stm
- High Fire Hazard/Fire Hazard Severity Zone Requirements: http://forevergreenforestry.com/documents/VHFHSZBuildingRequirements.pdf
- Radiant Heat versus Firebrands (Embers), Jack Cohen: www.youtube.com/watch?v=Dq6wy_tffpg
- Wildfire! Preventing Home Ignitions: www.youtube.com/watch?v=p0iR8o54hDU&feature=related
- Wildfire Rebuild Guidelines: http://fire.lacounty.gov/FirePrevention/wildfire_Rebuild_Guid.asp
- Will your home survive a wildfire?: http://takeresponsibility.cafirealliance.com/structure.php

Emergency Preparedness

- Are you prepared?: http://72hours.org/index.html
- City of Calabasas, Emergency Preparedness Guide: www.cityofcalabasas.com/pdf/emergency-guide-2008.pdf
- City of Malibu, Emergency Preparedness Program: www.ci.malibu.ca.us/index.cfm/fuseaction/nav/navid/182/
- City of Malibu, Emergency Notification System: www.ci.malibu.ca.us/index.cfm/fuseaction/DetailGroup/navid/471/cid/11670/
- Community Emergency Response Teams (CERT): http://fire.lacounty.gov/ProgramsEvents/PECERT.asp
- Disaster Safety: www.disastersafety.org/
- Fire, Safety & Well Being: www.rebuildyourlife.ca.gov/safety.shtml
- Humane Society - Disaster Preparedness Brochures for Pets and Animals: www.hsus.org/hsus_field/hsus_disaster_center/resources/disaster_preparedness_brochures.html
- Red Cross - Evacuation: www.redcross.org/preparedness/cdc_english/evac-1.html
- Red Cross - Prepare your Family for Disasters: www.redcross.org/preparedness/cdc_english/evac-plan.html
- Topanga Coalition for Emergency Preparedness: www.t-cep.org/fire.htm
- Topanga Disaster Survival Guide: www.topangasurvival.org/

Related Environmental Issues

- California Chaparral Institute: www.californiachaparral.com/
- California Wildfire Restoration Initiative: www.treepeople.org/california-wildfire-restoration-initiative
- Guide to Bird-Friendly Tree and Shrub Trimming and Removal:
- http://forevergreenforestry.com/documents/TreeTrimmingGuidelines_2009.pdf
- Guide to Flash Flood Preparation: http://forevergreenforestry.com/documents/GuidetoFlashFloodPreparation.pdf
- Resource Conservation District of the Santa Monica Mountains - Interesting Info for Locals: http://rcdsmm.org/interesting-information-locals
- Rural Roads - A Construction and Maintenance Guide for Landowners: http://ucce.ucdavis.edu/files/repositoryfiles/8262-54315.pdf
- Ventura County Tree Protection: www.ventura.org/RMA/planning/Permits/tree.html

Fire Safe Councils

- California Fire Safe Council: www.firesafecouncil.org/
- How to Form a Fire Safe Council: www.firesafecouncil.org/ca/howtoform1.cfm
- Running a Local Fire Safe Council: www.firesafecouncil.org/ca/index.cfm
- Grants Clearinghouse: http://grants.firesafecouncil.org/

CWPP Collaborators

- California Department of Parks and Recreation: www.parks.ca.gov/parkindex/region_info.asp?id=8&tab=1
- California Fire Safe Council: www.firesafecouncil.org/
- City of Malibu: www.ci.malibu.ca.us/index.cfm/fuseaction/nav/navid/396/
- ForEverGreen Forestry: http://forevergreenforestry.com/fire.html
- Los Angeles County Fire Department: http://fire.lacounty.gov/FirePrevention/FirePrevFirePreventionTips.asp
- National Park Service, Santa Monica Mountains National Recreation Area: www.nps.gov/samo/index.htm
- Santa Monica Mountains Conservancy: www.smmc.ca.gov/fire-prevention.html
- United States Forest Service: www.fs.fed.us/fire/prev_ed/index.html
- Ventura County Fire Department: http://fire.countyofventura.org/Prevention/tabid/56/Default.aspx

H.2. CAL FIRE Evacuation Tips

Evacuation Tips

Evacuation Tips

Evacuations save lives and allow responding personnel to focus on the emergency at hand.
Please evacuate promptly when requested!

The Law

California law authorizes officers to restrict access to any area where a menace to public health or safety exists due to a calamity such as flood, storm, fire, earthquake, explosion, accident or other disaster. Refusal to comply is a misdemeanor. (Penal Code 409.5)

Evacuation Orders

The terms ***Voluntary*** and ***Mandatory*** are used to describe evacuation orders. However, local jurisdictions may use other terminology such as *Precautionary* and *Immediate Threat*. These terms are used to alert you to the significance of the danger. **All evacuation instructions provided by officials should be followed immediately for your safety.**

Long Before a Fire Threatens

Prepare an *Evacuation Checklist* and Organize:

- Critical medications.
- Important personal papers, photos.
- Essential valuables.
- Pet and livestock transport, limited amount of pet food.
- Change of clothing, toiletries.
- Cell phone.
- Critical papers and effects in a fire-proof safe.
- An Evacuation Route Map with at least two routes.*
- Drive your planned route of escape before an actual emergency.*

*During an evacuation, law enforcement/ emergency personnel may determine your route.

If Evacuation is a Possibility

- Locate your *Evacuation Checklist* and place the items in your vehicle.
- Park your vehicle facing outward and carry your car keys with you.
- Locate your pets and keep them nearby.
- Prepare farm animals for transport.
- Place connected garden hoses and buckets full of water around the house.
- Move propane BBQ appliances away from structures.
- Cover-up. Wear long pants, long sleeve shirt, heavy shoes/boots, cap, dry bandanna for face cover, goggles or glasses. 100% cotton is preferable.
- Leave lights on in the house - door unlocked.
- Leave windows closed - air conditioning off.

Evacuation Tips

The Evacuation Process

1. Officials will determine the areas to be evacuated and the routes to use depending upon the fire's location, behavior, winds, terrain, etc.
2. Law enforcement agencies are typically responsible for enforcing an evacuation order. **Follow their directions promptly.**
3. You will be advised of potential evacuations as early as possible. You must take the initiative to stay informed and aware. Listen to your radio/TV for announcements from law enforcement and emergency personnel.
4. You may be directed to temporary assembly areas to await transfer to a safe location.

If You Become Trapped

While in your vehicle:

- Stay calm.
- Park your vehicle in an area clear of vegetation.
- Close all vehicle windows and vents.
- Cover yourself with wool blanket or jacket.
- Lie on vehicle floor.
- Use your cell phone to advise officials – Call 911.

While on foot:

- Stay calm.
- Go to an area clear of vegetation, a ditch or depression if possible.
- Lie face down, cover up.
- Use your cell phone to advise officials - Call 911.

While in your home:

- Stay calm, keep your family together.
- Call 911 and inform authorities of your location.
- Fill sinks and tubs with cold water.
- Keep doors and windows closed, but unlocked.
- Stay inside your house.
- Stay away from outside walls and windows.

** Note – it will get hot in the house, but it is much hotter, and more dangerous outside.*

After the fire passes, and if it is safe, check the following areas for fire:

- The roof and house exterior.
- Under decks and inside your attic.
- Your yard for burning trees, woodpiles, etc.

Returning Home

Fire officials will determine when it is safe for you to return to your home. This will be done as soon as possible considering safety and accessibility.

When you return home:

- Be alert for downed power lines and other hazards.
- Check propane tanks, regulators, and lines before turning gas on.
- Check your residence carefully for hidden embers or smoldering fires.

www.fire.ca.gov

H.3. Public Resources Code 4290 and 4291

4290. (a) The board shall adopt regulations implementing minimum fire safety standards related to defensible space which are applicable to state responsibility area lands under the authority of the department. These regulations apply to the perimeters and access to all residential, commercial, and industrial building construction within state responsibility areas approved after January 1, 1991. The board may not adopt building standards, as defined in Section 18909 of the Health and Safety Code, under the authority of this section. As an integral part of fire safety standards, the State Fire Marshal has the authority to adopt regulations for roof coverings and openings into the attic areas of buildings specified in Section 13108.5 of the Health and Safety Code. The regulations apply to the placement of mobile homes as defined by National Fire Protection Association standards. These regulations do not apply where an application for a building permit was filed prior to January 1, 1991, or to parcel or tentative maps or other developments approved prior to January 1, 1991, if the final map for the tentative map is approved within the time prescribed by the local ordinance. The regulations shall include all of the following:

(1) Road standards for fire equipment access.

(2) Standards for signs identifying streets, roads, and buildings.

(3) Minimum private water supply reserves for emergency fire use.

(4) Fuel breaks and greenbelts.

(b) These regulations do not supersede local regulations which equal or exceed minimum regulations adopted by the state.

4291. (a) A person who owns, leases, controls, operates, or maintains a building or structure in, upon, or adjoining a mountainous area, forest-covered lands, brush-covered lands, grass-covered lands, or land that is covered with flammable material, shall at all times do all of the following:

(1) Maintain defensible space no greater than 100 feet from each side of the structure, but not beyond the property line unless allowed by state law, local ordinance, or regulation and as provided in paragraph (2). The amount of fuel modification necessary shall take into account the flammability of the structure as affected by building material, building standards, location, and type of vegetation. Fuels shall be maintained in a condition so that a wildfire burning under average weather conditions would be unlikely o ignite the structure. This paragraph does not apply to single specimens of trees or other vegetation that are well-pruned and maintained so as to effectively manage fuels and not form a means of rapidly transmitting fire from other nearby vegetation to a structure or from a structure to other nearby vegetation. The intensity of fuels management may vary within the 100-foot perimeter of the structure, the most intense being within the first 30 feet around the structure. Consistent with fuels management objectives, steps should be taken to minimize erosion.

(2) A greater distance than that required under paragraph (1) may be required by state law, local ordinance, rule, or regulation. Clearance beyond the property line may only be required if the state law, local ordinance, rule, or regulation includes findings that such a clearing is necessary to significantly reduce the risk of transmission of flame or heat sufficient to ignite the structure, and there is no other feasible mitigation measure possible to reduce the risk of ignition or spread of wildfire to the structure. Clearance on adjacent property shall only be conducted following written consent by the adjacent landowner.

(3) An insurance company that insures an occupied dwelling or occupied structure may require a greater distance than that required under paragraph (1) if a fire expert, designated by the director, provides findings that such a clearing is necessary to significantly reduce the risk of transmission of flame or heat sufficient to ignite the structure, and there is no other feasible mitigation measure possible to reduce the risk of ignition or spread of wildfire to the structure. The greater distance may not be beyond the property line unless allowed by state law, local ordinance, rule, or regulation.

(4) Remove that portion of any tree that extends within 10 feet of the outlet of a chimney or stovepipe.

(5) Maintain any tree, shrub, or other plant adjacent to or overhanging a building free of dead or dying wood.

(6) Maintain the roof of a structure free of leaves, needles, or other vegetative materials.

(7) (a) Prior to constructing a new building or structure or rebuilding a building or structure damaged by a fire in an area subject to this section, the construction or rebuilding of which requires a building permit, the owner shall obtain a certification from the local building official that the dwelling or structure, as proposed to be built, complies with all

applicable state and local building standards, including those described in subdivision (b) of Section 51189 of the Government Code, and shall provide a copy of the certification, upon request, to the insurer providing course of construction insurance coverage for the building or structure. Upon completion of the construction or rebuilding, the owner shall obtain from the local building official, a copy of the final inspection report that demonstrates that the dwelling or structure was constructed in compliance with all applicable state and local building standards, including those described in subdivision (b) of Section 51189 of the Government Code, and shall provide a copy of the report, upon request, to the property insurance carrier that insures the dwelling or structure.

(b) A person is not required under this section to manage fuels on land if that person does not have the legal right to manage fuels, nor is a person required to enter upon or to alter property that is owned by any other person without the consent of the owner of the property.

(c) (1) Except as provided in Section 18930 of the Health and Safety Code, the director may adopt regulations exempting a structure with an exterior constructed entirely of nonflammable materials, or, conditioned upon the contents and composition of the structure, the director may vary the requirements respecting the removing or clearing away of flammable vegetation or other combustible growth with respect to the area surrounding those structures.

(2) An exemption or variance under paragraph (1) shall not apply unless and until the occupant of the structure, or if there is not an occupant, the owner of the structure, files with the department, in a form as the director shall prescribe, a written consent to the inspection of the interior and contents of the structure to ascertain whether this section and the regulations adopted under this section are complied with at all times.

(d) The director may authorize the removal of vegetation that is not consistent with the standards of this section. The director may prescribe a procedure for the removal of that vegetation and make the expense a lien upon the building, structure, or grounds, in the same manner that is applicable to a legislative body under Section 51186 of the Government Code.

(e) The Department of Forestry and Fire Protection shall develop, periodically update, and post on its Internet Web site a guidance document on fuels management pursuant to this chapter. Guidance shall include, but not be limited to, regionally appropriate vegetation management suggestions that preserve and restore native species, minimize erosion, minimize water consumption, and permit trees near homes for shade, aesthetics, and habitat; and suggestions to minimize or eliminate the risk of flammability of nonvegetative sources of combustion such as woodpiles, propane tanks, wood decks, and outdoor lawn furniture.

(f) As used in this section, "person" means a private individual, organization, partnership, limited liability company, or corporation.

4291.1. (a) Notwithstanding Section 4021, a violation of Section 4291 is an infraction punishable by a fine of not less than one hundred dollars ($100), nor more than five hundred dollars ($500). If a person is convicted of a second violation of Section 4291 within five years, that person shall be punished by a fine of not less than two hundred fifty dollars ($250), nor more than five hundred dollars ($500). If a person is convicted of a third violation of Section 4291 within five years, that person is guilty of a misdemeanor and shall be punished by a fine of not less than five hundred dollars ($500). If a person is convicted of a third violation of Section 4291 within five years, the department may perform or contract for the performance of work necessary to comply with Section 4291 and may bill the person convicted for the costs incurred, in which case the person convicted, upon payment of those costs, shall not be required to pay the fine. If a person convicted of a violation of Section 4291 is granted probation, the court shall impose as a term or condition of probation, in addition to any other term or condition of probation, that the person pay at least the minimum fine prescribed in this section.

(b) If a person convicted of a violation of Section 4291 produces in court verification prior to imposition of a fine by the court, that the condition resulting in the citation no longer exists, the court may reduce the fine imposed for the violation of Section 4291 to fifty dollars ($50).

4291.3. Subject to any other applicable provision of law, a state or local fire official, at his or her discretion, may authorize an owner of property, or his or her agent, to construct a firebreak, or implement appropriate vegetation management techniques, to ensure that defensible space is adequate for the protection of a hospital, adult residential care facility, school, aboveground storage tank, hazardous materials facility, or similar facility on the property. The firebreak may be for a radius of up to 300 feet from the facility, or to the property line, whichever distance is shorter.

H.4. County of Los Angeles Fire Department Operation Evacuation

County of Los Angeles
FIRE DEPARTMENT

OPERATION EVACUATION

photo by L.A. County Fire Department

WE have to stay.

YOU don't.

Preparedness is the key.

Do you know how to save your life in case of a wildfire?

When disaster strikes, it is usually without warning. Mobilization of all the human forces required to counteract and respond to the disaster must happen quickly for maximum protection of life and property.

photo by John Dietrich

Decisions must be made:

The Los Angeles County Fire Department Incident Management Teams must decide where to strategically deploy resources ahead of the fire front, and immediately initiate appropriate evacuation procedures.

photo by L.A. County Fire Department

The Los Angeles County Sheriff's Department must notify residents in immediate danger and alert them of the need to determine a safe exit, and assist them in doing so.

The California Highway Patrol and the Los Angeles Police Department must decide what traffic controls to initiate to keep roads accessible to ensure disaster-assisting vehicles can safely deploy; and citizens can safely exit the area.

The Los Angeles County Animal Care & Control Department will be informed of areas presenting the greatest threat and alert its teams to begin strategic assistance for horses and animals in the immediate vicinity of the emergency.

Local Volunteer Disaster Response Teams must mobilize and activate their communications network to provide accurate, local information so residents can make the safest choices possible.

The decision on when to leave is critical. Time spent on home preparation ahead of a wildland fire is important to reduce property loss. Every fire is different. In the path of wind-driven fires, residential evacuations may be ordered. If and when an evacuation is ordered, the Fire Department's desire is for residents to leave immediately. Your life/safety is the Fire Department's primary goal. Quick compliance to an evacuation order is critical.

This brochure is intended to inform/assist each and every resident of the Santa Monica Mountains, its Coastal and Valley regions included, learn how you can help yourself and those trained to help you, save your life and property. It's your responsibility, as well as that of participating emergency services, to be familiar with the evacuation procedures contained within this pamphlet. Keep it handy. Check it out.

photo by Battalion Chief Mastright

EVACUATION PLAN

Do you have one?

Emergency preparedness must be a priority for everyone that lives or works in a wildland interface area. A major part of your preparedness is to develop a logical well thought out and executed evacuation plan. A good evacuation plan includes the following:

- ✔ Predetermined routes of travel based on direction fire is moving.
- ✔ Identify at least two (2) exit routes from your neighborhood.
- ✔ Knowledge of designated residential assembly points within your local area (see listing).
- ✔ Knowledge of local emergency contacts.
- ✔ Plan, review, and practice with family and neighbors.

PREPARATION AHEAD OF THE FIRE

- ✔ Back your car in the garage heading out (windows closed and keys in the ignition).
- ✔ Close the garage door, leave it unlocked, disconnect the automatic garage door opener in the case of power failure.
- ✔ Place important documents, photo albums, pets and other valuables inside your car in case you have to evacuate.
- ✔ Keep a flashlight and portable radio with you at all times and stay tuned to your local news station.

photo by L.A. County Fire Department

DURING EVACUATION

- ✔ If you become trapped by fire while evacuating in your car, park in an area clear of vegetation, close all vehicle windows and vents, cover yourself with a blanket or jacket and lie on the floor.
- ✔ If you are trapped by fire while evacuating on foot, select an area clear of vegetation or lie faced down in a ditch.

EMERGENCY WILDFIRE HOME PROTECTION

- ✔ Move combustible yard furniture away from the house or store it in the garage.
- ✔ Cover windows, attic openings, eaves and vents with fire resistive material such as 1/2 inch or thicker plywood. Close window shutters and blinds if they are fire resistive.
- ✔ Attach garden hoses to spigots and place them so that they can reach all areas of your house.
- ✔ Fill all sinks, bath tubs, trash cans, and buckets. Place portable containers around your house for easy access.
- ✔ If you have an emergency generator or a portable gasoline-powered pump that will supply water from a swimming pool, pond, well or tank, clearly mark its location, test, and be ready to operate it.
- ✔ Place a ladder against the house on the side opposite the approaching fire for access to the roof.
- ✔ Close all windows and doors around your home to prevent sparks from blowing inside.
- ✔ Close all doors within the house to slow fire spread inside the house.
- ✔ Turn on the lights in all rooms of your house, on the porch and in the yard. Your home will be more visible through the smoke or darkness.
- ✔ Shut off liquefied petroleum gas or natural gas valves.
- ✔ Move furniture away from windows and sliding glass doors to avoid igniting from the fires radiant heat.
- ✔ Remove curtains and drapes. If you have metal blinds or special fire resistant window coverings, close them to block heat radiation.

photo by John Dietsch

IF YOU ARE UNABLE TO EVACUATE WHEN A FIRE APPROACHES

- ✔ Stay inside your house away from outside walls.
- ✔ Keep all doors closed but leave them unlocked.
- ✔ Keep your entire family together and REMAIN CALM. Remember if it gets hot in the house, it is four to five times hotter and more dangerous outside.

AFTER THE FIRE PASSES

- ✔ Check the exterior and roof immediately, extinguish all sparks and embers. If you must climb on the roof, use caution.
- ✔ Check inside the attic for hidden burning embers.
- ✔ Check your yard for burning woodpiles, trees, fence posts or other materials.

FOR ADDITIONAL FIRE SAFETY INFORMATION

Visit us at www.lacofd.org

or contact us

Public Affairs Section (323) 881-2411

COUNTY OF LOS ANGELES FIRE DEPARTMENT CALIFORNIA

NOTES

- ☑ _____
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H.5. CAL FIRE/California Fire Safe Council—Homeowner's Checklist

OUTSIDE

1 Design/Construction

(For new Wildland Urban Interface Construction or Remodels)

- ❑ Use ignition resistant construction (effective January 1, 2008) for roofs/roof assemblies, gutters, vents, desks, exterior walls, exterior windows.
- ❑ Enclose the underside of eaves, balconies and above ground decks with fire resistant materials
- ❑ Show your 100 feet Defensible Space on plot plan
- ❑ Build your home away from ridge tops, canyons and areas between high points of a ridge
- ❑ Consider installing residential sprinklers
- ❑ Make sure that electric service lines, fuse boxes and circuit breaker panels are installed and maintained per code
- ❑ Contact qualified individuals to perform electrical maintenance and repairs

2 Access

- ❑ Make sure that your street name sign is visibly posted at each street intersection
- ❑ Post your house address so it is easily visible from the street, especially at night
- ❑ Address numbers should be at least 3 inches tall and on a contrasting background
- ❑ Identify at least two exit routes from your neighborhood
- ❑ Clear flammable vegetation at least 10 feet from roads and five feet from driveways
- ❑ Cut back overhanging tree branches above access roads
- ❑ Construct roads that allow two-way traffic
- ❑ Make sure dead-end roads, and long drive ways have turn-around areas wide enough for emergency vehicles
- ❑ Design bridges to carry heavy emergency vehicles
- ❑ Post clear road signs to show traffic restrictions such as dead-end roads, and weight and height limitations

3 Roof

- ❑ Install a fire resistant roof. Contact your local fire department for current roofing requirements
- ❑ Remove dead leaves and needles from your roof and gutters
- ❑ Remove dead branches overhanging your roof and keep branches 10 feet from your chimney
- ❑ Cover your chimney outlet and stovepipe with a nonflammable screen of 1/2 inch or smaller mesh

4 Landscape

- ❑ Create a **Defensible Space** of 100 feet around your home. It is required by law
- ❑ Create a **"LEAN, CLEAN and GREEN ZONE"** by removing all flammable vegetation within 30 feet immediately surrounding your home
- ❑ Then create a **"REDUCED FUEL ZONE"** in the remaining 70 feet or to your property line

  You have two options in this area:

  A. Create horizontal and vertical spacing between plants. The amount of space will depend on how steep your property is and the size of your plants.

  B. Large trees do not have to be removed as long as all of the plants beneath them are removed.
- ❑ Remove lower tree branches at least six feet from the ground
- ❑ Landscape with fire resistant plants
- ❑ Maintain all plants with regular water, and keep dead braches, leaves and needles removed.
- ❑ When clearing vegetation, use care when operating equipment such as lawnmowers. One small spark may start a fire; a string trimmer is much safer

5 Yard

- ❑ Stack woodpiles at least 30 feet from all structures and remove vegetation within 10 feet of woodpiles
- ❑ Above ground Liquefied Petroleum Gas (LP-gas) containers (500 or less water gallons) shall be located a minimum of 10 feet with respect to buildings, public ways, and lot lines of adjoining property that can be built upon. - CFC 3804.3
- ❑ Remove all stacks of construction materials, pine needles, leaves and other debris from your yard
- ❑ Contact your local fire department to see if debris burning is allowed in your area; if so, obtain a burning permit and follow all local air quality restrictions

6 Emergency Water Supply

- ❑ Maintain an emergency water supply that meets fire department standards through one of the following:
  - a community water/hydrant system
  - a cooperative emergency storage tank with neighbors
  - a minimum storage supply of 2,500 gallon on your property (like a pond or pool)
- ❑ Clearly mark all emergency water sources
- ❑ Create easy firefighter access to your closest emergency water source
- ❑ If your water comes from a well, consider an emergency generator to operate the pump during a power failure

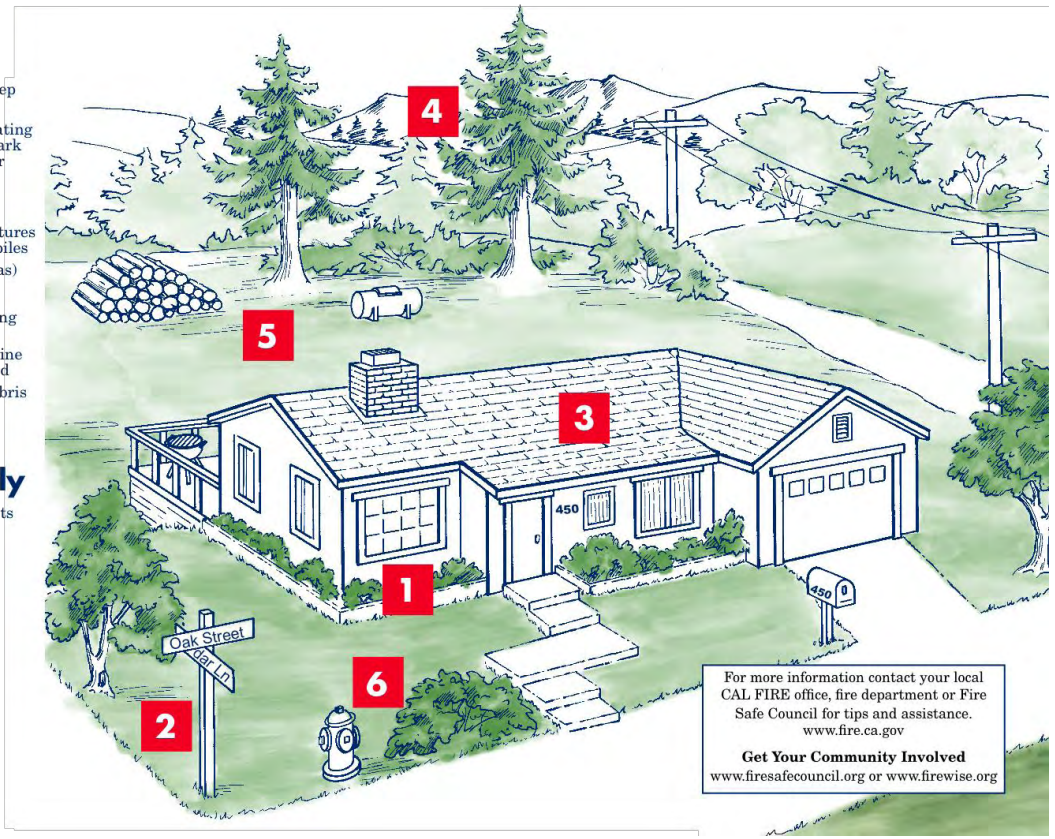
March 2009

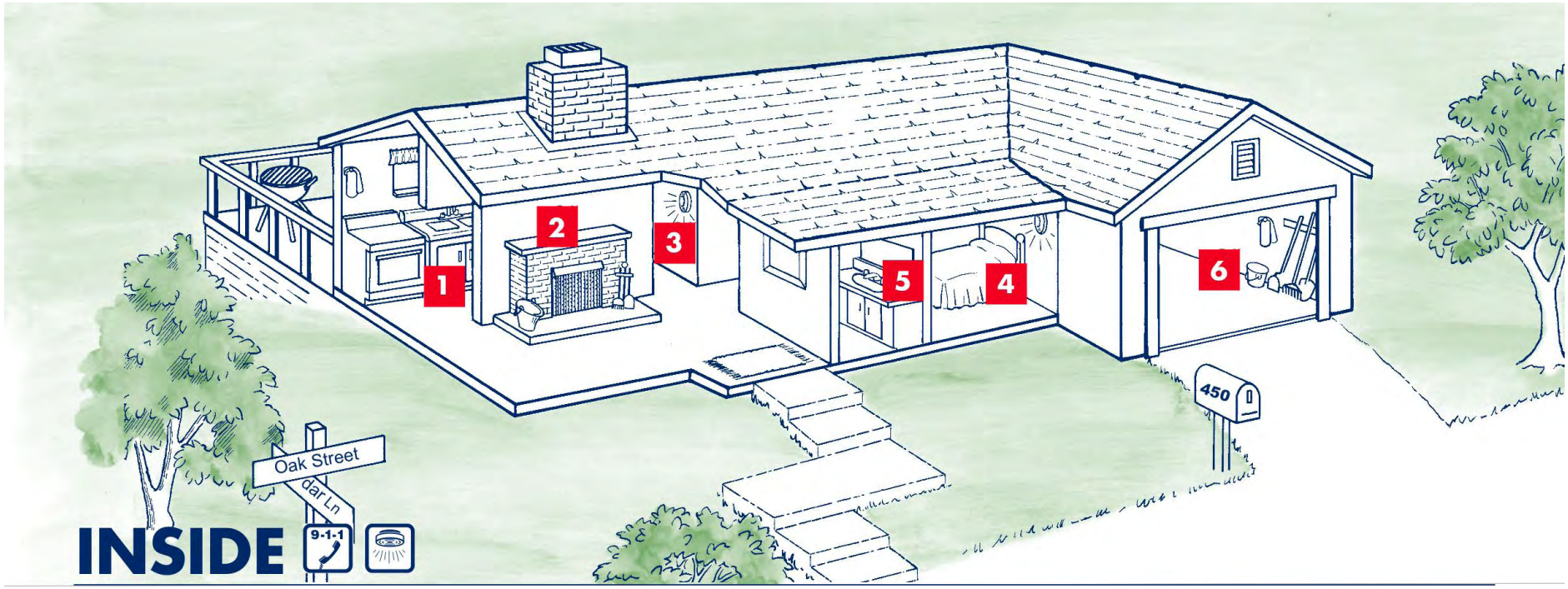
California Department of Forestry and Fire Protection

Homeowners Checklist

www.fire.ca.gov

How To Make Your Home Fire Safe





INSIDE

1 Kitchen

- ❑ Keep a working fire extinguisher in the kitchen
- ❑ Maintain electric and gas stoves in good operating condition
- ❑ Keep baking soda on hand to extinguish stove-top grease fires
- ❑ Turn the handles of pots and pans away from the front of the stove
- ❑ Install curtains and towel holders away from stoveburners
- ❑ Store matches and lighters out of reach of children
- ❑ Make sure that electrical outlets are designed to handle appliance loads

2 Living Room

- ❑ Install a screen in front of fireplace or wood stove
- ❑ Store the ashes from your fireplace (and barbecue) in a metal container and dispose of only when cold
- ❑ Clean fireplace chimneys and flues at least once a year

3 Hallway

- ❑ Install smoke detectors between living and sleeping areas
- ❑ Test smoke detectors monthly and replace batteries twice a year, when clocks are changed in the spring and fall
- ❑ Replace electrical cords that do not work properly, have loose connections, or are frayed

4 Bedroom

- ❑ If you sleep with the door closed, install a smoke detector in the bedroom
- ❑ Turn off electric blankets and other electrical appliances when not in use
- ❑ Do not smoke in bed
- ❑ If you have security bars on your windows or doors, be sure they have an approved quick release mechanism so you and your family can get out in the event of a fire

5 Bathroom

- ❑ Disconnect appliances such as curling irons and hair dryers when done; store in a safe location until cool
- ❑ Keep items such as towels away from wall and floor heaters

6 Garage

- ❑ Mount a working fire extinguisher in the garage
- ❑ Have tools such as a shovel, hoe, rake and bucket available for use in a wildfire emergency
- ❑ Install a solid door with self-closing hinges between living areas and the garage
- ❑ Dispose of oily rags in UL Underwriters Laboratories approved metal containers
- ❑ Store all combustibles away from ignition sources such as water heaters
- ❑ Disconnect electrical tools and appliances when not in use
- ❑ Allow hot tools such as glue guns and soldering irons to cool before storing
- ❑ Properly store flammable liquids in approved containers and away from ignition sources such as pilot lights

*Disaster Preparedness

- ❑ Maintain at least a three-day supply of drinking water, and food that does not require refrigeration and generally does not need cooking
- ❑ Maintain a portable radio, flashlight, emergency cooking equipment, lanterns and batteries
- ❑ Outdoor cooking appliances such as barbecues should never be taken indoors for use as heaters
- ❑ Maintain first aid supplies to treat the injured until help arrives
- ❑ Keep a list of valuables to take with you in an emergency; if possible, store these valuables together
- ❑ For safety, securely attach all water heaters and furniture such as cabinets and bookshelves to walls
- ❑ Have a contingency plan to enable family members to contact each other. Establish a family/friend phone tree
- ❑ Designate an emergency meeting place outside your home
- ❑ Practice emergency exit drills in the house (EDITH) regularly
- ❑ Make sure that all family members understand how to STOP, DROP AND ROLL if their clothes should catch fire

H.6. Ventura County Fire Hazard Reduction Program

Emergency Enforcement

The Ventura County Fire Department Uniform Fire Code provides that where the Fire Chief or his designee determines that the condition of a structure or property poses an immediate hazard to life or property, emergency action may be taken. In such cases, efforts will be made to contact the property owner and to request voluntary removal of the hazard at least ten days before abatement work is done.

Hazard Reduction

Ventura County residents and property owners cannot ignore the fact that dry, poorly maintained vegetation creates an extreme fire danger to their homes.

Well-placed, well-maintained vegetation beautifies and controls erosion in residential neighborhoods. Poorly maintained vegetation is a natural, volatile fuel for fast-spreading wildfires - an invitation to disaster.

Property owners and residents can help protect their homes by joining in partnership with their neighbors and the Fire Department to assure compliance with the Department's Fire Hazard Reduction program, as outlined here.

The goal is to maintain trees and vegetation that beautify and benefit a property, and to remove hazardous vegetation that provides a combustible fuel supply for wildfire. This is important to every resident of Ventura County, where the fire season is year round.

The Ventura County Fire Department wants to work with you to create the most fire-safe community possible. Fire Department personnel welcome your questions and invitations to discuss vegetation management and other fire-related issues with organizations or individuals.

For additional information, contact your neighborhood fire station.

ATTENTION

IF ANY OF THE FOLLOWING APPLY TO YOUR PROPERTY, THE VENTURA COUNTY FIRE DEPARTMENT IS STRONGLY RECOMMENDING THAT YOU INCREASE YOUR BRUSH CLEARANCE TO 200 FEET FROM ALL STRUCTURES.

- ❑ *House located on/or at the top of a slope*
- ❑ *Old brush not recently burned*
- ❑ *East facing aspect*
- ❑ *South facing aspect*
- ❑ *Wood shake roof*
- ❑ *Limited access for Fire Department*
- ❑ *Ornamental shrubbery next to house*
- ❑ *Older construction*
- ❑ *Historical fire pattern in your area*
- ❑ *Heavy chaparral fuels*
- ❑ *Limited or private water supply*
- ❑ *More than 5 miles from a fire station*

Fire Prevention Partnership

VENTURA COUNTY FIRE DEPARTMENT
165 Durley Avenue
Camarillo, CA 93010

COMMITMENT To DEFENSE. . .

PROTECT YOUR HOME AGAINST WILDFIRE

"You can make the difference."

FIRE HAZARD REDUCTION PROGRAM

Fire Prevention Partnership

A working partnership between property owners, their neighbors, and the Ventura County Fire Department is the best defense against disastrous fires. Ventura County Fire Department's Ordinance 24 is designed to minimize fire danger by controlling the density and placement of flammable vegetation.

The Fire Department does not recommend indiscriminate clearing of native chaparral and other vegetation. Natural vegetation plays an important role in erosion control. The delicate balance between erosion control and fire hazard reduction can be achieved if all members of the Fire Prevention partnership do their part.

Enforcement

The goal of the Ventura County Fire Department is to establish a fire-safe community through voluntary compliance of informed property owners and residents.

Fire inspectors look at property to determine hazard levels. Owners of property on which a hazardous vegetation condition exist are asked to correct the problem.

If a property owner does not comply with the ordinance, a contractor will be hired to complete the necessary work. Inspection and administrative fees will be charged and the cost of correcting the hazard will be added to the property owner's tax bill.

Enforcement involves several steps. They are:

1. INSPECTION AND NOTIFICATION
   Where a fire hazard exists, the Ventura County Fire Department will issue a notice to the owner of record requiring fire hazard reduction. The notice will be mailed to the owner of record at that time. No fee will be charged for this initial inspection.

2. REINSPECTION
   If the hazard still exists upon reinspection, the Fire Department will issue a notice of intention to abate within 5 days.

3. ABATEMENT
   A contractor will be hired to abate the hazard. The contractor will clean the parcel under direction of the Fire Department. The actual cost of abatement, plus an administrative fee, will be placed as a special assessment on the property owner's tax bill.

Defensible Space

Defensible Space refers to an area around the perimeter of structures or developments in the wildlands. Defensible space is key to defending structures from wildfire. Millions of Californians live in residential developments that border fire prone wildlands.

Each year, hundreds of homes in the wildland interface are lost to wildfires. According to the California Department of Forestry and Fire Protection (CDF), as many as 80 percent of the homes lost to wildfires in the past could have been saved if the owners had followed a few simple fire safe practices. These practices include:

- Discing and rototilling are acceptable methods for removing small types of vegetation. The material shall be tilled or disced into the soil in a manner to eliminate possible fire spread.
- Clearance from all structures shall not be less than 100 feet using surface measurements. Within the 100 foot perimeter, all brush, flammable vegetation, or combustible growth identified as a fire hazard by the inspecting officer shall be mowed to stubble height not to exceed 3 inches. All cuttings shall be removed from the property.
- Single specimens of trees, ornamental shrubbery or ground covers are permissible provided that they do not form a means of rapidly transmitting fire from the native growth to any structure. Such specimens shall be spaced a minimum of 15 feet from other specimens, structures or surrounding native brush. All trees and shrubs shall be maintained free of deadwood and litter, and shall be trimmed up 2 feet from the ground or 1/3 of the height, whichever is less.
- Roof surfaces shall be maintained free of accumulations, of leaves, needles, twigs, or other combustible materials. Chimneys shall be provided a 10 foot clearance from trees. Access roads shall be maintained with a minimum 10 foot clearance on each side of the traveled section. Trees and shrubs protruding over the access roadway shall be trimmed to a minimum height of 13 feed 6 inches to allow proper access for emergency equipment.
- Vacant parcels located in areas defined as Hazardous Watershed Fire Areas, such as vacant parcels in a city or highly developed area, shall be cleared entirely of combustible material.
- Large vacant parcels located in Hazardous Watershed Fire Areas bordering on developed areas (urban/wildland interface) shall have a 100 foot fuel break cleared along the entire interface border. When possible, the fuel break may be placed in such a manner so that it is obscured from the public view.

These minimum standards are established to provide reasonable measures of controlling both fire and erosion hazards and to protect lives and property. Ventura County Fire Department personnel may require greater protection levels in high-danger areas. In cases where difficult terrain, danger of erosion or unusual circumstances make compliance impractical, they can suspend or adjust the requirements.

H.7. Los Angeles County Fire Hazard Reduction and Safety Guidelines

EMERGENCY WATER SUPPLY

If you have a swimming pool, consider obtaining a gas-powered water pump with a fire hose and nozzle. Be sure to test the pump monthly.

Make accessible, clearly mark and maintain all emergency water sources.

If you have an electrically powered well or booster pump to supply water, considered installing an emergency generator to operate the system during power failures.

ACCESS

Identify at least two exit routes from your neighborhood.

Construct roads that allow two-way traffic.

Design road width, grade and curves to allow access for large emergency vehicles.

Design bridges to carry heavy emergency vehicles.

Post clearly visible roads signs to show traffic restrictions such as dead-end roads and weight and height limitations.

Make sure dead-end roads and long driveways have turnaround areas wide enough for emergency vehicles.

Construct turnouts along one-way roads.

Clear flammable vegetation horizontally at least 10 feet from roads and 10 feet from driveways.

Cut back overhanging tree branches above roads to provide minimum of 16 feet of clearance.

Make sure your street name or number is visibly posted at each intersection.

Post your house address on the street fronting the property. If your house is not visible from the street, post a sign next to the vehicle entrance using a minimum of 3-inch address numbers. Use noncombustible materials with a contrasting background.

CONSTRUCTION

Build your home at least 30 feet from property lines.

Use fire resistant building materials.

Ensure that electric service lines, fuse boxes and circuit breaker panels are installed and maintained according to code.

Enclose the underside of balconies and above ground decks with fire resistive materials.

Limit the size and number of windows that face large areas of hazardous vegetation.

Install dual-pane or triple-pane windows.

CALL 9-1-1

If you see smoke or fire in your area, immediately report it by dialing **9-1-1**. Remember to take note of the location so that the dispatcher can send emergency equipment to the correct location before you hang up.

FOR ADDITIONAL FIRE SAFETY INFORMATION

Call the Community Relations Office at
(323) 881-2411
or
Contact your Local Fire Station

For Specific Information
on Fire Hazard Reduction
write to:
County of Los Angeles Fire Department
Forestry Division
5823 Rickenbacker Rd, Room #123
Commerce, CA 90040-3027

County of Los Angeles Fire Department
Community Relations Office
1320 N. Eastern Avenue

COUNTY OF
LOS ANGELES
FIRE DEPARTMENT

YOUR HOME MAY BE AT RISK!

FIRE HAZARD REDUCTION AND SAFETY GUIDELINES

Compliance inspections begin April 1 in the Antelope Valley, June 1 in the coastal areas, and May 1 in all other areas.

COUNTY OF LOS ANGELES FIRE DEPARTMENT

To Homeowners and Residents:

All properties located near wildland areas have the potential of being a fire hazard. Unmaintained landscapes and ornamental vegetation have significantly contributed to recent disastrous fires in Oakland, Malibu, and Altadena. Fire hazards are not limited to native vegetation; **unmaintained ornamental vegetation is a significant threat to your home and your family.**

We need your assistance in creating a defensible space to protect your home and your family. Required clearance of native vegetation and properly maintained ornamental vegetation is the first line of defense against wildfire. Your conscientious efforts to comply with Fire Department requirements greatly reduce the chances of fire spreading onto your property and reaching your home.

Sincerely,

Members of the Board

First District	Gloria Molina
Second District	Yvonne Brathwaite Burke
Third District	Zev Yaroslavsky
Fourth District	Don Knabe
Fifth District	Michael D. Antonovich

Recent fire experience shows that with proper clearance, your home will have a better chance of surviving a wind-driven firestorm. Furthermore, it is **YOUR LEGAL** responsibility as a property owner to maintain your land in a fire safe condition.

Fire safe conditions can be achieved by following the Fire Safety Checklist provided in this pamphlet, and complying with Los Angeles County Fire Codes. Please take the time to review this information and utilize the checklist as a guide for yourself, contractors or maintenance personnel to complete the necessary clearance. An informed and concerned community is crucial in reducing the loss of life and property resulting from wildland fires.

Fire Department personnel will soon start their annual Brush Clearance Inspection Program. We are looking forward to working with you to reduce the fire hazards on your property. Thank you for your cooperation.

P. Michael Freeman, Fire Chief
County of Los Angeles Fire Department

FIRE SAFETY CHECKLIST

LANDSCAPE (ORNAMENTAL)

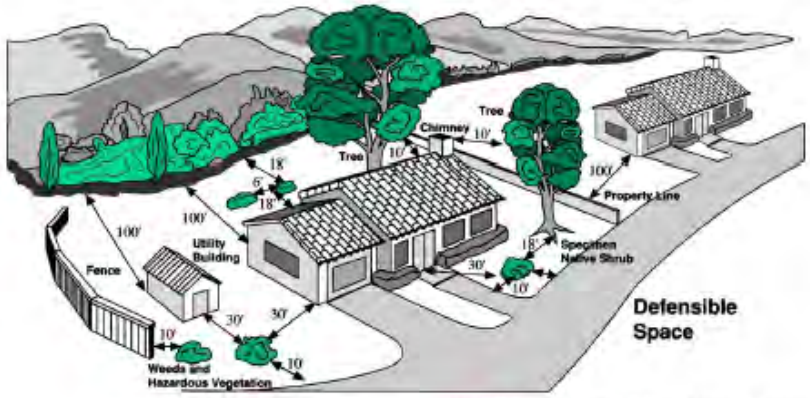
- ☐ Remove all flammable vegetation or other combustible growth within 30 feet of any structure or within 50 feet of any structure in areas determined to be high hazard. Single trees, ornamental shrubbery or cultivated ground covers may be permitted provided they are maintained in such a manner that they do not readily transmit fire from native vegetation to the structure.
- ☐ Special attention should be given to the use and maintenance of ornamental plants known or thought to be high hazard plants when used in close proximity to structures. Some of these plants are Acacia, Cedar, Cypress, Eucalyptus, Juniper, Pine, and Pampas Grass. Such plantings should be properly maintained and are not allowed to be in mass plantings in such a manner that they could transmit fire from the native growth to any structure.
- ☐ Thin out or remove additional vegetation an additional 70 feet from the structure for a total of 100 feet. The inspecting officer, with the approval of the Fire Chief, may require an additional 100 feet of thinning or removal for a total of 200 feet due to a high fire hazard.
- ☐ Space trees and shrubs a minimum of 15 feet or three times their diameter from other shrubs. Trees should be spaced to allow a minimum of thirty feet between canopies at maturity.
- ☐ For trees taller than 18 feet, prune lower branches within 6 feet of the ground.
- ☐ For trees and shrubs of less than 18 feet, prune lower branches to one third of their height.
- ☐ Choose landscaping plants that are fire resistive.
- ☐ Maintain all plants by regularly removing dead branches, leaves, and related materials.

YARD

- ☐ Stack wood at least 30 feet from structures; remove flammable vegetation within 10 feet of the woodpile.
- ☐ Remove all stacks of construction materials, pine needles, leaves and debris.
- ☐ Locate fixed butane/propane tanks at least 10 feet from any structure and give them 10 feet of clearance.

ROOF

- ☐ Remove dead branches overhanging your roof.
- ☐ Clean all dead leaves from your roof and rain gutters.
- ☐ Cover your chimney outlet with a spark arrestor consisting of a metal or non-flammable screen of 1/2 inch or smaller mesh.



NOTE: Small lots may make these clearance distances impossible. You are only responsible to clear up to your property line. Clearance of property adjacent to your lot is the responsibility of the property owner.

EMERGENCY WILDLIFE PROTECTION

PREPARATION AHEAD OF THE FIRE

Back your car in the garage heading out with windows closed and keys in the ignition.

Close the garage door, leave it unlocked, disconnect automatic door opener in the case of power failure.

Keep a flashlight and portable radio with you at all times and stay tuned to your local news station.

Move combustible yard furniture away from the house or store it in the garage.

Cover windows, attic openings, eaves and vents with fire resistive materials such as 1/2 inch or thicker plywood. Close window shutters and blinds if they are fire resistive.

Attach garden hoses to spigots and place them so that they can reach all areas of your house.

Fill all sinks, bath tubs, trash cans, buckets, and other containers with water. Keep small rugs or wet towels handy to dip into the water and extinguish spot fires.

If you have an emergency generator or a portable gasoline-powered pump that will supply water from a swimming pool, pond, well or tank, clearly mark its location and be ready to operate it.

Place a ladder against the house on the opposite side of the approaching fire for access to the roof.

Close all windows and doors around your home to prevent sparks from blowing inside.

Close all doors within the house to slow fire spread inside the house.

Turn on the lights in all rooms of your house, on the porch and in the yard. Your house will be more visible through the smoke or darkness.

Shut off butane/propane or natural gas valves.

Move furniture away from windows and sliding glass doors to keep them from igniting from the radiant heat of the fire.

This page is inserted to facilitate double-sided printing of the document.

I. Los Angeles County Local Fire Safety Regulations[1]

Section 100--California Fire Code and International Fire Code Adoption by Reference

Except as hereinafter changed and modified, Chapters 1 through 47, Appendix Chapter 1, Appendix B of the 2007 Edition of the California Fire Code, published by the California Building Standards Commission, and Chapters 1 through 45 and Appendix A of the 2006 Edition of the International Fire Code, published by the International Code Council, are hereby adopted by reference and incorporated into this Title 32 of the Los Angeles County Code as if set forth fully below, and shall be known as Chapters 1 through 47, Appendix Chapter 1, Appendix A, and Appendix B of Title 32 of the Los Angeles County.

A copy of the 2007 Edition of the California Fire Code, including Appendix Chapter 1, Appendix A, and Appendix B, and a copy of the 2006 International Fire Code shall be at all times maintained by the Executive Office of the Board of Supervisors for use and examination by the public.
Unless expressly repealed or amended herein, the previously enacted provisions of Title 32 of the Los Angeles County Code shall remain in full force and effect. (Ord. 2007-0112 § 2, 2007.)

101.1 Title. Title 32 of the Los Angeles County Code shall be known as the LOS ANGELES COUNTY FIRE CODE, may be cited as such, and will be referred to herein as "this code." (Ord. 2002-0080 § 4, 2002.)

101.6 Conflicting Provisions. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall be applicable. Where there is a conflict between amendments, unless otherwise expressly noted, the most recent amendment shall apply. (Ord. 2002-0080 § 6, 2002.)

103.3.1.1 Authority to inspect. The chief or his designated representatives shall inspect, as often as necessary , buildings and premises, including such other hazards or appliances designated by the chief for the purpose of ascertaining and causing to be corrected any conditions which would reasonably tend to cause fire or contribute to its spread, or any violation of the purpose or provisions of this code and of any other law or standard affecting fire safety. (Ord. 2002-0080 § 13, 2002.)

103.4.1.3 Stopping uses, evacuation. The chief is authorized to order an operation or use stopped or the evacuation of any premises, building or vehicle or portion thereof which has or is a condition hazardous to life or property regulated by this code. (Ord. 99-0044 § 9, 1999.)

103.4.5 Unsafe buildings. Buildings or structures which are structurally unsafe or not provided with adequate egress, or which constitute a fire hazard or are otherwise dangerous to human life, or which in relation to existing use constitute a hazard to safety or health or public welfare, by reason of inadequate maintenance, dilapidation, obsolescence, fire hazard, hazardous material contamination, disaster damage or abandonment as specified in this code or any other ordinance, are for the purposes of Section 103.4.5, unsafe buildings. Such unsafe buildings are hereby declared to be public nuisances and shall be abated by repair, rehabilitation, demolition or removal. A report concerning any such unsafe building shall be made by the chief to the building official for abatement of the unsafe condition. (Ord. 2002-0080 § 14, 2002.)

103.4.7 Violations. Every person violating any provision of this title or of any permit or license granted hereunder, or any rule, regulation or policy promulgated pursuant hereto, is guilty of a misdemeanor unless such violation is declared to be an infraction by Article 89 of this title. Each such violation is a separate offense for each and every day

[1] For update and the latest version of the Los Angeles County Fire Safety Regulations go to: http://search.municode.com/html/16274/maintoc.htm or call the County of Los Angeles County Fire Prevention Office at 323890-4132.

during any portion of which such violation is committed. Every violation determined to be an infraction hereunder is punishable in such manner and to such extent as is provided by state law. For the purposes of this section a forfeiture of bail shall be equivalent to a conviction. (Ord. 95-0063 § 14, 1995.)

103.4.8 Responsibility. Any person who personally or through another willfully, negligently, or in violation of law sets a fire, allows a fire to be set, or allows a fire kindled or attended by him to escape from his control, allows any hazardous material to be handled, stored or transported in a manner not in accordance with this code or nationally recognized standards, allows any hazardous materials to escape from his control, neglects to properly comply with any written notice of the chief, or willfully or negligently allows the continuation of a violation of this code and amendments thereto is liable for the expense of fighting the fire or for all costs associated with the control and mitigation of a hazardous materials incident, or for the expenses incurred while obtaining compliance with the written order of the chief, or for the expenses incurred in obtaining compliance with the continuing violation of this code, and such expenses shall be a charge against that person. (Ord. 95-0063 § 15, 1995.)

103.4.9.1 Administrative penalty--imposition. An administrative penalty may be imposed on all parcels found to be in violation of Sections 1117.2.2, 1117.2.3, 1117.10, or 902.2.2.1 of this code relating to clearance of brush and combustible growth, roadway clearance, and vertical clearance on fire access roads. (Ord. 2003-0087 § 4, 2003: Ord. 96-0065 § 2, 1996.)

103.4.9.2 Administrative penalty--enforcement. An administrative penalty will be imposed and enforced upon failure of the responsible party to comply with written abatement instructions and timeframes contained on the Official Inspection Report Form (County of Los Angeles Fire Department FORM 410B) issued by the fire department. (Ord. 2003-0087 § 5, 2003: Ord. 96-0065 § 3, 1996.)

103.4.9.3 Declared parcel. A declared parcel is a parcel which contains noxious weeds and other flammable vegetation that are a fire hazard and which constitutes a public nuisance which must be abated as declared in an annual resolution of the Board of Supervisors. An owner of a declared parcel will be mailed a declaration card specifying the abatement actions required of the owner. The declaration card constitutes the first official notice to the owner. A physical inspection of the declared parcel is conducted by the fire department to determine compliance with the declaration card. After the physical inspection, if the fire department determines that the owner has not complied with the declaration card, then such noncompliance constitutes the first violation of the fire code. The owner will be given notice of such first violation of the fire code. This notice constitutes the second official notice to the owner. The second official notice shall also inform the owner that an administrative penalty may be imposed on the declared parcel if not properly cleared. An owner's failure to comply with the second official notice constitutes the second violation of the fire code. (Ord. 2003-0087 § 6, 2003: Ord. 96-0065 § 4, 1996.)

103.4.9.4 Undeclared parcel. An undeclared parcel is a parcel not contained in the annual resolution of the Board of Supervisors described in Section 103.4.9.3. (Ord. 2003-0087 § 7, 2003: Ord. 96-0065 § 5, 1996.)

103.4.9.5 Inspection--notice of violations. After a physical inspection, if the fire department determines that an undeclared parcel is not in compliance with the fire code, the owner will be given notice of such violation of the fire code. This notice of violation constitutes the first official notice. An owner's failure to comply with the first official notice constitutes the first violation of the fire code. After a first violation, a physical inspection of an undeclared parcel will be conducted by the fire department to determine compliance with the fire code. After the physical inspection, if the fire department determines that an undeclared parcel is not in compliance with the fire code, the owner will be given notice of the second violation of the fire code. This notice constitutes the second official notice to the owner. This second official notice shall also inform the owner that an administrative penalty may be imposed

on an undeclared parcel if not cleared. An owner's failure to comply with the second notice constitutes the second violation of the fire code. (Ord. 2003-0087 § 9, 2003: Ord. 96-0065 § 7, 1996.)

103.4.9.6 Administrative penalty--amount. The administrative penalty for a first violation as described in Section 103.4.9.3 or 103.4.9.5 is zero. The administrative penalty for a second violation as described in Section 103.4.9.3 or 103.4.9.5 is $200.00. (Ord. 2003-0087 § 8, 2003: Ord. 96-0065 § 6, 1996.)

103.4.9.7 Administrative penalty--collection. The administrative penalty will be collected by the fire department through direct invoice. The fire department shall notify the owner of the imposition and amount of the administrative penalty. (2003-0087 § 10, 2003.)

103.4.9.8 Administrative penalty--administrative review and appeal. The imposition of the administrative penalty may be appealed in writing utilizing the claim resolution form provided with the invoice. The claim resolution form must be filed with the Brush Clearance Unit of the fire department within 30 days of the date of invoice. Brush Clearance Unit personnel will attempt to resolve the claim, and provide a written response to the claimant within 30 working days of receipt of the claim. If unable to resolve the claim, Brush Clearance Unit personnel will forward the claim to the Brush Clearance Section Manager. The Brush Clearance Section Manager will review the claim and provide a final administrative order or decision in writing within 30 working days of the receipt of the claim. The Brush Clearance Section Manager will make the final decision of the fire department on the claim. Any person contesting the final administrative order or decision of the fire department may seek further review pursuant to Section 53069.4 of the California Government Code. Any administrative penalty imposed shall be cancelled or refunded as provided in Sections 14920--14921 of the State Health and Safety Code, or any successor statute of similar import. (Ord. 2003-0087 § 11, 2003: Ord. 96-0065 § 8, 1996.)

104.2 Investigations. The fire department is authorized to investigate promptly the cause, origin and circumstances of each and every fire or hazardous materials incident occurring in the jurisdiction involving loss of life or injury to person or destruction or damage to property and, if it appears to the investigator that such fire or hazardous materials incident is of suspicious origin, he or she is authorized to take immediate charge of all physical evidence relating to the cause of the fire or hazardous materials incident and to pursue, under the direction of the fire chief or his authorized deputy fire chief, the investigation to its conclusion, in cooperation with the appropriate law enforcement agency. (Ord. 2002-0080 § 15, 2002.) (Ord. 2002-0080 § 17 (part) 2002.)

Section 317 Clearance of Brush and Vegetative Growth

317.1 Electrical Transmission Lines

317.1.1 Support clearance. Any person owning, controlling, operating, or maintaining any electrical transmission or distribution line upon any mountainous, forest, or brush-covered lands or land covered with flammable growth, shall, at all times, maintain around and adjacent to any pole supporting a switch, fuse, transformer, lightning arrester, or line junction, or dead end, or corner poles, or towers, or other poles or towers at which power company employees are likely to work most frequently, an effective firebreak, consisting of a clearing of not less than 10 feet in each direction from the outer circumference of such pole or tower, provided, however that this provision shall not be deemed to apply to lines used exclusively as telephone, telegraph, telephone, or telegraph messenger call, fire or alarm lines, or other lines classed as communication (Class C) circuits by the Public Utilities Commission of the State of California. Nor shall this provision apply to clearance around poles supporting only secondary electrical distribution lines of 750 volts or less. (Ord. 2007-0112 § 20 (part), 2007.)

317.1.2 Line clearance. Any person owning, controlling, operating, or maintaining any electrical transmission or distribution line upon any mountainous, or forest, or brush-covered lands, or lands covered with flammable growth shall maintain a clearance of the respective distances hereinafter in this section specified in all directions between all vegetation and all conductors carrying electrical current.
For lines operating at 2,400 volts or more, but less than 72,000 volts: a minimum of four (4) feet;
For lines operating at 72,000 volts or more, but less than 110,000 volts: a minimum of six (6) feet; and
For lines operating at 110,000 volts or more: a minimum of ten (10) feet.
In any case, such distance shall be sufficiently great to furnish the required clearance from the particular wire or conductor at any position of such wire or conductor at any temperature of 120 degrees Fahrenheit or less. Dead trees, old, decadent or rotten trees, those weakened by decay or disease and trees leaning toward the line, which may contact the line from the side or may fall on the line, shall be felled, cut, or trimmed so as to remove the hazard. (Ord. 2007-0112 § 20 (part), 2007.)

317.1.3 Self-supporting aerial cable. No clearing to obtain line clearance is required when self-supporting aerial cable is used except that forked trees, leaning trees, and other growth which may fall across the cable and break it, shall be removed.

EXCEPTION: Nothing contained in this section shall be construed to require any person to maintain any clearing on land where such person does not have the legal right to maintain such clearing, nor shall any provision of this ordinance be construed to require any person to enter upon or to damage property of another without the consent of the owner thereof. For further exceptions, see Title 14, California Code of Regulations, sections 1250-57 inclusive. (Ord. 2007-0112 § 20 (part), 2007.)

317.2 Structures

317.2.1 Fuel modification plan in fire hazard severity zones. A fuel modification plan, a landscape plan, and an irrigation plan prepared by a registered landscape architect, landscape designer, landscape contractor, or an individual with expertise acceptable to the forestry division of the fire department shall be submitted with any application for a subdivision of land or prior to any new construction, remodeling, modification, or reconstruction of a structure where such remodeling, modification, or reconstruction increases the square footage of the existing structure by 50 percent or more within any 12-month period and where the structure or subdivision is located within areas designated as a Very High Fire Hazard Severity Zone in Chapter 7A of the Los Angeles County Building Code and Chapter 47 of this code. Every fuel modification plan, landscape plan, and irrigation plan shall also be reviewed and approved by the forestry division of the fire department for reasonable fire safety.
After such final plan has been approved by the forestry division of the fire department, a signed copy of the Covenant and Agreement shall be recorded at the registrar-recorder/county clerk's office. (Ord. 2007-0112 § 20 (part), 2007.)

317.2.1.1 Appeals. Any person who disagrees with any decision related to fuel medication plans may file a written appeal with the chief of the forestry division. The chief of the forestry division will adjudicate all policy interpretations relevant to fuel modification plan requirements and serve as the final authority in the appeals process. (Ord. 2007-0112 § 20 (part), 2007.)

317.2.1.2 Fuel modification, landscape, and irrigation plan check fee schedule. A plan check fee shall be payable to the fire department, upon the submission of any fuel modification plan, landscape plan, or irrigation plan for review and approval by the fire department. The amount of the plan check fee, for each such plan, shall be calculated in accordance with the following:
1. $407.00 for barns, garages, accessory structures; or

2. $678.00 for new residential, commercial, or industrial structures less than 2,500 square feet in total area, or additions/modifications to existing residential, commercial, or industrial structures which increase the total square footage by 50 percent or more and which addition/modification does not exceed 2,500 square feet in total area, or tract/lot splits of 4 or less lots, or
3. $678.00 for parcel maps; or
4. $1,356.00 for new residential, commercial, or industrial structures greater than 2,500 square feet in total area, or additions/modifications to existing residential, commercial, or industrial structures which increase the total square footage by 50 percent or more and which addition/modification exceeds 2,500 square feet in total area, or tract/lot splits of 4 or tentative tract/lot splits of 5 to 20 lots; or
5. $1,356.00 for tract maps preliminary plan approval; or
6. $2,711.00 for tract maps containing 5 to 20 lots, tentative tract/lot splits over 20 lots; or
7. $4,067.00 for tract maps containing more than 20 lots - final plan approval.
Section 317.2 is applicable to all unincorporated portions of Los Angeles County, to all cities that are a part of the Consolidated Fire Protection District of Los Angeles County, and to all cities that contract with the Consolidated Fire Protection District of Los Angeles County for services and adopt section 317.2 as part of their fire code.
The fees in this Section 317.2.1.2 shall be reviewed annually by the fire department. Beginning on July 1, 2008, and thereafter on each succeeding July 1, the amount of each fee shall be adjusted as follows: calculate the percentage movement between March of the previous year and March of the current year in the Consumer Price Index (CPI) for all urban consumers in the Los Angeles, Anaheim, and Riverside areas, as published by the United States Government Bureau of Labor Statistics. The adjusted fee shall be rounded to the nearest dollar; provided, however, notwithstanding any of the above, no fee shall exceed the cost of providing the service for which the fee is collected. (Ord. 2008-0039 § 13, 2008: Ord. 2007-0112 § 20 (part), 2007.)

317.2.2 Clearances. Any person owning, leasing, controlling, operating, or maintaining any building, structure, or apiary upon or adjoining any mountainous, or forest or brush-covered land or land covered with flammable growth, and any person owning, leasing, or controlling any land adjacent to such structures, shall at all times:
1. Place or store firewood, manure, compost, and other combustible materials a minimum of 30 feet from any building, structure, or apiary.
2. Maintain around and adjacent to such building, structure, or apiary an effective fire protection or firebreak made by removing and clearing away, for a distance of not less than 30 feet on each side thereof, all flammable vegetation or other combustible growth. This includes ornamental plants and trees known to be flammable, including but not limited to: Acacia, Cedar, Cypress, Eucalyptus, Juniper, Pine, and Pampas Grass.

EXCEPTIONS: 1. Ornamental plants and trees that are individually planted, spaced, and maintained in such a manner that they do not form a means of transmitting fire from native growth to the structure.

2. Cultivated ground cover such as green grass, ivy, succulents, or similar plants provided that they are maintained in a condition that does not form a means of transmitting fire from native growth to the structure.

3. When the fire code official or commissioner finds that because of extra hazardous conditions, a firebreak of only 30 feet around such building, structure, or apiary is not sufficient to provide reasonable fire safety, the person owning, leasing, controlling, operating, or maintaining the building, structure, or apiary shall maintain around or adjacent to any building, structure, or apiary an additional fire protection or firebreak made by removing all brush, flammable vegetation, or combustible growth located from 30 to 100 feet from such building, structure, or apiary, as may be required by the fire code official or commissioner. Grass and other vegetation located more than 30 feet from

such building structure, or apiary and less than 18 inches in height above the ground, may be maintained where necessary to stabilize the soil and prevent erosion.

4. That portion of any tree which extends within 10 feet of the outlet of any chimney shall be removed.

5. Maintain any tree adjacent to or overhanging any building, structure, or apiary free of dead wood.

6. Maintain the roof of any building, structure or apiary free of leaves, needles, or other dead vegetative growth. (Ord. 2007-0112 § 20 (part), 2007.)

317.2.3 Extra hazard. The governing body finds that in many cases because of extra hazardous situations, a firebreak around buildings, structures, or apiaries of only 30 feet is not sufficient and that a firebreak of 50 feet or more may be necessary. If the fire code official or commissioner finds that because of the location of any building, structure, or apiary and because of other conditions, a 30-foot firebreak around such building, structure, or apiary as required by Section 317.2.2 is not sufficient, the fire code official or commissioner may notify all owners of property affected that they must clear all flammable vegetation and other combustible growth or reduce the amount of fuel content for a distance greater than 30 feet, but not to exceed 200 feet. (Ord. 2007-0112 § 20 (part), 2007.)

317.3 Notice to Correct

317.3.1 Contents of notice. A notice to clear all flammable vegetation and other combustible growth for a distance greater than 30 feet shall be in writing and shall specify the exact distance from the structure that such vegetation and growth must be cleared. (Ord. 2007-0112 § 20 (part), 2007.)

317.3.2 Compliance with findings. Within a reasonable time after receipt of the notice specified in Section 317.3, every person owning, leasing, controlling, or operating the building, structure, or apiary involved, and every person owning, leasing or controlling any land adjacent to such building, structure, or apiary shall, at all times maintain around and adjacent to such building, structure or apiary an effective fire protection or firebreak made by removing and clearing away, for a distance not less than so determined, on each side thereof, all flammable vegetation or other combustible growth, except as otherwise provided in Section 317.2. (Ord. 2007-0112 § 20 (part), 2007.)

317.3.3 Correction by fire code official or commissioner. Any person described in Sections 317.2.2, 317.2.3, or 317.3.2 who has received notice for having failed to meet any of the requirements specified in said sections and who is unable to comply with the requirements of such notice may request the fire code official or commissioner to correct the condition or conditions. The fire code official or commissioner may do so, provided that the person requesting such assistance agrees to pay the full cost thereof. (Ord. 2007-0112 § 20 (part), 2007.)

317.3.4 Notice of failure to correct. In the event any of the requirements prohibited by either Sections 317.2.2 or 317.2.3 exist, the governing body may instruct the fire code official or commissioner to give notice to the owner of the property upon which such condition exists, to correct such prohibited condition, and if the owner fails to correct such condition the governing body may cause the same to be done and make the expenses of such correction a lien upon the property upon which such condition exists. If it so instructs the fire code official or commissioner, the governing body shall designate the time and place of a hearing either before itself or before a referee appointed by it, and shall notify the fire code official of its action. (Ord. 2007-0112 § 20 (part), 2007.)

317.3.5 Mailing notice. Upon receipt of a notice from the governing body of the time and place of hearing, and not less than 10 days before such hearing, the fire code official or commissioner shall mail a notice to the owners of property, as their names and addresses appear from the last equalized assessment roll, or as they are known to the clerk of the governing body on which a firebreak is not maintained as required by Section 317.2 in substantially the following form:

NOTICE TO DESTROY WEEDS, BRUSH, AND RUBBISH

Notice is hereby given that on the ___day of (month) _____, the governing body of (municipality) passed a resolution declaring the noxious or dangerous weeds, sagebrush, chaparral, and any other brush or weeds which attain such large growth as to become, when dry, a fire menace to adjacent improved property, were growing, and that there existed dry grass, stubble brush, litter, or other flammable material which endangers the public safety by creating a fire hazard upon or in front of the property on certain streets in said municipality, and more particularly described in said resolution, and that same constitutes a public nuisance which must be abated by the removal of said noxious or dangerous weeds, brush, litter, or other flammable material, otherwise they will be removed and the nuisance will be abated by the municipal authorities, in which case the cost of such removal shall be assessed upon the lots and lands from which, or in front of which, such materials are moved, and such cost will constitute a lien upon such lots or lands until paid. Reference is hereby made to said resolution for further particulars.

All property owners having any objections to the proposed removal of such materials are hereby notified to attend a meeting of the governing body of said municipality, to be held at _____ a.m. o'clock, (month) _____, when their objections will be heard and given due consideration.

Dated this _____ day of (month) _____.

(name)

(department)

(municipality)

(Ord. 2007-0112 § 20 (part), 2007.)

Section 318 Activities in Hazardous Fire Areas

318.1 Intent. The unrestricted use of grass, grain, brush, or forest-covered land, in certain hazardous fire portions of the jurisdictional area due to conditions tending to cause or allow the rapid spread of fires which may occur on such lands, or because of the inaccessible character of such lands, is a potential menace to life and property from fire. Therefore, it is the intent of this section to provide necessary safeguards to prevent the occurrence of fires and to control the spread of fires which might be caused by recreational, commercial, industrial, or other activities carried on in any hazardous fire area. (Ord. 2007-0112 § 21 (part), 2007.)

318.2 Permit required. No person shall establish or conduct any of the following or similar activities in a hazardous fire area without first securing a permit.

1. Recreational activities including but not limited to rifle ranges, carnivals and fairs, public assembly events, fireworks, and open burning.
2. Temporary or permanent activities including but not limited to stands for cooking, or other activities which could provide a source of ignition. (Ord. 2007-0112 § 21 (part), 2007.)

318.3 Permit request. A request of an issuance of a permit for any such activity shall be made to the fire code official not less than 15 days prior to the starting date of such activity. (Ord. 2007-0112 § 21 (part), 2007.)

318.4 Fire protection survey. Upon receiving a request for issuance of a permit, the fire code official shall survey the buildings, premises, and facilities proposed for such use prior to issuance of the permit to determine the fire protection equipment and safeguards necessary to conduct such activity without unduly increasing the potential fire hazard to the area. (Ord. 2007-0112 § 21 (part), 2007.)

318.5 Notification. The applicant shall be notified by the fire code official of those facilities and all fire protection safeguards necessary, and a permit shall not be issued until all such facilities and safeguards have been provided. (Ord. 2007-0112 § 21 (part), 2007.)

318.6 Permit stipulations. The permit shall stipulate the conditions, precautions, limitations, and safeguards necessary to conduct such activity with a reasonable degree of fire safety and failure to comply with any condition, precaution, limitation, or safeguard stipulated shall be cause of immediate revocation of the permit and cessation of the activity. (Ord. 2007-0112 § 21 (part), 2007.)

318.7 Fire protection facilities required. Fire protection facilities required and conditions or limitations necessary to maintain reasonable fire safety may include but are not limited to the following:

1. Adequate water supply, pumps, hydrants, and hose.
2. Firebreaks as necessary to prevent a fire on the premises from spreading to adjacent brush or grass-covered areas.
3. Posting of "NO SMOKING" signs.
4. Removal of dry grass and weeds from around buildings, along roadways and automobile parking areas, and other areas accessible to the public or participants of the activity.
5. Provision of approved, competent fire safety officers or advisors to act as fire guards or fire watchers to patrol the area when such activity is taking place. See also Section 2404.20.
6. Provision of adequate access roads and parking facilities to prevent congestion of public roads, to permit adequate means of egress for evacuation of the public or participants in event of emergency, and to permit movement of fire apparatus and equipment.
7. Restriction or prohibition of activities during periods of high fire hazard weather conditions.
8. Such fencing as is necessary to control the activity.
9. Such other conditions, limitations, or provisions necessary to maintain reasonable fire safety. (Ord. 2007-0112 § 21 (part), 2007.)

318.8 Restricted entry on national forest land. A person shall not enter or be on any lands within the boundaries of the National Forest within Los Angeles County which have been closed to entry by the U.S. Forest Service, except by a valid special entry permit issued by a U.S. Forest Service Officer. (Ord. 2007-0112 § 21 (part), 2007.)

318.9 Closure of public or private lands. Any portion of public or private lands in any hazardous fire area may be closed to the public by the fire code official at the request of the owners of such public or private lands, when in the opinion of the fire code official such closure is necessary for the prevention of fires. Notice of such closure shall be made by the fire code official by public announcement and such closure shall be in effect until, in the opinion of the fire code official, such closure is no longer necessary for the protection of property against fire and such closure is lifted by public announcement. (Ord. 2007-0112 § 21 (part), 2007.)

318.10 Restricted entry on closed lands. A person shall not enter or be upon any public or private lands closed to the public by the fire code official during the period such closure is in effect, except that the closure of private lands shall not prohibit the use or entry upon such lands by the owner, owner's guests, or invitees, provided that such guests or invitees have written permission from the owner of such lands to enter upon the same. Such written permit shall be presented upon the demand of any public officer when such person is within any closed area. (Ord. 2007-0112 § 21 (part), 2007.)

318.11 Posting of lands closed to entry. Lands closed to entry shall be posted by the fire protection agency having jurisdiction. (Ord. 2007-0112 § 21 (part), 2007.)

318.12 Spark arresters required.

318.12.1. Equipment. No person shall use or operate in, upon, or within any hazardous fire area, any tractor, construction equipment, engine, machinery, or any steam, oil, or gasoline-operated stationary or mobile equipment, from which a spark or fire may originate unless such equipment is provided with a qualified device or spark arrester

installed in or attached to the exhaust pipe which will prevent the escape of fire or sparks. Said qualified device or spark arrester shall meet the United States Forest Service "Standard for Spark Arresters for Internal Combustion Engines" (Standard 5100-1B, July 1991). For the purpose of this section, any registered motor vehicle operated on a road or highway and which is equipped with a muffler in good condition, as required by the Vehicle Code, shall be deemed to be in compliance with this section. (Ord. 2007-0112 § 21 (part), 2007.)

318.12.2. Chimneys. Each chimney used in conjunction with any fireplace, barbecue, incinerator, or any heating appliance in which solid or liquid fuel is used, upon any building, structure, or premises located within any hazardous fire area, shall be maintained with a spark arrester constructed with heavy wire mesh or other noncombustible material with openings not to exceed one-half inch. (Ord. 2007-0112 § 21 (part), 2007.)

318.13 Open flame device. No person shall operate or use any device, machine, or process such as a welding torch, tar pot, decorative torch, or any other device liable to start or cause fire in or upon any hazardous fire area, except by the authority of a written permit from the fire code official. Provided, however, that no permit will be required if such use is within inhabited premises or a designated camp site, and such uses are a minimum of 30 feet from any grass, grain, brush, or forest covered lands. (Ord. 2007-0112 § 21 (part), 2007.)

318.14 Roadway clearance. 1. Clearance of brush or vegetative growth from roadways shall be in accordance with Section 317.10 of this Code.
2. If the fire code official determines in any specific case that difficult terrain, danger of erosion, or other unusual circumstances make strict compliance with the provisions of the Code undesirable or impractical, the fire code official may suspend enforcement thereof and require reasonable alternative measures. (Ord. 2007-0112 § 21 (part), 2007.)

318.15 Illegal dumping. No person shall place, deposit, or dump any garbage, cans, bottles, papers, ashes, refuse, trash, rubbish, or combustible waste material in or upon any hazardous fire area. No person shall dump such material in, upon, or along any trail, roadway or highway in any hazardous fire area. Dumping in areas approved by the fire department for this use shall not be deemed to be in violation of this section. This section may be enforced by the commissioner. (Ord. 2007-0112 § 21 (part), 2007.)

318.16 Disposal of ashes. No person shall place, deposit, or dump any ashes or coals in or upon any hazardous fire area except, in the hearth of an established fire pit, camp stove, or fireplace, or in a noncombustible container with a tight-fitting lid which is kept or maintained in a safe location not less than 10 feet from any combustible vegetation or structure, or where such ashes or coals are buried and covered with one foot of mineral earth not less than 25 feet from any combustible vegetation or structure. (Ord. 2007-0112 § 21 (part), 2007.)

318.17 Fire roads and firebreaks. 1. No person, except public officers acting within the scope of their duties shall travel upon, or drive or park any motorcycle, motor scooter, or motor vehicle upon any fire road or firebreak beyond the point where travel is restricted by a cable, gate, or sign, without the permission of the property owner or owners involved.
2. No person shall park any vehicle so as to obstruct the entrance to any fire road or firebreak.
3. No person shall install or maintain a radio or television aerial, or guy wire thereto, or any other obstruction on any fire road or firebreak, which is less than 16 feet above such fire road or firebreak. (Ord. 2007-0112 § 21 (part), 2007.)

318.18 Use of motorcycle, motor scooter, and motor vehicles. No person shall operate any motorcycle, motor scooter, or motor vehicle, except upon clearly established public or private roads, within any hazardous fire area without first having secured a permit to do so from the fire code official. No such permit shall be issued unless written permission from the property owner is first presented. (Ord. 2007-0112 § 21 (part), 2007.)

318.19 Hazardous warning lights. It shall be unlawful to maintain any torch or lantern utilizing an open flame along any excavation, road, or any place where the dislodgment of such torch or lantern might permit same to roll, fall, or slide on to any forest or brush-covered land, or any land containing flammable material. (Ord. 2007-0112 § 21 (part), 2007.)

Section 320 Land Development and Environmental Review Fees

320 Land development and environmental review fees. This section is applicable to all unincorporated portions of Los Angeles County, to all incorporated areas that are a part of the Consolidated Fire Protection District of Los Angeles County, and to all cities that contract with the Consolidated Fire Protection District of Los Angeles County for services and adopt section 320 as part of their fire code. The applicable fees described herein shall be collected as a condition of approval for any land development project or environmental or permit review referred or submitted to the fire department for review. (Ord. 2008-0039 § 14 (part), 2008.)

320.1 Tentative tract map initial review. A fee shall be payable to the fire department, upon the initial submittal of any tentative tract map for the review and approval by the fire department. The amount of the fee shall be $1,775.00 for the first 10 lots, plus an additional amount for any tentative tract map containing more than 10 lots, calculated in accordance with the following:

a. An additional $13.00 for each of the next 15 lots; plus
b. An additional $13.00 for each of the next 25 lots; plus
c. An additional $9.00 for each of the next 50 lots; plus
d. An additional $7.00 for each of the next 900 lots; plus
e. An additional $4.00 for each lot in excess of 1000 lots. (Ord. 2008-0039 § 14 (part), 2008.)

320.2 Revised tentative tract map filing fees. If, prior to approval by the advisory agency or the legislative body of the city (if it has no advisory agency), the tentative map requires a major revision, the subdivider shall pay to the fire department a fee of $252.00 for the third major revision and for each additional major revision thereafter. (Ord. 2008-0039 § 14 (part), 2008.)

320.2.1 If, subsequent to the approval of a tentative map by the advisory agency or the legislative body of the city (if it has no advisory agency), the subdivider requests a revision of the conditions of approval, and a revised map must be submitted, the subdivider shall pay the fire department a fee of $840.00. (Ord. 2008-0039 § 14 (part), 2008.)

320.2.2 If the revision is of a minor nature and a revised map is not required, the subdivider shall pay the fire department a fee of $168.00. (Ord. 2008-0039 § 14 (part), 2008.)

320.3 Final map review analysis (tract map).

320.3.1 A fee shall be payable to the fire department, upon the submittal of any final tract map for review by the fire department. The amount of the fee shall be as follows:

a. $365.00 for each map consisting of 1 - 5 lots.
b. $441.00 for each map consisting of 6 - 10 lots.
c. $541.00 for each map consisting of 11 - 25 lots.
d. $630.00 for each map consisting of 26 - 50 lots.
e. $756.00 for each map consisting of 51 or more lots. (Ord. 2008-0039 § 14 (part), 2008.)

320.3.2 In addition to the fee specified in Section 320.3.1, a supplemental review fee shall be payable to the fire department in the event that a final tract map is submitted more than three times. The amount of the supplemental

review fee, payable upon the fourth and each subsequent submittal, shall be $126.00. (Ord. 2008-0039 § 14 (part), 2008.)

320.4 Tentative parcel map initial review. A fee shall be payable to the fire department, upon the initial submittal of any tentative parcel map for the review and approval by the fire department. The amount of the fee shall be $717.00. (Ord. 2008-0039 § 14 (part), 2008.)

320.5 Tentative parcel map revisions. A fee shall be payable to the fire department, upon the submittal for approval by the fire department of any revisions to a tentative parcel map that has been previously approved by the fire department. The amount of the fee shall be as follows:

a. $193.00 for a major revision to a tentative parcel map that has not been approved by the advisory agency or the legislative body of the city (if it has no advisory agency).

b. $357.00 for a major revision to a tentative parcel map that has previously been approved by the advisory agency or the legislative body of the city (if it has no advisory agency).

c. $126.00 for a revision of a tentative parcel map that has previously been approved by the advisory agency or the legislative body of the city (if it has no advisory agency) that is of a minor nature and where a revised map is not required. (Ord. 2008-0039 § 14 (part), 2008.)

320.6 Final map review analysis (parcel map).

320.6.1 A fee shall be payable to the fire department, upon the submittal of any final parcel map for approval by the fire department. The amount of the fee shall be as follows:

a. $365.00 for each map consisting of 1 - 4 parcels.

b. $441.00 for each map consisting of 5 - 10 parcels.

c. $630.00 for each map consisting of 11 - 50 parcels.

d. $756.00 for each map consisting of 51 or more parcels. (Ord. 2008-0039 § 14 (part), 2008.)

320.6.2 In addition to the fee specified in Section 320.6.1, a supplemental review fee shall be payable to the fire department in the event that a final parcel map is submitted more than three times. The amount of the supplemental review fee, payable upon the fourth and each subsequent submittal, shall be $126.00. (Ord. 2008-0039 § 14 (part), 2008.)

320.7 Miscellaneous fees. A fee shall be payable to the fire department, upon submittal of any of the following requests for review and approval by the fire department. The amount of the fee shall be as follows:

a. $84.00 for a request for a site plan review.

b. $168.00 for a request for verification that a final tract or parcel map complies with the applicable ordinances, conditions, and other requirements.

c. $258.00 for a request for review of a proposed street vacation.

d. $180.00 for a request for review of an application for a lot line adjustment.

e. $180.00 for a request for the review of a water system that includes up to 10 hydrants. Where the water system includes more than 10 hydrants, the amount of the fee shall be increased by an additional $30.00 for each additional hydrant beyond 10.

f. $104.00 for a request for review of a water system plan.

g. $263.00 for a request for review of an application for a conditional use permit.

h. $143.00 for a request for review of a revision to a conditional use permit application that has previously been approved by the fire department.

i. $84.00 for a request for review of an appeal to the water appeals board.

j. $180.00 for a request for review of an application for a change of zone.
k. $263.00 for a request for review of an application for a mobile home permit or a mobile home impact report.
l. $347.00 for a request for review of a grading plan for fire lanes and private driveways only.
m. $84.00 for a request for review of a revised Exhibit A.
n. $185.00 for a request for a grant of waiver.
o. $168.00 for a request for review of an application for a clean hands waiver.
p. $171 for a certificate of compliance. (Ord. 2008-0039 § 14 (part), 2008.)

320.8 Environmental document reviews.

320.8.1 Whenever a review for impact on the fire prevention, natural resources, and/or fire resource allocation responsibilities of the fire department is required, as part of the environmental review process, the applicant shall pay a minimum deposit fee of $1,000 at the time of submittal to the fire department, and such supplemental fees and deposits as specified in subsections 320.8.2 through 320.8.7 of this section to complete the required review. (Ord. 2008-0039 § 14 (part), 2008.)

320.8.2 If during the fire department's review process actual costs incurred reach 80 percent of the amount on deposit, the applicant shall be notified and required to submit a minimum supplemental deposit up to the amount of the initial deposit. There is no limit to the number of supplemental deposits that may be required prior to completion or withdrawal of the environmental review. (Ord. 2008-0039 § 14 (part), 2008.)

320.8.3 If an initial or supplemental deposit is not received within 30 days of notification that such deposit is due and payable, the fire department's review shall be discontinued until such deposit is received. (Ord. 2008-0039 § 14 (part), 2008.)

320.8.4 At the sole discretion of the applicant, the amount of an initial or supplemental deposit may exceed the minimum amounts defined herein, except that at no time shall such initial or supplemental deposit be less than the minimum deposit amount set forth in Section 320.8.1. (Ord. 2008-0039 § 14 (part), 2008.)

320.8.5 The fire department's actual costs shall be computed on a monthly basis and deducted from the amount on deposit. The costs shall be considered final upon completion of the fire department's review process. If final costs do not exceed the amount on deposit, the unused portion shall be refunded. (Ord. 2008-0039 § 14 (part), 2008.)

320.8.6 Should the application be withdrawn, costs to the date that the fire department is advised of the withdrawal shall be computed and the unused portion of the amount on deposit shall be refunded. (Ord. 2008-0039 § 14 (part), 2008.)

320.8.7 Costs shall be computed using actual hours expended by staff multiplied by the most current applicable hourly rates, approved by the county auditor-controller, that are available at the time that costs are assessed. Cost data used to determine fees shall be maintained by the department's business office and made available for public review while work is in progress and for three years following final action or withdrawal of the application. (Ord. 2008-0039 § 14 (part), 2008.)

320.9 Oak Tree Permit Fees.

a. When an oak tree report is referred to the fire department for review, pursuant to Section 22.56.2140, a fee shall be paid to the fire department based on the number of trees identified for review in the oak tree report, as follows:

NUMBER OF TREES IDENTIFIED FOR REVIEW	PERMIT FEE
1 – 5	$245.00
16 – 50	314
51 – 100	585
101 – 200	645
201 – 400	795
401 – 999	1,124.00

b. When the number of trees identified for review in the oak tree report is 1,000 or more, the applicant shall pay directly to the fire department a deposit of $1,000.00 from which actual costs shall be billed and deducted.
- If during the oak tree inspection process, actual costs incurred reach 80 percent of the amount on deposit, the applicant shall be notified by the fire department and required to submit a minimum supplemental deposit in the amount of $1,000.00 directly to the fire department. There is no limit to the number of supplemental deposits that may be required to be submitted to the fire department prior to completion or withdrawal of the inspection report.
- If an initial or supplemental deposit is not received by the fire department within 30 days of notification that such deposit is due and payable, all work shall be discontinued until such deposit is received.
- At the sole discretion of the applicant, the amount of an initial or supplemental deposit may exceed the minimum amount defined herein, except that at no time shall such initial or supplemental deposit be less than the minimum requirement.
- The final oak tree inspection fee shall be based on actual costs incurred by the fire department.
- Costs shall be computed on a monthly basis and deducted from the amount on deposit. The oak tree inspection fee shall be considered final upon completion of the review process. If final costs do not exceed the amount on deposit, the unused portion shall be refunded to the applicant.
- Should the inspection request be withdrawn, costs to date shall be computed and the unused portion of the amount on deposit shall be refunded to the applicant.
- Costs shall be computed using actual hours expended by fire staff multiplied by the most current applicable hourly rates, approved by the county auditor-controller, that are available at the time that costs are assessed.
- Cost data used to determine inspection fees shall be maintained by the business office of the fire department and made available for public review while work is in progress and for three years following final action or withdrawal of the application. (Ord. 2008-0039 § 14 (part), 2008.)

320.10 Land development plan reviews located within fire hazard severity zones. Land development plan check review and approvals in designated properties located within the Very High Fire Hazard Severity Zone (VHFHSZ) shall be performed in accordance with Section 317.2.1.2 of this code. (Ord. 2008-0039 § 14 (part), 2008.)

320.11 Annual Review of Fees. The fees in this Section 320 shall be reviewed annually by the fire department. Beginning on July 1, 2008, and thereafter on each succeeding July 1, the amount of each fee shall be adjusted as follows: calculate the percentage movement between March of the previous year and March of the current year in the Consumer Price Index (CPI) for all urban consumers in the Los Angeles, Anaheim, and Riverside areas, as published by the United States Government Bureau of Labor Statistics. The adjusted fee shall be rounded to the nearest dollar; provided, however, notwithstanding any of the above, no fee shall exceed the cost of providing the service for which the fee is collected. (Ord. 2008-0039 § 14 (part), 2008.)

Fire and Building: Title 26: Building Code - Chapter 7A [for SFM] Materials and Construction Methods for Exterior Wildfire Exposure

Section 701a--Scope, Purpose and Application

701A.1 Scope. This chapter applies to building materials, systems and/or assemblies used in the exterior design of new buildings, and to additions, alterations, or repairs made to existing buildings, erected, constructed or moved within a Wildland-Urban Interface Fire Area as defined in Section 702A.

EXCEPTION: Greenhouses constructed as specified in Appendix C, when approved by the Building Official. (Ord. 2007-0108 § 3 (part), 2007.)

701A.3 Application. New buildings, and any additions, alterations or repairs to existing buildings located in or moved within any Fire Hazard Severity Zone within State Responsibility Areas or any Wildland-Urban Interface Fire Area designated by Los Angeles County Fire Department for which an application for a building permit is submitted on or after January 1, 2008, shall comply with the requirements of this chapter. (Ord. 2007-0108 § 3 (part), 2007.)

701A.3.1 Alternates for materials, design, tests, and methods of construction. The Building Official is permitted to modify the provisions of this chapter for site-specific conditions in accordance with Chapter 1, Section 104.2.7. When required by the Building Official for the purposes of granting modifications, a fire protection plan shall be submitted in accordance with the Los Angeles County Fire Code Title 32, Chapter 47. (Ord. 2007-0108 § 3 (part), 2007.)

701A.3.2 Inspection and certification. Building permit applications and final completion approvals for buildings within the scope and application of this chapter shall comply with the following: (Ord. 2007-0108 § 3 (part), 2007.)

701A.3.2.1 The Building Official shall, prior to construction, provide the owner or applicant a certification that the building as proposed to be built complies with all applicable state and local building standards, including those for materials and construction methods for wildfire exposure as described in this chapter. (Ord. 2007-0108 § 3 (part), 2007.)

701A.3.2.2 The Building Official shall, upon completion of construction, provide the owner or applicant with a copy of the final inspection report that demonstrates the building was constructed in compliance with all applicable state and local building standards, including those for materials and construction methods for wildfire exposure as described in this chapter. (Ord. 2007-0108 § 3 (part), 2007.)

701A.3.2.3 Prior to building permit final approval the property shall be in compliance with the vegetation clearance requirements prescribed in California Public Resources Code 4291 California Government Code Section 51182 and the Los Angeles County Fire Code Title 32. (Ord. 2007-0108 § 3 (part), 2007.)

Section 702A-Definitions

FIRE PROTECTION PLAN is a document prepared for a specific project or development proposed for a Wildland-Urban Interface Fire Area. It describes ways to minimize and mitigate potential for loss from wildfire exposure.

The Fire Protection Plan shall be in accordance with this chapter and the Los Angeles County Fire Code Title 32, Chapter 47. When required by the Building Official for the purposes of granting modifications, a fire protection plan shall be submitted.

FIRE HAZARD SEVERITY ZONES are geographical areas designated pursuant to California Public Resources Codes Sections 4201 through 4204 and classified as Very High, High, or Moderate in State Responsibility Areas or as Local Agency Very High Fire Hazard Severity Zones designated pursuant to California Government Code, Sections 51175 through 51189. See Los Angeles County Fire Code Chapter 47.

IGNITION-RESISTANT MATERIAL is any product which, when tested in accordance with ASTM E 84 for a period of 30 minutes, shall have a flame spread of not over 25 and show no evidence of progressive combustion. In addition, the flame front shall not progress more than 10½ feet (3200 mm) beyond the centerline of the burner at any time during the test.

Materials shall pass the accelerated weathering test and be identified as exterior type, in accordance with ASTM D 2898 and ASTM D 3201. All materials shall bear identification showing the fire performance rating thereof. That identification shall be issued by ICC-ES or a testing facility recognized by the State Fire Marshal or the Building Official having a service for inspection of materials at the factory.

The Building Official may use other definitions of ignition-resistant material that reflect wildfire exposure to building materials and/or their materials, performance in resisting ignition.

STATE RESPONSIBILITY AREA means lands that are classified by the Board of Forestry pursuant to Public Resources Code Section 4125 where the financial responsibility of preventing and suppressing forest fires is primarily the responsibility of the state.

VERY HIGH FIRE HAZARD SEVERITY ZONE (VHFHSZ) is a geographical area designated by the Los Angeles County Fire Department and defined in Appendix M of the Los Angeles County Fire Code Title 32.

WILDFIRE is any uncontrolled fire spreading through vegetative fuels that threatens to destroy life, property, or resources as defined in Public Resources Code Sections 4103 and 4104.

WILDLAND-URBAN INTERFACE FIRE AREA is a geographical area identified by the state as a "Fire Hazard Severity Zone" in accordance with the Public Resources Code Sections 4201 through 4204 and Government Code Sections 51175 through 51189, or other areas designated by the Los Angeles County Fire Department to be at a significant risk from wildfires. (Ord. 2007-0108 § 3 (part), 2007.)

Section 703A--Standards of Quality

703A.2 Qualification by testing. Material and material assemblies tested in accordance with the requirements of Section 703A shall be accepted for use when the results and conditions of those tests are met. Testing shall be performed by a testing agency approved by the State Fire Marshal, the Building Official or identified by an ICC-ES report. (Ord. 2007-0108 § 3 (part), 2007.)

Section 704A-Materials, Systems and Methods of Construction

704A.1 Roofing.

704A.1.2 Roof coverings. Roof covering shall be Class A as specified in Section 1505.2. Where the roof profile allows a space between the roof covering and roof decking, the spaces shall be constructed to prevent the intrusion of flames and embers, be firestopped with approved materials or have one layer of No. 72 ASTM cap sheet installed over the combustible decking. Wood-shingle and wood-shake roofs are prohibited in Very High Fire Hazard Severity Zones (VHFHSZ) regardless of classification. (Ord. 2007-0108 § 3 (part), 2007.)

704A.3 Exterior Walls.

704A.3.2 Exterior wall openings. Exterior wall openings shall be in accordance with this section. (Ord. 2007-0108 § 3 (part), 2007.)

704A.3.2.2 Exterior glazing and window walls. Exterior windows, window walls, glazed doors, and glazed openings within exterior doors shall be multi-pane glazing units with a minimum of one tempered pane, or glass block units, or have a fire-resistance rating of not less than 20 minutes, when tested according to ASTM E 2010, or conform to the performance requirements of SFM 12-7A-2. (Ord. 2007-0108 § 3 (part), 2007.)

704A.5 Ancillary buildings and structures.

704A.5.1 Ancillary buildings and structures. When required by the Building Official, ancillary buildings and structures and detached accessory structures shall comply with the provisions of this chapter. (Ord. 2007-0108 § 3 (part), 2007.)

Section 4708 Materials and Construction Methods for Exterior Wildfire Exposure

This section is applicable to all occupancy groups. All occupancy groups must also comply with the Los Angeles County Building Code. (Ord. 2007-0112 § 150 (part), 2007.)

4708.1.1 Scope. This Section applies to building materials, systems, and or assemblies used in the exterior design and construction of new buildings, and any additions, alterations, or repairs to existing buildings located in or moved within a Wildland-Urban Interface Area as defined in Section 4702.

EXCEPTION: Greenhouses constructed as specified in Appendix C, of the Los Angeles County Building Code, when approved by the building official. (Ord. 2007-0112 § 150 (part), 2007.)

4708.1.2 Purpose. The purpose of this Section is to establish minimum standards for the protection of life and property by increasing the ability of a building located in any Fire Hazard Severity Zone within State Responsibility--Areas or any Wildland-Urban Interface Fire Area to resist the intrusion of flame or burning embers projected by a vegetation fire and contributes to a systematic reduction in conflagration losses. (Ord. 2007-0112 § 151, 2007.)

4708.1.3 Application. New buildings, and any additions, alterations, or repairs to existing buildings located in or moved within any Fire Hazard Severity Zone within State Responsibility Areas or any Wildland-Urban Interface Fire Area designated by this Department for which an application for a building permit is submitted on or after January 1, 2008, shall comply with the requirements of this section. (Ord. 2007-0112 § 152, 2007.)

4708.2 Alternates for materials, design, tests, and methods of construction. The building official is permitted to modify the provisions of this chapter for site-specific conditions in accordance with the 2008 Los Angeles County Building Code, Chapter 1, section 104.2.7. When required by the building official for the purposes of granting modifications, a fire protection plan shall be submitted in accordance with Chapter 47. (Ord. 2007-0112 § 153, 2007.)

4708.3 Inspection and certification. Building permit applications and final completion approvals for buildings within the scope and application of this chapter shall comply with the following:

1. The building official shall, prior to construction, provide the owner or applicant with a certification that the building as proposed to be built complies with all applicable state and local building standards, including those for materials and construction methods for wildfire exposure as described in this Chapter.

2. The building official shall, upon completion of construction, provide the owner or applicant with a copy of the final inspection report that demonstrates the building was constructed in compliance with all applicable state and

local building standards, including those for materials and construction methods for wildfire exposure as described in this Chapter.

3. Prior to building permit final approval, the property shall be in compliance with the vegetation clearance requirements prescribed in California Public Resources Code section 4291, California Government Code section 51182 and this code. (Ord. 2007-0112 § 154, 2007.)

4710.1.1 General. Roofs shall comply with the requirements of the 2008 Los Angeles County Building Code, Chapter 7A and Chapter 15. Roofs shall have a roofing assembly installed in accordance with its listing and the manufacturer's installation instructions. (Ord. 2007-0112 § 155, 2007.)

4710.1.2 Roof coverings. Roof coverings shall be Class A as specified in Section 1505.2 of the Los Angeles County Building Code. Where the roof profile allows a space between the roof covering and roof decking, the spaces shall be constructed to prevent the intrusion of flames and embers, and be fire-stopped with approved materials or have one layer of No. 72 ASTM cap sheet installed over the combustible decking. Wood-shingle and wood-shake roofs are prohibited in Very High Fire Hazard Severity Zones (VHFHSZ) regardless of classification. (Ord. 2007-0112 § 156, 2007.)

4710.2.3 Eave protection. Eaves and soffits shall meet the requirements of SFM 12-7A-3 or shall be protected by ignition-resistant materials or non-combustible construction on the exposed underside. (Ord. 2007-0112 § 157, 2007.)

Section 4714 Standards of Quality

This Section is applicable to all occupancy groups. All occupancy groups must also comply with the Los Angeles County Building Code. (Ord. 2007-0112 § 158 (part), 2007.)

4714.1 General. Material, systems, and methods of construction used shall be in accordance with this Chapter. (Ord. 2007-0112 § 158 (part), 2007.)

4714.2 Qualification by Testing. Material and material assemblies tested in accordance with the requirements of the 2008 Los Angeles County Building Code, Chapter 7A, Section 703A, shall be accepted for use when the results and conditions of those tests are met. Testing shall be performed by a testing agency approved by the state fire marshal, the building official or identified by an ICC-ES/ICBO-ES report. (Ord. 2007-0112 § 158 (part), 2007.)

4714.3 Standards of Quality. The state fire marshal standards listed below and as referenced in this Chapter are located in the California Referenced Standards, Chapter 45, of this code.

SFM 12-7A-1, Exterior Wall Siding and Sheathing

SFM 12-7A-2, Exterior Wind

SFM 12-7A-3, Under Eave

SFM 12-7A-4, Decking

(Ord. 2007-0112 § 158 (part), 2007.)

Section 4715 Exterior Walls

This Section is applicable to all occupancy groups. All occupancy groups must also comply with the Los Angeles County Building Code. (Ord. 2007-0112 § 159 (part), 2007.)

4715.1 General. Exterior walls shall be approved non-combustible or ignition resistant material, heavy timber, or log wall construction or shall provide protection from the intrusion of flames and embers in accordance with standard SFM 12-7A-1. (Ord. 2007-0112 § 159 (part), 2007.)

4715.1.1 Exterior wall coverings. Exterior wall coverings shall extend from the top of the foundation to the roof, and terminate at 2-inch (50.8 mm) nominal solid wood blocking between rafters at all roof overhangs, or in the case of enclosed eaves, terminate at the enclosure. (Ord. 2007-0112 § 159 (part), 2007.)

4715.2 Exterior wall openings. Exterior wall openings shall be in accordance with this section. (Ord. 2007-0112 § 159 (part), 2007.)

4715.2.1 Exterior wall vents. Unless otherwise prohibited by other provisions of this code, vent openings in exterior walls shall resist the intrusion of flame and embers into the structure or vents shall be screened with a corrosion-resistant, non-combustible wire mesh with ¼ inch (6 mm) openings or its equivalent. (Ord. 2007-0112 § 159 (part), 2007.)

4715.2.2 Exterior glazing and window walls. Exterior windows, window walls, glazed doors, and glazed openings within exterior doors shall be multi-pane glazing units with a minimum of one tempered pane, or glass block units, or have a fire resistance rating of not less than 20 minutes, when tested according to ASTM E 2010, or conform to the performance requirements of SFM 12-7A-2. (Ord. 2007-0112 § 159 (part), 2007.)

4715.2.3 Exterior door assemblies. Exterior door assemblies shall conform to the performance requirements of standard SFM 12-7A-1 or shall be of approved non-combustible construction, or solid core wood having stiles and rails not less than 1 3/8 inches thick with interior field panel thickness on less than 1 1/4" thick, or shall have a fire resistance rating of not less than 20 minutes when tested according to ASTM E 2074.

EXCEPTION: Noncombustible or exterior fire retardant treated wood vehicle access doors are not required to comply with this chapter. (Ord. 2007-0112 § 159 (part), 2007.)

Section 4716 Decking, Floors and Underfloor Protection

This section is applicable to all occupancy groups. All occupancy groups must also comply with the Los Angeles County Building Code. (Ord. 2007-0112 § 160 (part), 2007.)

4716.1 Decking. (Ord. 2007-0112 § 160 (part), 2007.)

4716.1.1 Decking surfaces. Decking surfaces, stair treads, risers, and landings of decks, porches, and 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 E 84 and;

b. The exterior wall covering to which the deck is attached and within 10 (3048 mm) feet of the deck shall be constructed of approved non-combustible or ignition resistant material.

EXCEPTION: Walls are not required to comply with this subsection 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. (Ord. 2007-0112 § 160 (part), 2007.)

4716.2 Underfloor and appendages protection. (Ord. 2007-0112 § 160 (part), 2007.)

4716.2.1 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. (Ord. 2007-0112 § 160 (part), 2007.)

4716.2.2 Unenclosed underfloor protection. Buildings shall have all underfloor areas enclosed to the grade with exterior walls in accordance with Los Angeles County Building Code Section 704A.3.

EXCEPTION: The complete enclosure of underfloor 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. (Ord. 2007-0112 § 160 (part), 2007.)

Section 4717 Ancillary Buildings and Structures

This section is applicable to all occupancy groups. All occupancy groups must also comply with the Los Angeles County Building Code. (Ord. 2007-0112 § 161 (part), 2007.)

4717.1 Ancillary buildings and structures. When required by the building official, ancillary buildings and structures and detached accessory structures shall comply with the provisions of this Chapter. (Ord. 2007-0112 § 161 (part), 2007.)[2]

[2] http://search.municode.com/html/16274/index.htm

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I. Ventura County Local Fire Safety Regulations

Ventura County Code: Fire and Building: Chapter 7A Materials and Construction Methods for Exterior Wildfire Exposure

Section 701A – Scope, Purpose and Application

701A.2 PURPOSE. The purpose of this Section is to provide a minimum standard for the fire protection of buildings and structures hereafter erected in proximity to areas of the County where concentrations of highly flammable brush, grass, or other combustible growth combined with periods of hot, dry winds create a high fire hazard, and where lives and property may thereby be endangered.

701A.3 APPLICATION. Buildings or structures hereafter erected, constructed or moved within or into designated High Fire Hazard areas/Fire Severity Zones, including mobile homes, shall be one of the Types of Construction as defined in this Code and shall meet the requirements of this Section. Manual or automatic fire extinguishing systems or similar water spraying devices shall not be substituted for the fire protection set forth herein.

Section 702A - High Fire Hazard Areas/Fire Hazard Severity Zones[1]

702A. HIGH FIRE HAZARD AREAS/FIRE HAZARD SEVERITY ZONES are geographical areas in unincorporated Ventura County designated by the Ventura County Fire Protection District pursuant to California Public Resources Codes Sections 4201 through 4204 and classified as Very High, High, or Moderate in State Responsibility Areas or as Local Agency Very High Fire Hazard Severity Zones designated pursuant to California Government Code, Sections 51175 through 51189.

See California Fire Code Article 86.

The California Code of Regulations, Title 14, Section 1280, entitles the maps of these geographical areas as "Maps of the Fire Hazard Severity Zones in the State Responsibility Area of California."

704A.1.2 ROOF COVERINGS. Roof coverings shall be fire retardant Class “A” as specified in Section 1505 of the 2007 CBC. Where the roof profile allows a space between the roof covering and roof decking, the spaces shall be constructed to prevent the intrusion of flames and embers, be firestopped with approved materials or have one layer of No. 72 ASTM cap sheet installed over the combustible decking.

704A.2 VENTILATION OPENINGS

704A.2.1 General. When required by this code, foundation, roof and attic vents shall resist the intrusion of flame and embers into the floor and attic area of the structure, or shall be protected by corrosion-resistant, noncombustible wire mesh with 1/4-inch (6 mm) openings or its equivalent. Attic or foundation ventilation openings or louvers shall not be located at or within 18", measured vertically, of eaves or rakes, soffits, balconies, decks, or similar exterior overhangs which may be directly exposed to a fire.

704A.2.3 Eave protection. Eaves and soffits shall meet the requirements of SFM 12-7A-3 or shall be protected by ignition-resistant materials or noncombustible construction on the exposed underside.

EXCEPTION: Combustible structural members in horizontal projections may be unprotected timbers of size 4 x 6 or larger provided roof decking at the eave is not less than 2” nominal thickness.

704A.3 EXTERIOR WALLS

704A.3.1 GENERAL. Exterior walls shall be approved noncombustible or ignition-resistant material, heavy timber, or log wall construction or shall provide protection from the intrusion of flames and embers in accordance with standard SFM 12-7A-1.

EXCEPTION: No exterior wall covering of a building shall provide less fire resistance than that afforded by one of the following:

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[1] County of Ventura. Resource Management Agency. Building Safety Division. Ventura County Building Code. 2007 Edition. Chapter 7A. *Materials and Construction Methods for Exterior Wildfire Exposure*. Section 701A, Section 702 A, Section 704A.2 Section 704A.3. p. 30 -31.
www.ventura.org/rma/build_safe/pdf/building_code/2007_Ventura_County_Building_Code.pdf

1. 7/8-inch exterior cement plaster
2. 1-inch nominal thickness solid wood siding
3. 1/2-inch textured plywood siding having a groove depth of 1/8-inch or less
4. 7/16-inch hardwood siding
5. 5/8-inch particleboard, exterior type 2-M
6. 5/8-inch exterior plywood, T1-11, having a groove depth of 1/4-inch or less.

Fire-retardant treated or untreated wood shingle or shake siding shall not be permitted.

704A.4.1.1 PROJECTIONS AND OTHER BUILDING ELEMENTS EXPOSED TO FIRE. Architectural projections such as soffits, stairs, porches, balconies and decks, and other elements of the building which have combustible structural elements in the horizontal plane, shall be protected with materials approved for 1-hour fire-resistive construction on the lower, fire-exposed side and shall have 1-hour fire-resistive supporting columns unless the details of construction conform to those for heavy timber as described in Section 602.4 in the 2007 CBC , or ignition-resistant materials as defined in this chapter.

EXCEPTIONS:

1. Balconies and decks 30 inches or more above grade may have flooring of not less than 3-inch nominal thickness lumber or material of equivalent fire resistance. Such flooring may be spaced not more than 1/4-inch apart and need not be fire protected on the underside.

2. Balconies and decks less than 30 inches above grade shall be solidly floored without gaps and shall be fire-protected on the underside as required by Section 704A.4.2. In lieu of fire protection, such balconies and decks may be enclosed from floor surface to grade in the manner prescribed for exterior walls in section 704A.3 of this Section.

704A.5.1 ANCILLARY BUILDINGS AND STRUCTURES. When required by the enforcing agency, ancillary buildings and structures and detached accessory structures shall comply with the provisions of this chapter.

EXCEPTIONS:

1. Patios, carports, arbors and open latticework sunshades may be constructed of any materials allowed by this Code.

704A.6 WAIVER OF REQUIREMENTS. The Building Official may waive the requirements of Chapter 7A above, in whole or in part, for specific construction projects within the High Fire Hazard Area/Fire Severity Zone when such waiver is approved by an authorized representative of the Ventura County Fire Protection District, based upon site conditions which justify a reduction in fire resistance.

Ventura County Fire Protection District Ordinance Number 26

BOARD OF DIRECTORS, VENTURA COUNTY FIRE PROTECTION DISTRICT, STATE OF CALIFORNIA

TUESDAY NOVEMBER 20, 2006 AT 10:30 A.M.

FIRE PROTECTION DISTRICT ORDINANCE NO. 26

AN ORDINANCE OF THE VENTURA COUNTY FIRE PROTECTION DISTRICT ADOPTING BY REFERENCE THE INTERNATIONAL FIRE CODE (2006 EDITION), TOGETHER WITH THE APPENDIX CHAPTERS B, C, E, F, G, H, AND J WITH ADDITIONS, DELETIONS AND AMENDMENTS THERETO, AND REPEALING VENTURA COUNTY FIRE PROTECTION DISTRICT ORDINANCE NUMBER 25

An ordinance of the Ventura County Fire Protection District adopting by reference the 2006 edition of the International Fire Code with amendments and repealing Ordinance 25 is presented to the Board of Directors at this time, and upon motion of Director Bennett, seconded by Director Foy, and duly carried, it is ordered that the same be passed and adopted as an ordinance of the Ventura County Fire Protection District, to be known as Ordinance No. 26.

Board members vote as follows:

Ayes: Directors Bennett, Long, Foy and Parks

Noes: None

Absent: Director Flynn

All members of the Ventura County Fire Protection District Board of Directors present voting on the passage and adoption of said Ordinance, it is hereby declared and ordered that said Ordinance is hereby passed and adopted as an Ordinance of the Ventura County Fire Protection District, to be known as Ordinance No. 26

It is further ordered that said ordinance shall take effect and be enforce at the expiration of thirty (30) days from the date hereof, and before the expiration of fifteen (15) days the same shall be published, with the names of the members of the Ventura County Fire Protection District Board of Directors voting for and against the same, at least once in the Ventura County Star, a newspaper of general circulation printed and published in the County of Ventura, State of California.

PART 3. AMENDMENTS TO THE INTERNATIONAL FIRE CODE.

The International Fire Code is amended and changed in the following respects.

Section 101 is amended to read as follows:

101.1 Title. These regulations shall be known as the Fire Code of Ventura County Fire Protection District, hereinafter referred to as "this code." Throughout this code, where references are made to the International Building Code, International Residential Code, International Mechanical Code, International Fuel Gas Code, International Existing Building Code and the International Electrical Code, those references shall mean the California version of those codes adopted under the California Building Standards Code.

Section 105.1.4 is added and reads as follows:

105.1.4 Sale or delivery without permit. No person shall sell, deliver or cause to be delivered, any hazardous commodity to any person not in possession of a valid permit when such permit is required by the provisions of this code.

Section 105.3.3 is amended to read as follows:

105.3.3 Occupancy and use, prohibited before approval. The building or structure shall not be occupied prior to the fire code official issuing a permit that indicates that applicable provisions of this code have been met. No appliance, device, equipment, or system shall be operated or used until the installation has been approved and permitted by the fire code official and all applicable provisions of this code have been met. It shall be the duty of the permit applicant or contractor or both to cause the work to remain accessible and exposed for inspection purposes.

Section 105.4.1 is amended to read as follows:

105.4.1 Submittals. Construction documents shall be submitted in one or more sets and in such form and detail as required by the fire code official. The construction documents shall be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed. Except as otherwise determined by the fire code official, plans for the construction, alteration, repair, or conversion of buildings or portions thereof which are classified as high-rise buildings, Use Groups A, E, H, I, L and R occupancies, except Group R-3 occupancies, shall be submitted for review prior to obtaining a building permit. The fire code official shall check for compliance with state and local laws and regulations that relate to fire and life safety.

Section 108 is amended to read as follows:

108.1 Board of appeals established. In order to hear and decide appeals of orders, decisions or determinations made by the fire code official relative to the application and interpretation of this code, there shall be and is hereby created a board of appeals. The County Executive Officer shall provide staff services for the board. The board of appeals shall be appointed by the Board of Directors and shall hold office at its pleasure. The board

VENTURA COUNTY FIRE PROTECTION DISTRICT ORDINANCE NUMBER 26

AN ORDINANCE OF THE VENTURA COUNTY FIRE PROTECTION DISTRICT ADOPTING BY REFERENCE THE INTERNATIONAL FIRE CODE (2006 EDITION), TOGETHER WITH THE APPENDIX CHAPTERS B, C, E, F, G, H AND J WITH ADDITIONS, DELETIONS AND AMENDMENTS THERETO, AND REPEALING VENTURA COUNTY FIRE PROTECTION DISTRICT ORDINANCE NUMBER 25.

The Board of Directors of the Ventura County Fire Protection District ordains as follows:

PART 1. ADOPTION OF THE INTERNATIONAL FIRE CODE.

For the purpose of prescribing regulations governing conditions hazardous to life and property from fire, explosion or hazardous materials, that certain Code known as the International Fire Code published by the International Code Council being particular the 2006 edition thereof and the whole thereof, save and except such portions as are hereinafter added, deleted, modified or amended by Part 3 of this ordinance, is hereby adopted pursuant to Section 13869 of the California Health and Safety Code and incorporated as fully as if set out at length herein, and from the date on which this ordinance shall take effect, the provisions thereof shall be controlling within the limits of the Ventura County Fire Protection District.

All chapters, sections, and other headings shall be those of the International Fire Code. Generally, each numbered portion of this code, such as Section 109.3, is deemed to be a separate section. An amendment to such a numbered portion amends only that section and does not, by omission of reference, delete any other section such as Section 109.3.1. An amendment to the International Fire Code shall be made by ordinance amendment to the specific chapter, section or other heading involved.

PART 2. REPEAL OF CONFLICTING ORDINANCES.

All parts of Ventura County Fire Protection District Ordinance No. 25 are hereby repealed, except that Appendix VII of said ordinance shall remain in effect in the County of Ventura and in each city wherein its provisions apply until Appendix J hereof becomes effective in said County or city pursuant to Part 4 hereof, at which time Appendix VII shall be repealed in said County or city.

shall adopt rules of procedure for conducting its business, and shall render all decisions and findings in writing to the appellant with a duplicate copy to the fire code official.

The fee for appeals shall be consistent with the Ventura County Building Code.

108.2 Limitations on authority. An application for appeal shall be based on a claim that the intent of this code or the rules legally adopted hereunder have been incorrectly interpreted, the provisions of this code do not fully apply, or an equivalent method of protection or safety is proposed, with the exception of the provisions dealing with the abatement of combustible and flammable materials in Appendix H, over which the board shall have no authority. The board shall have no authority to waive requirements of this code.

The board of appeals' decisions shall be final, except that in the case of appeals from governmental agencies, such agencies shall have the right to a review by the Board of Directors. A review by the Board of Directors shall be final.

108.3 Qualifications. The board of appeals shall consist of members who are qualified by experience and training to pass on matters pertaining to hazards of fire, explosions, hazardous conditions or fire protection systems and are not employees of the jurisdiction.

Section 109.3 is amended to read as follows:

109.3 Violation penalties. Persons who shall violate a provision of this code or shall fail to comply with any of the requirements thereof or who shall erect, install, alter, repair or do work in violation of the approved construction documents or directive of the fire code official, or of a permit or certificate used under provisions of this code, and from which no appeal has been taken, or who shall fail to comply with such an order as affirmed or modified by the board of appeals within the time fixed herein, shall severally for each and every such violation and noncompliance, respectively, be subject to the criminal sanctions set forth in Health and Safety Code Section 13871. The imposition of one penalty for any violation shall not excuse the violation or permit it to continue. All such persons shall be required to correct or remedy such violations or noncompliance within a reasonable time and, when not otherwise specified, each ten days that a prohibited condition is maintained shall constitute a separate offense. The imposition of the above penalty shall not prevent the enforced removal of a prohibited condition.

Section 202 is amended to include certain definitions that read as follows:

HELISPOT is a site used for helicopter landings and take-offs during emergency operations. See Section 502.1.

PERSON is a natural person or a natural person's heirs, executors, administrators or assigns, and also includes a firm, partnership whether general or limited, corporation, unincorporated association, union, organization, cooperative or trust, and its or their successors or assigns, or the agent of any of the aforesaid. It shall include the plural as well as the singular number, the male and female gender, and all governmental entities subject in whole or in part to this code and the codes adopted by reference herein.

Section 304.1.2 is amended to read as follows:

304.1.2 Vegetation. Weeds, grass, vines or other growth that is capable of being ignited and endangering property shall be cut down and removed by the owner or occupant of the premises. Vegetation clearance requirements in urban-wildland interface areas, hazardous watershed fire areas, hazardous fire areas and parcels declared a public nuisance by the fire code official shall be in accordance with Appendix H.

Section 316 is added to read as follows:

SECTION 316 Combustible Materials Subject To Spontaneous Ignition.

316.1 General. Combustible materials subject to spontaneous ignition shall be in accordance with Section 316.

316.2 Prevention of ignition. Combustible materials shall be stored, handled, treated or monitored as necessary and in such a manner as to prevent ignition.

316.3 Provisions for extinguishment. The owner or person responsible for combustible materials shall provide the necessary means to extinguish a fire should ignition occur. Piles shall be arranged in such a manner as not to exceed the capability of available resources to extinguish a fire in a single pile. Access for firefighting apparatus shall be provided when required by the fire code official.

316.4 Location. When combustible materials are located in, upon or adjoining any hazardous watershed fire area, clearance from combustible vegetation shall be in accordance with Appendix H for buildings.

Section 502.1 is added and reads as follows:

HELISPOT is a site used for helicopter landings and take-offs during emergency operations.

Section 503.1.1, Exception 3, is amended to read as follows:

3. There are not more than four Group R-3 or any Group U occupancies, and any building with a total floor area of 700 square feet or less, the requirements of Sections 503.1.1 and 503.2 may be modified by the fire code official.

Section 503.1.4 is added and reads as follows:

503.1.4 Access Road Design. The fire code official may evaluate access road design in terms of total response efficiency. The fire code official is authorized to make modifications to access road network design, access road route and inter-connectivity with new or existing roads so that response efficiency is maintained.

Section 503.5 is amended to read as follows:

503.5 Required gates or barricades. The fire code official is authorized to require the installation and maintenance of gates or other approved barricades across fire apparatus access roads, trails, access to helispots or other access ways, not including public streets, alleys or highways.

Section 505 is amended with new sections added to read as follows:

505.1 Address numbers. New and existing buildings shall have approved address numbers, building numbers or approved building identification placed in a position that is plainly legible and visible from the street or road fronting the property. Address numbers shall be provided at additional locations on the building and at locations adjacent to roads or driveways leading to buildings when required by the fire code official. These numbers shall contrast with their background. The height and minimum stroke of numbers or letters shall be approved by the fire code official.

505.1.1 Directories. When required by the fire code official, complexes with multiple buildings may be required to provide directories, premises maps and directional signs. The scale, design and location of directory signs shall be approved by the fire code official and may be required to be illuminated.

505.2 Street or road signs. Streets and roads shall be identified with approved signs. Temporary signs shall be installed at each street intersection when construction of new roadways allows passage by vehicles. Signs shall be of an approved size, weather resistant and be maintained until replaced by permanent signs.

Section 903.1 is amended to read as follows:

903.1 General. Automatic sprinkler systems shall comply with this section and Appendix J.

Section 2206.2.3 is amended to read as follows:

2206.2.3 Above-ground tanks located outside, above grade.
Above-ground tanks shall not be used for automotive fuel dispensing stations open to the public for retail sales. Above-ground tanks shall not be used for the storage of Class I, II or IIIA liquid motor fuels except as provided by this section.

Section 2703.4 is amended to read as follows

2703.4 Material Safety Data Sheets. Material Safety Data Sheets (MSDS) shall be readily available on the premises for hazardous materials regulated by this chapter. When a hazardous substance is developed in a laboratory, available information shall be documented. The fire code official is authorized to require the Material Safety Data Sheets be kept in a key box at an approved location.

Exception: Designated hazardous waste.

Section 2704.14 is added and reads as follows:

Enclosures. Two means of access shall be provided when an enclosure is provided on three or more sides of a hazardous material container, tank or storage area. The two points of access shall be placed a distance apart equal to not less than one half of the length of the maximum overall diagonal dimension of the enclosure. Each access shall be a minimum of three feet in width. When provided, the method of locking or securing the enclosure shall be approved by the fire code official.

Section 3404.2.3.2 is amended to read as follows:

3404.2.3.2 Label or Placard. Tanks more than 100 gallons (379 L) in capacity, which are permanently installed or mounted and used for the storage of Class I, II or IIIA liquids, shall bear a label and placard identifying the material therein. Placards shall be in accordance with NFPA 704.

Exceptions:

1. Tanks of 300-gallon (1136 L) capacity or less located on private property and used for heating and cooking fuels in single-family dwellings.

2. Tanks located underground.

3. When approved by the fire code official, tanks containing a commonly recognized product and labeled with the product name, such as "Gasoline" or "Diesel," need not be marked with the DOT placard.

Appendix B is amended to read as follows:

APPENDIX B
FIRE-FLOW REQUIREMENTS FOR BUILDINGS

SECTION B101 GENERAL

B101.1 Scope. The procedure for determining fire-flow requirements for buildings or portions of buildings hereafter constructed shall be in accordance with this appendix. This appendix does not apply to structures other than buildings.

SECTION B102 DEFINITIONS

B102.1 Definitions. For the purpose of this appendix, certain terms are defined as follows:

AGRICULTURAL BUILDING is a structure designed and constructed to house farm implements, hay, grain, poultry, livestock, or other horticultural products. This structure shall not be a place of human habitation or a place of employment where agricultural products are processed, treated or packaged, nor shall it be a place used by the public. The California Building Code classifies this building as a Group U occupancy.

FIRE-FLOW. The flow rate of a water supply, measured at 20 pounds per square inch (psi) (138 kPa) residual pressure, that is available for fire fighting.

FIRE-FLOW CALCULATION AREA. The floor area, in square feet (m 2), used to determine the required fire flow.

GREEN HOUSE is an agricultural building used for the growing of plants. It shall include other structures also known as hothouses, coldframes and other similar specialty categories. It shall include construction materials of glass, rigid plastic, flexible plastic, masonry, wood, metal and concrete.

ISOLATED RESIDENTIAL is a single Group R, Division 3, dwelling on a parcel of land of 5 acres or more in size where no building is closer than 100 feet to the nearest building on any adjacent parcel.

SECTION B103 MODIFICATIONS

B103.1 Decreases. The fire chief is authorized to reduce the fire-flow requirements for isolated buildings or a group of buildings in rural areas or small communities where the development of full fire-flow requirements is impractical.

B103.2 Increases. The fire chief is authorized to increase the fire-flow requirements where conditions indicate an unusual susceptibility to group fires or conflagrations. An increase shall not be more than twice that required for the building under consideration.

B103.3 Areas without water supply systems. For information regarding water supplies for fire-fighting purposes in rural and suburban areas in which adequate and reliable water supply

systems do not exist, the fire code official is authorized to utilize NFPA 1142 or the International Wildland-Urban Interface Code.

SECTION B104 FIRE-FLOW CALCULATION AREA

B104.1 General. The fire-flow calculation area shall be the total floor area of all floor levels within the exterior walls, and under the horizontal projections of the roof of a building, except as modified in Section B104.3.

B104.2 Area separation. Portions of buildings, which are separated by fire walls without openings, constructed in accordance with the International Building Code, are allowed to be considered as separate fire-flow calculation areas.

B104.3 Type IA and Type IB construction. The fire-flow calculation area of buildings constructed of Type IA and Type IB construction shall be the area of the three largest successive floors.

Exception: The Fire-flow calculation area for open parking garages shall be determined by the area of the largest floor.

SECTION B105 FIRE-FLOW REQUIREMENTS FOR BUILDINGS

B105.1 One- and two-family dwellings. The minimum fire-flow and flow duration requirements for one- and two-family dwellings and U-1 private garages shall be 1000 gallons per minute (3785.4 L/min.) for two hours.

Exception:

1. A reduction in required fire flow of 50 percent, as approved, is allowed when the building is provided with an approved automatic sprinkler system.

2. Isolated residential lots and existing residential parcels in existence prior to October 7, 1980, fire-flow for buildings may be reduced to 500 gallons per minute.

3. Buildings on residential parcels in existence prior to October 7, 1980, where there is no water purveyor or the water purveyor's current system cannot meet fire-flow or duration requirements without excessive system modifications, an on-site water storage tank may provide the fire protection water supply when the building has an approved automatic sprinkler system. The location, capacity, connections and other appurtenances of the tank shall be approved by the fire code official.

4. Buildings on residential parcels created after October 7, 1980, where there is no water purveyor or the water purveyor certifies the system cannot provide the required fire-flow or duration, the provisions of Exception 3 may be utilized.

5. Buildings classified as Group R, Division 3, occupancies with a total fire area of 700 square feet or less are not required to provide fire-flow.

B105.2 Buildings other than one- and two-family dwellings. The minimum fire-flow and flow duration for buildings other than one- and two-family dwellings shall be as specified in Table B105.1. When approved by the fire code official the following exceptions may be applied.

Exception:

1. A reduction in required fire-flow of up to 50 percent, as approved by the fire code official, is allowed when the building is provided with an approved automatic sprinkler system installed in accordance with Section 903.3.1.1. The resulting fire-flow shall not be less than 1250 gallons per minute for the prescribed duration as specified in Table B105.1.

2. In rural areas where there is no water purveyor or the water purveyor certifies the system cannot provide the required fire-flow or duration, and the building is protected by an approved automatic sprinkler system, the provisions in NFPA 13 for combined inside and outside hose lines may be utilized to determine fire-flow and duration. The location, connections and other appurtenances of tanks shall be approved by the fire code official.

3. Buildings classified as Group U, agricultural buildings used as barns, storage structures, stables, poultry buildings and other similar uses with a total fire area of 1500 square feet or less are not required to provide fire-flow.

4. Buildings classified as Group U, agricultural buildings used as greenhouses, horticultural structures, nurseries and similar uses with a total fire area of 3000 square feet or less are not required to provide fire-flow.

5. For buildings classified as Group U, not exempt from fire-flow requirements by Exceptions 3 or 4, shall provide a minimum fire-flow of 500 gallons per minute for a minimum two (2) hour duration. Where there is no water purveyor or the water purveyor certifies the system cannot provide the required fire-flow or duration, an on-site water storage tank shall be provided. The capacity, location, connections and other appurtenances of tanks shall be approved by the fire code official.

6. Buildings with a total floor area of 700 square feet or less are not required to provide fire-flow.

Appendix H is added and reads as follows:

APPENDIX H
Fire Hazard Abatement

SECTION H101 General

H101.1 Scope. This appendix provides provisions intended to identify hazard areas and mitigate the risk to life and structures from intrusion of fire from wildland fire exposures and fire exposures from adjacent structures and to mitigate fires from spreading to wildland fuels that may threaten to destroy life, overwhelm fire suppression capabilities, or result in large property loss.

H101.2 Purpose. The purpose of this appendix is to establish minimum requirements in wildland-urban interface areas that will increase the ability of a building to resist the intrusion of flame or burning embers projected by a vegetation fire, including the identification of hazardous fire areas that require applicable defensible space provisions as set forth herein and enforced by the fire code official and applicable state and local fire-resistive building standards that are required and enforced by the local building official.

SECTION H102 Definitions.

H102.1 Definitions. For the purpose of this appendix certain terms are defined as follows:

Combustible Material includes seasonal and recurrent weeds, stubble, brush, dry leaves, tumbleweeds, rubbish, litter or flammable materials of any kind.

Defensible Space. An area either natural or man-made, where material capable of allowing a fire to spread unchecked has been treated, cleared or modified to slow the rate and intensity of an advancing wildfire and to create an area for fire suppression operations to occur.

Fire Protection Plan is a plan that shall be based upon a site-specific wildfire risk assessment that includes considerations of location, topography, aspect, flammable vegetation, climatic conditions and fire history. The plan shall address water supply, access, building ignition and fire-resistance factors, fire protection systems and equipment, defensible space and vegetation management.

Hazardous Fire Area is land which is covered with grass, grain, brush, or forest, whether privately owned or publicly owned, which is so situated or is of such inaccessible location that a fire originating upon such land would present an abnormally difficult job of suppression or would result in great and unusual damage through fire or resulting erosion. Such areas are designated by the fire code official. The fire code official is authorized to utilize as reference the definition of Hazardous Watershed Fire Area, Local Agency Fire Hazard Severity Zone Maps designated pursuant to California Government Code Sections 51175 through 51189, and the International Wildland-Urban Interface Code.

Hazardous Watershed Fire Area is a location within 500 feet of a forest or brush-, grass-, or grain-covered land, exclusive of small individual lots or parcels of land located outside of a brush -, forest-, or grass-covered area.

Parcel is a portion of land of any size, the area of which is determined by the assessor's maps and records and may be identified by an assessor's parcel number whether or not any buildings are present.

Public Nuisance is a declaration by the fire code official that the presence of combustible material on a parcel creates a fire hazard.

Wildland-Urban Interface Area Is that geographical area where structures and other human development meet or intermingle with wildland or vegetative fuels

H103 Unlawful Disposal. Every person who places, deposits or dumps combustible material on a parcel whether or not he owns such parcel, or whether or not he so places, deposits or dumps on such parcel with the consent of the owner thereof, is subject to the criminal sanctions set forth in Health and Safety Code Section 13871.

H104 Clearance of Brush, Vegetative Growth and Combustible Material from Parcels. All parcels declared a public nuisance shall be cleared entirely of combustible material. If the fire code official determines this impractical, the provisions of Section H105 may be used.

H105 Clearance of Brush or Vegetative Growth from Structures. Any person owning, leasing, controlling, operating or maintaining any building in, upon, or adjoining any hazardous fire area, and any person owning, leasing or controlling any land adjacent to such buildings, shall at all times maintain around and adjacent to such building an effective firebreak made by removing and clearing away all combustible material for a distance not less than 100 feet from all portions of the building. Distances may be increased by the fire code official because of a site-specific analysis based on local conditions and, when required, based on a fire protection plan.

This section shall not apply to single specimens or stands of protected species of trees, ornamental shrubbery or similar plants used as ground covers, provided that they do not form a means of rapidly transmitting a fire from the native growth to any building.

H105.1 Fire Protection Plan. A fire protection plan shall be prepared by the applicant when required by the fire code official.

H105.1.1 Cost. The cost of fire protection plan preparation and review shall be the responsibility of the applicant.

H106 Prosecution. The fire code official may serve a written order upon the owner or possessor of a parcel, when, in the fire code official's opinion, a public nuisance exists thereon. The order shall direct such owner or possessor to remove or abate the public nuisance within ten days after such order is given. Every owner or possessor who fails or refuses to abate said public nuisance from such parcel within ten days after being served with such order is guilty of a misdemeanor. Evidence that the current assessment roll of the County shows real property assessed to a person shall constitute prima facie evidence that such person is the owner of such property.

H107 Clearance Upon Default of Owner or Lessee.

H107.1 Notice. The fire code official may, instead of, or in addition to, following the procedure set forth in Section H106, cause a notice to be mailed. The notice shall state that a public nuisance exists on a specified parcel, describe the parcel as set forth on the County assessment roll, and direct the owner or possessor of the parcel to remove or abate the public nuisance within ten days after notice is given or such later period as specified in the notice. The notice shall also state the time and place that the Board of Directors will meet to hear the report of the fire code official regarding the alleged public nuisance.

H107.2 Mailed Notice. The notice shall be mailed to the last assessee of the parcel at the address given on the County assessment roll at least ten days before the Board of Directors meets to hear the report of the fire code official regarding the alleged public nuisance. The notice shall also be provided to the Clerk of the Board of Directors three days prior to the Board hearing. It shall be the responsibility of the owner of record in the current assessment roll to notify any new owner or possessor of the parcel of the notice that was received and forward the notice to the new owner or possessor of the parcel. It shall also be the responsibility of the current owner of record to notify the fire code official of this change in ownership on the form provided.

H107.3 Hearing. At the time and place stated in the notices, the Board of Directors shall meet to hear the report of the fire code official and any objections thereto. The fire code official shall attend, inform the Board as to the alleged public nuisance, and supply the description of the parcel upon which it exists, the name and address of the last known assessee thereof, and state what has been done in order to give notice of the hearing according to the provisions of this code. The Board may continue the hearing from time to time as it sees fit.

H107.4 Clean-up Order. If, after a hearing, the Board of Directors finds that a public nuisance exists upon a parcel, the Board may direct the fire code official to abate the public nuisance. The Board shall maintain a record of its proceedings at such hearing and retain therewith the report of the fire code official and a description of such parcel and, where available, the name and address of its last known assessee.

H107.5 Abatement. If the Board of Directors directs the fire code official to abate a public nuisance, he shall proceed to abate such nuisance unless it has been completely abated before his agents arrive to begin such abatement. The fire code official may expend District funds for such abatement and may contract with a person or persons for such abatement.

H108 Seasonal and Recurrent Nuisances

H108.1 Resolution. If, in the opinion of the fire code official, the public nuisance on a parcel is seasonal and recurrent, the fire code official may ask the Board of Directors to so declare by resolution. If the Board of Directors makes such a declaration by resolution, such seasonal and recurring public nuisance thereafter shall be abated every year without the necessity of any further hearing.

H108.2 Notice. For a parcel subject to a declaration described in Section H108.1, it is sufficient to mail a notice to the same person and in the same manner as set forth in Section H107.2. The notice shall describe the parcel and shall state that the parcel is subject to seasonal and recurring weeds that constitute a public nuisance and must be cleared every year without further notice. The notice shall further state that if the weeds constituting a public nuisance are not cleared by the owners of the parcel by a specified date, they will be abated by the District, in which case the cost of such abatement shall be assessed upon the parcel from which the public nuisance is abated and that such cost will constitute a lien upon such parcel until paid. In the event the fire code official sets a hearing before the Board of Directors as authorized by Section H108.3, the notice shall also set forth the date, time and place of such hearing and shall be mailed at least ten days before the hearing.

H108.3 Optional Hearing. Notwithstanding Section H108.1, the fire code official may set a hearing before the Board of Directors to consider any objections to the proposed abatement of the public nuisance as described in the notice pursuant to Section H108.2. The decision by the Board at the hearing is final. Upon the completion of the hearing, the Board shall authorize and direct the fire code official to abate any public nuisance found by the District to exist on the parcel

after the date specified in said notice. The fire code official may expend District funds for such abatement and may contract with a person or persons for such abatement.

H108.4 Optional Second Notice. At the discretion of the fire code official, if a public nuisance is found to exist on a parcel after the date specified in the first notice pursuant to Section H108.2, a second notice may be mailed or delivered to the same person to whom the first notice was mailed. The second notice shall state that the public nuisance will be abated by the District unless it is otherwise abated immediately or by a specified date. The mailing or delivery of a second notice does not create any right to object or further object to the proposed abatement of the public nuisance.

H109 Collection of the Cost of Abatement

H109.1 Account of Expenses. The fire code official shall keep an account of his expenses when abating a public nuisance pursuant to an order by the Board of Directors and file the account thereof with the Board which shall include a description, according to the County assessment roll, of the parcel upon which such public nuisance existed and, when available, the name and address of the last known assessee.

H109.2 Confirmation of Expense Account. The account of expenses shall be maintained on file, open to public inspection, in the office of the Clerk of the Board of Directors for at least ten days before a hearing of the Board to confirm such account. Any person who files with the Clerk of the Board a written request to be notified of such hearing will be so notified by mail at the address supplied with the request so long as the request is received at least two business days before the day of the hearing. At the time fixed for such hearing, the Board shall meet to hear any objections to the account of expenses filed by the chief. At such hearing the Board may make any modification in the amount it deems just, after which the account shall be confirmed.

H109.3 Special Assessment and Lien. The amount of expenses incurred by the fire code official for abating a public nuisance when confirmed by the Board of Directors shall constitute a special assessment against the parcel from which the said public nuisance was removed and a lien thereon for the amount of such assessment.

H109.4 Transmittal of Account. The Board of Directors shall deliver a copy of the account, as confirmed, to the Auditor of the County on or before the 10th day of August following such confirmation.

H109.5 Inclusion of Assessment. The County Auditor shall enter the amount stated in the account as a special assessment against the parcel described in the account. The Tax Collector of the County shall include the amount of the assessment on the bill for taxes levied against the parcel. All laws applicable to the levy, collection and enforcement of county taxes are applicable to such special assessments, except that if any real property to which such lien would attach has been transferred or conveyed to a bona fide purchaser for value, or if a lien of a bona fide encumbrance for value has been created and attaches thereon, prior to the date on which the first installment of such taxes would become delinquent, then the lien which would otherwise be imposed by this section shall not attach to such real property and the costs of abatement, as confirmed, relating to such real property shall be transferred to the unsecured roll for collection. All special assessments collected shall be paid into the county treasury to be used on behalf of the Fire District.

H109.6 Grounds for Cancellation or Refund. If a property owner believes an assessment against the owner's property pursuant to Sections H107 and H108 was entered, charged or paid more than once, through clerical error, through the error or mistake of the District in respect to any material fact, or illegally, the owner must in compliance with applicable law present a claim to the Board of Directors for an order canceling (if uncollected) or refunding (if collected) the assessment.

Appendix J is added and reads as follows:

APPENDIX J
FIRE PROTECTION SYSTEMS

J101 General. An automatic fire extinguishing system shall be installed in all occupancies and locations as set forth in Appendix J and Chapter 9.

J102 Definitions

Building, Existing – as defined in the California Building Code.

Floor Area - as defined in the California Building Code.

J103 Where required. Approved automatic sprinkler systems in new and existing buildings shall be provided in the locations described in this section.

J103.1 Buildings. An automatic fire extinguishing system shall be installed in all buildings.

Exception: Group U Occupancies when approved by the Fire Chief and Building Official.

J103.2 Buildings, Existing. Buildings in existence at the time of the effective date of this Appendix may have their existing use continued if such use was legal at the time. Additions to buildings shall require an automatic fire extinguishing system installed throughout, including areas not previously protected, except buildings that meet one of the following exceptions.

Exceptions:

1. All occupancies, except Group R, Division 3, where an addition is 25% or less of the existing floor area.

2. Occupancies classified as Group R, Division 3, including attached Group U occupancies, where an addition is 1000 square feet or less.

3. Occupancies classified as Group R, Division 3, including attached Group U occupancies, where an addition is 50% or less of the existing floor area.

J104 Installation Requirements

J104.1 Modifications

J104.1.1 For the purpose of this appendix, fire walls shall not be considered as creating separate buildings.

J104.1.2 Where allowed, sprinkler systems installed in accordance with NFPA 13D in Group R-3 occupancies shall provide sprinkler protection for attached Group U occupancies and all bathrooms.

J104.1.3 When NFPA 13R sprinkler systems are provided in Group R occupancies, exceptions to, or reductions in, code requirements are not allowed based on the installation of either a NFPA 13R or a NFPA 13 sprinkler system. This shall also include requirements in the California Code of Regulations Title 24, Part 2 and Part 9.

J105. Maintenance of Area Separation Walls

J105.1 General. Area separation fire walls used to create fire areas less than 5000 square feet in buildings, for which the original application for permit under which the building was constructed was accepted by Building and Safety before November 1, 2002, shall be maintained as approved area separation fire walls with no openings.

J106. Public Safety Radio System Coverage

J106.1 General. In new buildings, public safety radio system equipment may be required if radio reception is shielded or when determined necessary for essential public and firefighter safety when existing public safety radio communication quality and intelligibility in a geographic area can be improved to provide effective communication and public safety services.

J107 Findings

J107.1 General. After due consideration the Board of Directors of the Ventura County Fire Protection District hereby finds that due to local climatic, geologic and topographic conditions as stated in this section, modifications and changes to the current California Building Code and California Fire Code are reasonably necessary to provide sufficient and effective protection of life, health and property.

J107.1.2 Climatic. Ventura County experiences periods of high temperatures accompanied by low humidity and high winds each year. These conditions create an environment in which the Fire District commits large numbers of firefighting resources to the control and extinguishment of wildland fires. During such periods, the limited available firefighting resources may have great difficulty in controlling fires in structures not having built-in fire protection.

J107.1.3 Geological. Ventura County is in a potential high activity seismic zone. After a large seismic event, the potential for multiple fires occurring simultaneously will tax available firefighting resources. Built-in fire protection will assist in extinguishing or controlling fires in structures, which will increase the availability of firefighting resources after seismic activity.

J107.1.4 Topographical. Ventura County has rural areas that are in high fire hazard areas. Due to topography, access to structures in rural areas increases response time and delays fire suppression efforts. An extended response time will allow fires to grow beyond the control of initial attack fire suppression resources. Structure fires in the hillside areas will have a greater likelihood of starting a wildland fire, which may expose additional structures to fire.

J108 Ratification

J108.1 General. Before Appendix J is effective in the County of Ventura or in a city within the Fire Protection District, the legislative body of the County or of the city must ratify Appendix J in accordance with California Health and Safety Code Section 13869.7.

PART 4. EFFECTIVE DATE

This ordinance shall be effective 30 days from the date of its final passage or January 1, 2008, whichever is later, except that Appendix J hereto shall be effective upon the effective date of the ordinance or upon the ratification of Appendix J by the legislative body of the County of Ventura and of any city where Appendix J will apply, pursuant to Health and Safety Code Section 13869.7, subdivision (c), whichever is later.

PASSED AND ADOPTED this 20th day of NOVEMBER 2007, by the following vote:

AYES: Directors BENNETT, LONG, FOY AND PARKS

NOES: NONE

ABSENT: FLYNN

Linda Parks
CHAIR, BOARD OF DIRECTORS

ATTEST:

JOHN F. JOHNSTON
Clerk of the Board of Supervisors,
County of Ventura, State of California,

By Kathryn Pierce
Deputy Clerk of the Board

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J. Fire-Resistant Plants to Favor and Restricted Plant List/Plants to Avoid[1,2,3,4]

–These California natives are good options for a fire-safe landscape. Drought-tolerant non-native species can also be good choices if they don‘t self-sow or naturalize; but consult the –Plants to Avoid” list on the next page before selecting any non-natives. A good rule of thumb is to use plants with high fire resistance closer to your house and those with lower resistance farther away.

–Restricted plants, mostly non-native, are highly flammable and should not be planted near your house. If they are already growing on your property, you might want to consider phasing them out and replacing them with more fire-resistant species.”[5]

TABLE 1: FIRE-RESISTANT PLANTS

SCIENTIFIC NAME	COMMON NAME	FIRE RESISTANCE	HEIGHT	SPREAD	EXPOSURE	FLOWER COLOR
Succulents:						
Agave species	Agave	High	1–6'	1–10'	sun	yellow-green
Dudleya species	Bluff lettuce, Live Forever	High	<1.5'	varies	sun/part shade	yellow-red
Sedum species	Stonecrop	High	<1'	varies	sun/part shade	many
Low-Growing Ground-Cover Plants:						
Arctostaphylos ‗Carmel Sur‘	Carmel Sur	Low	1'	6'	sun/part shade	white-pink
Baccharis pilularis	‗Twin Peaks‘ dwarf coyote brush	Medium	1–2'	6'	sun/part shade	white
Ceanothus ‗Centennial‘	‗Centennial‘	Medium	8–12”	4–6'	sun/part shade	blue
Ceanothus griseus var. horizontalis	Carmel creeper	Medium	3–5'	5–15'	sun/part shade	blue
Heuchera maxima	Island alum root	Medium	1–2'	1–2'	shade	white-pink
Mahonia repens	Creeping barberry	Medium	1–3'	3'	sun/part shade	yellow
Shrubs and Trees:						
Calliandra eriophylla	Fairy duster	Low	1–3'	3–4'	sun	pink, white

[1] Santa Monica Mountains Fire Safe Alliance (2010), *A Road Map to Safety: How to Create Defensible Space in the Santa Monica Mountains,* pp. 29–30. www.fire.lacounty.gov/Forestry/RoadMaptoFireSafety.pdf.

[2] C. Bornstein, D. Fross, and B. O‘Brien (2005), *California Native Plants for the Garden* (Los Olivos, CA: CaChuma Press).

[3] Recommended List of Native Plants for Landscaping in the Santa Monica Mountains. Revised August 2007. Los Angeles/Santa Monica Mountains Chapter, California Native Plant Society.

[4] Betsey Landis of the California Native Plant Society contributed to this list.

[5] Santa Monica Mountains Fire Safe Alliance (2010), *A Road Map to Safety: How to Create Defensible Space in the Santa Monica Mountains.*

SCIENTIFIC NAME	COMMON NAME	FIRE RESISTANCE	HEIGHT	SPREAD	EXPOSURE	FLOWER COLOR
Cercis occidentalis	Western redbud	Low	10–20'	8–10‘	sun/part shade	magenta
Heteromeles arbutifolia	Toyon	High	12–30‘	12–30‘	sun/part shade	white
Mimulus aurantiacus	Sticky monkey-flower	Low	3'	3‘	sun	orange
Platanus racemosa	California sycamore	Medium	40–80'	40–50'	sun	—
Quercus agrifolia, Q. lobata, Q. wislizenii	Coast live oak, Valley oak, Interior live oak	High	to 100'	to 100'	sun	—
Quercus berberidifolia	Scrub oak	Low	to 15‘	to 15‘	sun	
Rhamnus californica	Coffeeberry	Low	3–15'	3–10'	sun/part shade	yellow-green
Rhus integrifolia (coastal)	Lemonadeberry	Low	4–5'	15'	sun/part shade	pink
Rhus ovata (inland)	Sugar bush	High	10–20‘	15‘	sun/part shade	white-pink
Romneya coulteri	Matilija poppy	High	6–10‘	6–8'	part shade/shade	white and yellow
Perennials and annuals:						
Achillea species	Yarrow	Medium	6”–3'	may spread	sun/part shade	white, yellow, pink
Clarkia amoena, C. bottae, C. unguiculata	Farewell-to-spring	Low	4–5"	<1'	sun/part shade	pink, lavender
Epilobium californica (syn. Zauschneria)	California fuchsia	Low	1–3'	1–3'	sun	red
Eriophyllum confertiflorum	Golden yarrow	Low	1–2'	1–2'	sun	yellow
Eschscholzia californica	California poppy	Low	8–24"	to 1'	sun	orange
Iris douglasiana	Douglas iris	Medium	1–2'	clumping	sun/part shade	varies
Isomeris arborea	Bladder-pod	High	2–6'	3–6'	sun/part shade	yellow
Layia platyglossa	Tidytips	Low	5–16"	to 1'	sun	yellow
Lupinus species	Lupines (Annuals to perennials)	Low to Medium	8–30”	to 2'	sun	blue, yellow, violet
Nemophila menziesii	Baby blue eyes	Low	4–6"	to 1'	sun/part shade	blue
Penstemon species	Penstemons	Low	1–3'	1–3'	sun/part shade	purple, red
Salvia spathacea	Hummingbird sage	Low	1–3'	1–3'	sun/part shade	red
Sisyrinchium bellum	Blue-eyed grass (iris)	Low	8–10"	clumping	sun	blue-purple
Sisyrinchium californicum	Yellow-eyed grass (iris)	Low	1'	clumping	sun/part shade	yellow

TABLE 2: RESTRICTED PLANT LIST/PLANTS TO AVOID

SCIENTIFIC NAME	COMMON NAME
Acacia species	Acacia (trees and shrubs)
Adenostema fasciculatum	Chamise, greasewood
Ageratina adenophora	Eupatory
Ailanthus altissima	Tree of heaven
Artemisia californica	California sagebrush
Bougainvillea	Bougainvillea
Cedrus species	Cedar
Cortaderia selloana, Cortaderia jubata	Pampas grass
Cupressus species	Cypress
Delairea odorata	Cape ivy, German ivy
Dimorphotheca sinuate	African daisy
Dodonea viscose	Hopseed bush
Eriogonum fasciculatum	Buckwheat
Eucalyptus species	Eucalyptus, gum tree
Fraxinus uhdei	Shamel ash
Gelsemium sempervirens	Carolina jessamine
Hakea suaveolens	Hakea
Hedera species	Ivy
Juniperus species	Juniper
Lobularia maritima	Sweet alyssum
Malosma laurina	Laurel sumac
Myoperum laetum	Myoperum
Pennisetum species	Fountain grass
Phoenix canariensis	Canary Island date palm
Picea species	Spruce
Pinus species	Pine
Ricinus communis	Castor bean
Schinus molle	Peruvian pepper tree (AKA –California" pepper tree)
Schinus terebinthifolius	Brazilian pepper tree
Spartium junceum	Spanish broom
Taxus species	Yew
Thuja species	Arborvitae
Tropaeolum majus	Nasturtium
Vinca major, Vinca minor	Periwinkle
Washingtonia species	California and Mexican

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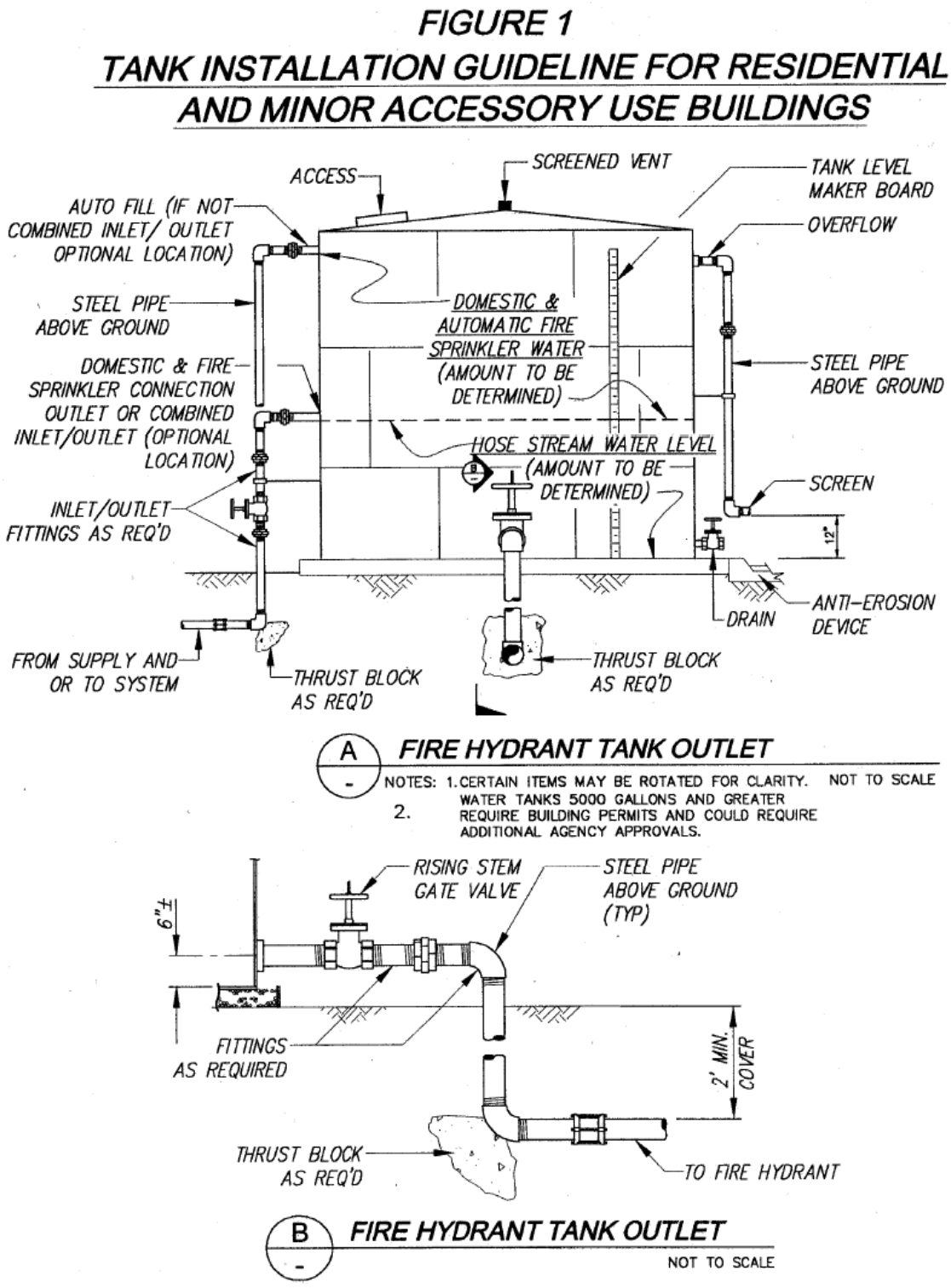
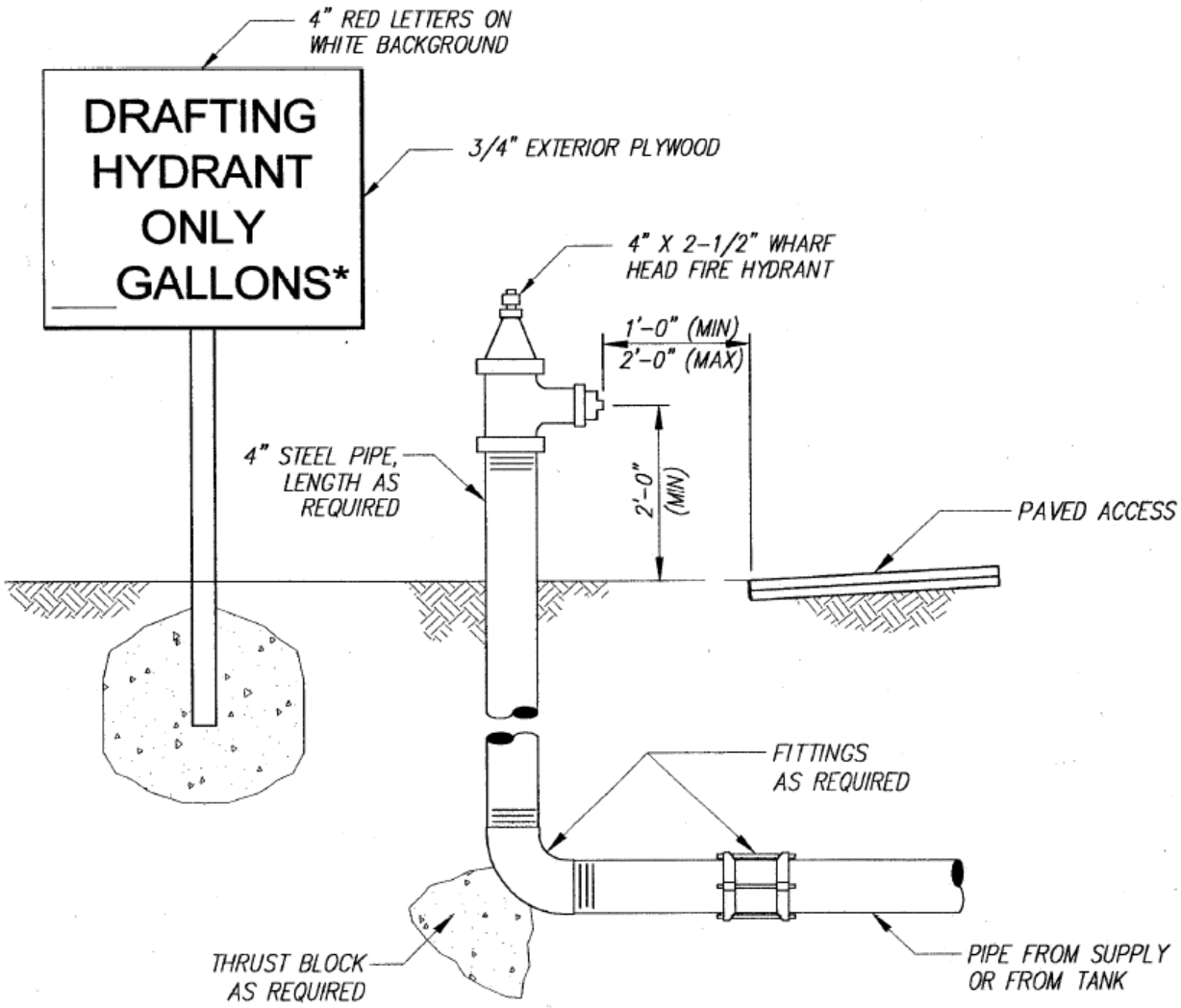
K. Water Tank and Hydrant Diagrams (Ventura County)[1]



[1] http://fire.countyofventura.org/LinkClick.aspx?fileticket=0DzHf1sWaDY%3d&tabid=58

FIGURE 2



NOTES:
1. SIGN FOR DRAFTING HYDRANT REQUIRED IF RESIDUAL PRESSURE AT DESIGN FLOW IS LESS THAN 20 PSI
2. AMOUNT OF WATER RESERVED FOR HOSE STREAM. EXAMPLE: 5,000 GALLONS

B / - **TYPICAL "WHARF" FIRE HYDRANT INSTALLATION**

NOT TO SCALE

FIGURE 3

CALCULATING TANK LEVELS

EXAMPLE: - 3000 square foot dwelling, using a 10 foot diameter tank

Requirements from Fire Prevention Standard 14.5.1, Table A:

Minimum Tank Size	Reserved for Hose	Automatic Fill Level
4750 gallons	2500 gallons	4000 gallons

DETERMINING HEIGHTS WHEN DESIGNING PRIVATE WATER SYSTEMS:

Formula: $A = \pi R^2$

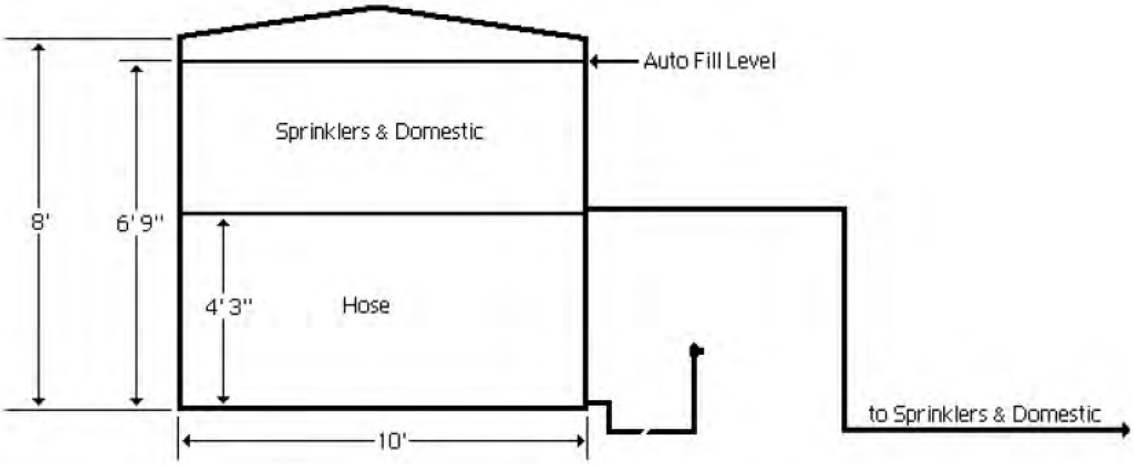
3.1416 x 25 = 78.54 cu. ft. (per ft. of height)

There are 7.48 gallons per cubic ft.:

7.48 x 78.54 = 587.47 gallons per ft. of height

Minimum water heights:

Tank	Sprinkler/Domestic Connection	Auto Fill Height
4750 ÷ 587 = 8	2500 ÷ 587 = 4.25	4000 ÷ 587 = 6.8
8'	4' 3"	6' 9"



DETERMINING GALLONS WHEN INSPECTING:

Formula: $A = \pi R^2$

3.1416 x 25 = 78.54 cu. ft. (per ft. of height)

There are 7.48 gallons per cubic ft.:

7.48 x 78.54 = 587.47 gallons per ft. of height

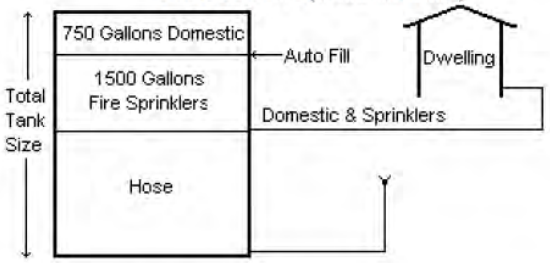
8' x 587 = 4696 gallons 4.25' x 587 = 2494 gallons 6.8' x 587 = 3991 gallons

FIGURE 4

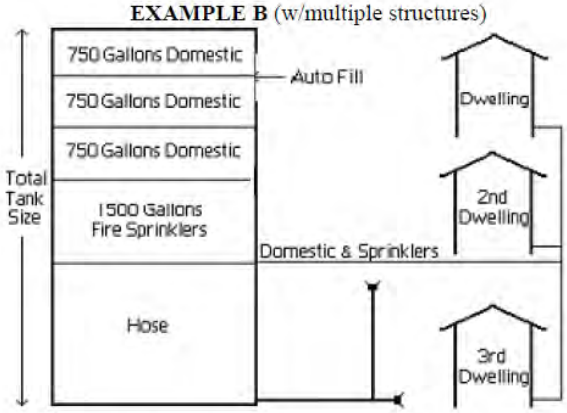
DETERMINING TANK SIZE WHEN SERVING 2 – 4 CONNECTIONS

(Requirements assume only one structure will be on fire at a time)

EXAMPLE A (w/one structure)

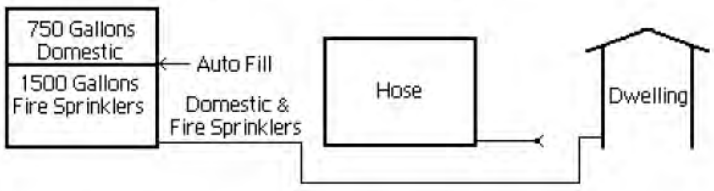


EXAMPLE B (w/multiple structures)



PRIVATE WATER SYSTEMS SERVING MORE THAN (4) FOUR CONNECTIONS (EACH STRUCTURE SERVED IS A CONNECTION) ARE OUTSIDE THE SCOPE OF STANDARD 14.5.1 AND ARE REQUIRED TO COMPLY WITH THE VENTURA COUNTY WATERWORKS MANUAL AND THE ENVIRONMENTAL HEALTH DEPARTMENT (EHD).

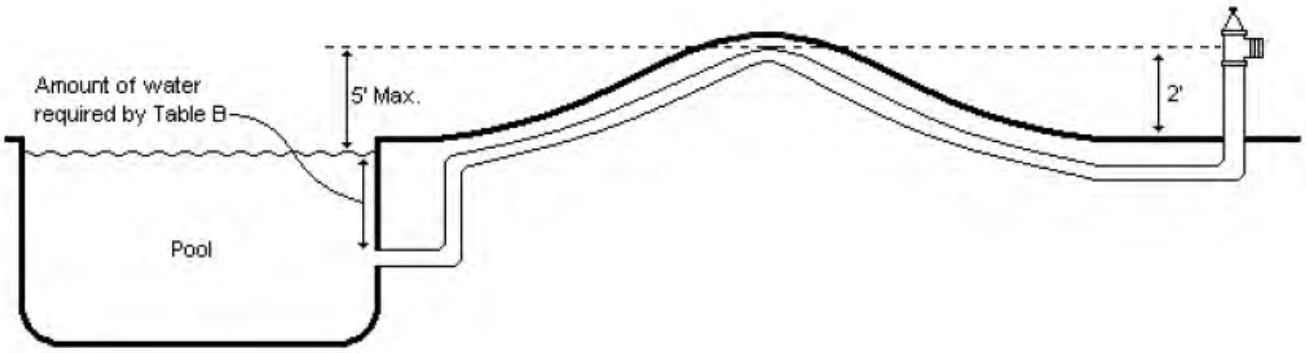
EXAMPLE C (w/multiple tanks)



Domestic and sprinkler may come from a purveyor or a tank which includes both the domestic and sprinkler water.
Hose supply must come from a tank. (A swimming pool may be used for this tank)

FIGURE 5

SWIMMING POOL/TANK INFORMATION



- A pool may be used for hose reserve. (Domestic & sprinkler cannot come from a pool)
- Hydrant piping must be a permanent connection to the bottom or side of the pool, such that the required amount of water is available above the connection at the pool.
- The connection and pipe size must be as required in Fire Prevention Standard 14.5.1.
- The hydrant outlet shall be 2 feet above the finished grade at the hydrant location.
- The level of the required amount of water shall not be more than 5 feet below the hydrant outlet.
- The piping from the pool to the hydrant shall not rise above the hydrant outlet.
- The connection may tee off the bottom drain (with the correct pipe size), but must do so before the equipment and must meet the above elevation issues.
- A check valve is not permitted in the piping.
- If water quality is a concern, the line can be flushed as needed.
- If the pool is not completed prior to construction, a temporary water tank must be provided before combustible materials are on site. (This may be the permanent tank to be used ultimately for sprinklers and domestic)
- The temporary tank must be sized to the amount of water required for a structure with sprinklers. Auto-fill is not required for the temporary tank. The pool must be completed at the time of final inspection, or the temporary tank must be retrofitted to comply with all requirements for a permanent tank.

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L. Home Ignition Zone Structure Assessment Guide[1]

Note: This assessment is designed to help determine "how vulnerable the structure" will be during the wildfire and to convey recommendations that should be taken so that the home will have a better chance to survive a wildfire.

Remember, the following assessment items are for prevention/mitigation measures to be done well in advance of wildfire season.

Date of Assessment:	Property Address:	Resident Name:	Property Owner:

	Assessment Items	Mitigation Recommendations
1.	**OVERVIEW OF SURROUNDINGS:**	
	How is the structure positioned in relationship to severe fire behavior?	
	Type of Construction.	
2.	**PEAKS TO EAVES:**	
	Inspect the roof – noncombustible? Shingles missing? Shingles flat with no gaps?	
	Gutters – present? Noncombustible?	
	Litter on roof, in gutters, and crevices.	
3.	**EAVES TO FOUNDATION:**	
	Attic, eaves, soffit vents, and crawl spaces.	
	Inspect windows and screens – metal screens? Multi-paned windows? Picture windows facing vegetation? Metal screening on all windows. Walls and attachments: noncombustible? Will they collect litter?	
	Decks (combustible materials?)	

[1] National Fire Protection Association 1144: Standard for Reducing Structure Ignition Hazards from Wildland Fire, 2008 Edition, www.nfpa.org. Courtesy of Pat Durland.

	Assessment Items	Mitigation Recommendations
3.	**EAVES TO FOUNDATION:** *(Continued)*	
	Fences.	
	Flammable materials next to or under the structure.	
	Crawl space, attic vents, soffits.	
	Nooks and crannies and other small spaces.	
4.	**FOUNDATION TO IMMEDIATE LANDSCAPED AREA:**	
	Landscaped (Managed) Vegetation – separation distances, maintenance, plant selection; Firewise Landscaping Zones?	
	Propane Tanks.	
	Vehicle and RV use and parking, including lawn mowers, etc.	
5.	**IMMEDIATE LANDSCAPED AREA TO EXTENT OF THE HOME IGNITION ZONE:**	
	Inspect vegetation clearance and crown separation.	

M. GIS Metadata[1]

DESCRIPTION	FILE/ DATASET NAME	SOURCE	LINK
10m digital elevation model	ned1_9arcsec	United States Geological Service	http://seamless.usgs.gov/
California county boundaries	cnty24k09	CA.gov Cal-Atlas Geospatial Clearinghouse http://www.atlas.ca.gov/download.html	www.atlas.ca.gov/download.html
CWPP units and boundary	cwpp_planning_units_v06	National Park Service- Santa Monica Mountains National Recreation Area	http://science.nature.nps.gov/nrdata/
Fire history (fire perimeters)	fire09_1	National Park Service- Santa Monica Mountains National Recreation Area	http://frap.cdf.ca.gov/data/frapgisdata/download.asp?rec=fire
Fire protection resources	statlocs_2009	Los Angeles County Fire Department	
Fire regime classification	cafrcc03_2	CALFIRE Fire and Resource Assessment Program	http://frap.cdf.ca.gov/data/frapgisdata/download.asp?rec=cafrcc
Land ownership	current_tract_ownership_data	National Park Service- Santa Monica Mountains National Recreation Area	http://science.nature.nps.gov/nrdata/
LANDFIRE rapid assessment fire regime condition classes	landfire.ra_frcc	LANDFIRE	www.landfire.gov/products_national.php
Roads	SAMOroads2005	National Park Service- Santa Monica Mountains National Recreation Area	http://science.nature.nps.gov/nrdata/
Shade relief model	HillshadeAMOazimuthSelev45deg	National Park Service- Santa Monica Mountains National Recreation Area	
Southern CA city boundaries	CitiesSoCal	Southern CA Association of Governments	www.scag.ca.gov/mappingGIS.htm
Streams	SAMOstreams24K	United States Geological Service	http://science.nature.nps.gov/nrdata/
Urban footprint	urbanfootprint_SCAGandSAMOcegmapurbanclasses	National Park Service- Santa Monica Mountains National Recreation Area	http://science.nature.nps.gov/nrdata/

[1] Robert S. Taylor, Biogeographer/Fire GIS Specialist, National Park Service – Santa Monica Mountains National Recreation Area; Gregory Elwood, National Park Service Partner – GIS Technician.

DESCRIPTION	FILE/ DATASET NAME	SOURCE	LINK
Vegetation	SAMOveg2007alliance	National Park Service- Santa Monica Mountains National Recreation Area	http://science.nature.nps.gov/nrdata/

Part IV

REFERENCES

This page is inserted to facilitate double-sided printing of the document.

Reference I–Glossary of Fire Safety Terms[1,2]

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.

1,000-Hour Fuel: Fuels from 3 inches to 8 inches that take about 1,000 hours to lose or gain two-thirds of the equilibrium moisture content of their environment.

10,000-Hour Fuel: Fuels that are greater than 8 inches in diameter. 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.

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. Management practices tend to change over time as new information is learned and the effects of one's actions become apparent.

Age Classes: A way of classifying the age range of vegetation, often for trees or forests, and usually divided into 20-year units or classes, e.g. 0–20 years.

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

Anthropogenic: An adjective for something that is the result of human activities or the influence of humans on nature.

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

Backburn: *See Blackline.*

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

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.

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

Best Management Practices (BMPs): In this context, fire safety activities that effectively reduce wildfire risk while limiting potential negative environmental impacts. BMPs can range from reducing impacts on specific wildlife species, to maintaining or enhancing ecosystem functions and processes.

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

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.

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[1] This glossary contains terms used in this Community Wildfire Protection Plan, as well as related fire-safety terms that are not found in the CWPP but are included as helpful background information.

[2] Many definitions in this glossary were found on the websites below. The remaining terms were researched and defined by ForEverGreen Forestry.
US Forest Service; Caster, J. Fire Information Toolbox. Dictionary, www.fs.fed.us/r2/fio/dict.htm; Wikipedia: www.wikipedia.org.

Bioregional/Bioregion: The characteristic features of an area (bioregion) constituting a natural ecological community of contiguous geographic terrain, delineated by natural rather than artificial borders: the region's climate, local aspects of seasons, particular landforms, watersheds, soils, native plants, and animals. Humans are also an integral aspect of a bioregion's life.

Biosolids: A term used by the wastewater industry to denote the byproduct of domestic and commercial sewage and wastewater treatment.

Biotic: A term referring to all living things, organisms, or their materials; of life, of living things.

Blackline: Preburning, or backburning, of fuels adjacent to a control line before igniting a prescribed burn (controlled burn).

Bone-Dry Ton (BDT): A standard industry designation for a ton of material at nominal zero moisture content.

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 in which 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 or patches of vegetation.

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.

British Thermal Unit (BTU): A unit of energy equal to about 1.06 kilojoules.

Built Environment: Man-made structures as opposed to the natural environment.

Built Out: In this case, a community with little space left for further development.

Burn Plan: Detailed document with specific information on prescribed burns. Used by the burn boss for implementing specific prescribed-burn (controlled-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, tree, or lower-growing stand of shrubs, which is formed by leaves, needles, and branches creating a continuous cover.

Cavities: Holes or openings, usually in a decayed area of a tree, where birds and animals may live.

Check Dams: Small barriers built across the direction of water flow to control sediment movement.

Chimney: A vertical cleft in topography, which may increase the intensity and/or speed of a fire.

Chip: To cut up slash materials into small pieces, or chips.

Chipping Program: A program where several individuals or communities share the resources associated with processing debris from fuel-reduction activities, including the chipper (the machine that creates the chips), staff, insurance, etc.

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

Climax Species: The terminal community in ecological succession capable of self-replacement under the prevailing climatic, edaphic, physiographic, biotic, and pyric conditions.

Closed Canopy: Occurs when the tops of trees or shrubs touch and blend together sufficiently to prevent direct sunlight from reaching the ground in most or all places.

Coarse Woody Material: Large-dimension wood, usually 20 inches in diameter or larger, found on the ground from fallen trees or downed branches.

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.

Collaborative: An open, inclusive process that assumes all participants have valuable knowledge and opinions,

and all of their comments are heard and considered. Collaboration does not mean consensus or ownership.

Colonize: In the plant world, the act of establishing populations in new sites, such as burned areas, by seed.

Community-Based Monitoring: The act of community members observing and noting ecological processes and the effects of their own actions (such as planting, mowing, and fuel reduction) in the area where they live.

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

Composite Decking: Deck boards manufactured from wood fiber and plastic to form a profile that requires less maintenance and generally has a longer lifespan than natural wood.

Composition: The percentage of each species that together comprise the life present in a given area.

Condition Class: This landscape designation is based on a relative measure describing the degree of departure (low, moderate, or high) from the historical natural fire regime.

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

Conservative Species: Refers to plant or animal species that are non-generalist. Conservative, sensitive species require very specific habitat niches and are generally uncommon, rare, or threatened.

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

Contour Falling: Cutting and placing trees along the slope contour. This is a treatment that utilizes positioned logs to help control erosion from water flow. Logs are offset on the slope contour to slow water by creating a meandering travel path.

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

Controlled Burning (or Prescribed Fire): A vegetation management practice that uses fire to improve habitat and/or reduce hazardous fuels. A plan for the prescribed burn must be written out and approved by fire department authorities, and specific requirements must be met before commencing burning. *This practice is not recommended in this CWPP.*

Convection Column: Heat generated from a fire rises in a column to varying heights above the flames, depending on the size of the burn.

Cover: Any plants or organic matter that hold soil in place and/or grow over and create shade that provides wildlife with an area to reproduce and find protection from predators and weather.

Crop: The amount of fruits or seeds that a group of plants of one species yields in one growing season.

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

Crown Fire: A fire that spreads through the top of the vegetative canopy and is characteristic of hot fires and dry conditions. Crown fires are generally more complex to control than surface fires.

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

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

Dappled Light: When the vegetative canopy has small openings, filtered sunrays project through the treetops onto the ground.

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 has been entirely extinguished.

Debris: The vegetative remains from thinning or fuel-reduction operations, also known as slash.

Decay Classes: Rotting wood is categorized based on the level of decomposition, broken into five classes. For example, decay class 1 is structurally intact (with bark attached) ranging to decay class 5, which is very soft, disintegrated wood.

Defensible Fuel Profile Zone: This term is used by federal and state land management agencies to describe a larger shaded fuelbreak normally a quarter-mile in width. The object of creating such a large break is to reduce the fuel ladder (both horizontal and vertical) and to add space between the treetop canopy in order to

keep the fire out of the canopy and on the ground.

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

Defensible Space Zone: The 100-foot zone around the home or other structure.

Discing: Cultivating or roto-tilling the soil.

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

Disturbance Factors: Various aspects that influence changes to the environment, both human-caused and natural occurrences, such as agriculture, logging, and other development, and fire, wind, floods, and earthquakes.

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

Diurnal: Belonging to or active during the day (opposite of nocturnal).

Doghair: An excessively dense stand of trees. An example is an acre with 35,000 trees, all smaller than 7 inches DBH.

Dominant: The species or individual 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, or the shrub species most abundant in the local understory.

Downed Woody Debris: The remains of dead trees, branches, and various woody brush that sit on the ground; generally refers to trunks of downed 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 topographic channel that is generally shallower than a ravine.

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

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.

Drip-Line Thinning: Clearing ladder fuels under the drip-line circumference of a leave-tree. *This practice is not recommended in this CWPP.*

Duff: A layer on top of the soil made up of mostly fine (small) decomposing organic matter such as leaves, needles, and small branches.

Early-Seral Species: Species that start growing in natural succession soon after a disturbance (fire or logging). These can include shrubs (such as ceanothus) and hardwoods, usually in tree form.

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

Ecosystem Functions: The processes and interactions that occur between organisms and the physical environment.

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

Edaphic: A general term referring to characteristics of the soil, often used to describe plant communities that are found only on specific soil conditions.

Ember Attack: Sparks and small flaming bits blown by the wind during a firestorm. These can accumulate at intersections between horizontal and vertical members on the outside of a 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 the home.

Ember Interceptors: An ignition-resistant object or plant, such as coast live oak, that interrupts the flight of embers during a firestorm, often slowing their descent long enough for them to burn out before reaching

surface fuels below. In some wildfires this process appears to have resulted in reduced frequency of ignitions of urban fuels (homes) beneath ember interceptors (mature oaks that had been cleared of dead wood).

Embers: Small glowing or smoldering pieces of wood or other organic debris, often dispersed ahead of a fire (also known as firebrands).

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

Endangered Species: A population of organisms classified as such by the state or federal government as being at risk of becoming extinct because it is few in number and/or threatened by changing environmental or predation parameters.

Engine Strike Team: A specified number and type of fire engine assembled for a tactical assignment on an emergency.

Environmental Compliance: To meet the environmental regulations, laws, standards, and requirements enacted.

Environmentally Sensitive Habitat Area (ESHA): An area protected from human activities or development due to the existence of rare or especially valuable and/or vulnerable plants, animals, and habitats.

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

Epicormic Branching: Branches of a plant that shoot sporadically from the main stem rather than from the top. May be caused by disturbance.

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 for getting out of harm's way in a fire situation. The route should be well understood in advance of crisis by all participants. 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 at which fires tend to stop burning.

Extirpated: A species is considered extirpated when it no longer exists in the wild in a certain area.

Exurban: A region lying beyond the suburbs of a city.

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

Feather or Feathering: A process that reduces the appearance of change between treated and untreated sites by gradually softening the transition (gradually doing less and less manual work on an area as one moves away from the primary treatment site).

Federal Responsibility Area (FRA): An area where fire protection responsibility and liability is federal.

Firebrand: 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 stream could also serve as a firebreak. *See Fuelbreak for the difference between the two.*

Fireline Intensity: The heat energy released by the fire at the forefront of the fire.

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

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

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. Opportunistic species benefit from fire and the openings it can create in a woodland; this is part of their adaptation.

Fire-Adapted Vegetation: Vegetation that has adapted to fire as a disturbance factor and can generally survive wildfire. In the case of chaparral vegetation, survival depends on fires occurring only every 25 years or more, and it is not adapted to more frequent fire.

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

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

Fire-Dependent: Plant communities and specific habitat types that have evolved to rely on fire in order to exist and/or thrive.

Fire-Dependent Vegetation: Vegetation that depends on some fire for its long-term survival.

Fire Ecology: The study of fire and its relationship to the physical, chemical, and biological components of an ecosystem.

Fire Flow: The flow rate of a water supply, measured at 20 pounds per square inch (PSI) (137.9kPa) residual pressure, that is available for fire fighting. When water supply tanks are approved for use, the flow rate of a water supply may be at draft.

Fire Followers: Plants that flourish after a fire; seeds from long-lived seedbanks typically germinate abundantly in ashy soils.

Fire-Free Zone: A 5-foot minimum zone around the home that is free of all fuels.

Fire Hazard: The amount, condition, and structure of fuels that will burn if a fire enters an area.

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 ecosystem's 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 Protection (a.k.a. Fire Suppression): Fire-fighting tactics used to suppress wildfires. Fire-fighting efforts in wildland areas require different techniques, equipment, and training from the more familiar structure fire-fighting found in populated areas.

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-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.

Fire-Resistant: A material, substance, or structure that is difficult to ignite by fire and burn.

Fire-Resistant Building Materials: Construction materials that are resistant to ignition when exposed to radiant heat or flames. Examples include clay tile roofs, metal roofing, and stucco siding.

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

Fire Risk: The combination of vegetation, topography, weather, ignition sources, and fire history that leads to fire potential and danger in a given 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. www.firesafecouncil.org.

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

Fire Safe or Fire Safety: The act of preparing something—a home, neighborhood, or community—to survive a wildfire; the ability of an object to survive fire.

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

Fire Severity: A qualitative indicator of the effects of fire on an ecosystem. Fire severity reflects the amount of heat released by a fire, and therefore it is also dependent on fuels and fire behavior.

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

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

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

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.

Flanks: Slope areas on both sides below a ridgetop.

Flashy: An adjective that when applied to fuel means that it ignites readily and is consumed rapidly when dry.

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

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

Forbs: Herbaceous flowering plants, other than grasses.

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 silvicultural thinning practices and other forest restoration activities (such as controlled burning) that 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. Used as a noun, can also refer to one of the patches.

Fragmentation: The transformation of contiguous stretches of forest or vegetation into one or more patches of smaller size, which can occur by natural means such as fire, disease, etc.; by management practices such as timber harvesting; or changing land uses such as development.

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 length and intensity; as distinguished from a *firebreak*, where all fuels are removed to bare mineral soil for fire suppression.

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

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 vertically toward the crowns of trees or horizontally into other fuels.

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

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

Fuel-Load Conditions: The amount of combustible material (both dead and live fuels). It relates to a site's *fuel model (see definition below and in Chapter 3)*, slope, aspect, and the fuel moisture content.

Fuel Model: A standardized description of fuels available to a fire based on the amount, distribution, and continuity of vegetation and wood. Fuel models distinguish among vegetation (such as tall and short chaparral, or timber with and without an understory), as well as describe the arrangement and amount of vegetative fuels. Fire managers use fuel models within the Fire Behavior Prediction System to analyze the wildfire environment. *See Chapter 3 for more information.*

Fuel Management: The management of fuels for fire safety or ecosystem health. Examples include prescribed burns and creation of firebreaks.

Fuel Modification: In Los Angeles County, the establishment of a plan to be approved by the fire department that helps protect homes and neighborhoods by requiring vegetation planted in zones around structures to be selected from an approved list and identifies areas that require fuel reduction or other modifications.

Fuel Moisture: The amount of water in vegetation, typically expressed as a percentage, and having a large effect on the rate of spread of fires.

Fuel Reduction/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.

Future Desired Condition: The short-term and long-term goals desired from management activities on a property/area. It is important to keep the Conservation Principles in mind (*see Chapter 1)* and Best Management Practices *(see Chapter 5)* when designing these activities.

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

Geomorphology: The study of the evolution and configuration of landforms.

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.

GIS (Geographic Information System): A program for storing and manipulating geographical information on a computer; very useful for landscape-level planning efforts.

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

Ground Fuels: The layer of combustible materials that exists below the layer of surface litter. This layer includes plant roots, duff, etc. These materials can combust and burn without direct contact with a flame when embers drop from above.

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

Habitat: An ecological or environmental area that is inhabited by a particular species of animal(s), plant(s), or other type of organisms.

Habitat Conditions: The conditions needed by local wildlife to survive, including food, water, cover, and nesting sites.

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

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

Hardening/Harden Homes: This term refers to improving a building’s resistance to fire, such as updating a roof with noncombustible roofing material; the goal is to make the structure survivable in fire.

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

Headwall: Steep upper sides of a drainage where fire can move quickly.

Heart-Rot Decay: Fungus-caused decay of a tree's heartwood (interior wood). Trees are infected when fungal spores enter tree wounds or dead branch stubs and encounter conditions favorable for spore germination. *See Conks.*

Heat Output: The total amount of heat that a fire releases 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 a 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 winter.

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

Heterogeneity: An object or system consisting of multiple items having a large number of structural variations.

High Pruning: Cutting of both dead and live branches 10 to 15 feet up from the base of the tree. This is done on larger trees to separate the fuel connectivity from the ground to the crown of a tree.

Historic Natural Condition: The climax environmental condition of a property/area that occurred in the past, before fire suppression and industrial activities. Old photos, settlers' 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.

Home Ignition Zone: The home and the area out to approximately 100 feet, where local conditions affect the potential ignitability of a home during a wildfire.

Home-to-Home Ignitions: The event of combustion initiation that creates fire as embers pass from one home to another. The action of one home igniting adjacent homes.

Hydrology: The science that describes 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.

Ignitions: The event of combustion initiation that creates fire.

Ignition Specialist: A trained professional whose expertise is 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. They have met all necessary requirements to perform firing applications.

Ignition Zone: The place where combustion is initiated.

Ingress-Egress: Roads and other avenues to enter and leave a property. Also refers to the act or right to come in or go through, as in entering a property (ingress), and 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 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.

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, arundo, tamarisk, and Scotch broom.

Jackpots: 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.

Knox-Box: A small safe typically mounted on a wall or post that holds the keys to a building or gate for firefighter or EMT use in emergency situations.

Ladder Fuel Continuity: The presence of connected or adjacent fuel materials in a fire's path that allow the fire on the ground to extend in a vertical direction toward the crowns of trees.

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

Landscape: The visible features of an area of land, including topography, water bodies, vegetation, human elements such as land uses and structures, and transitory elements such as lighting and weather conditions.

Landing: In logging or fuel-reduction work, a place where logs and branches are taken in order to be processed by a chipper.

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.

Leap-frog development: This occurs when development skips over available land and instead focuses on larger or more desirable and often isolated areas.

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.

Lignotubers: A starchy enlarged root of a woody plant that stores water and nutrients as a survival mechanism during fire events.

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 or shrub.

Live Crown Percentages: The proportion of the height of the tree or shrub on which live branches and foliage are present.

Local Responsibility Areas (LRA): An area where fire protection is provided by local sources such as city fire departments, fire protection districts, and counties. Legal responsibility is at a local level, not at the state or federal level.

Lollipop: A woody plant that has had the lower branches removed from the main stem, making it look similar when finished to candy on a stick.

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.

Mastication: The grinding, shredding, chunking, or chopping of vegetation by heavy machinery.

Meadows and Seeps: Areas of more or less dense grasses, sedges, and herbs that thrive, at least seasonally, under moist or saturated conditions. They occur from sea level to treeline and on many different substrates. They may be surrounded by grasslands, forests, or shrublands. A seep is an area where water rises from an underground source to the surface and creates a wet area.

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 treeline 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.

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

Mosaic Thinning Regime: A system of thinning to create patches and openings that emulate the structural composition created by a wildfire.

Mulch: A material (such as decaying leaves, bark, or compost) spread around or over a plant to keep invasive weeds down, to reduce moisture loss and/or to enrich and insulate the soil; as a verb, the application of such material. In the Santa Monica Mountains, only native vegetation should be used as mulch.

Mutual Aid: An agreement among emergency responders to lend assistance across jurisdictional boundaries. This may occur due to an emergency response that exceeds local resources, such as a disaster or a multiple-alarm fire.

Mycorrhizal: The mutually beneficial relationship between plant roots and fungi "roots," a.k.a. 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: Disruptions, 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.

Niche: A species or population's role and/or 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 after fires 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: The topmost trees in a forest that compose the upper canopy layer; compared to the understory, which is the lower woody or herbaceous layer underneath treetops.

Overstory Trees: Trees that form the uppermost layer of the canopy in a forest.

Patch Burning: A method of prescribed burning where patches are burned to prepare an area for planting or to reduce fuels, the objective of the latter being to form an obstruction to future fires. *This practice is not recommended in this CWPP.*

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.

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

Pathogens: Insects or disease that can affect a site or individual plant.

Perennial: Plants that live from year to year. In reference to water, a stream that flows year-round during a typical year. May have some flux in a drought year.

Perennial Stream: A stream or watercourse that has water all year round.

Permeability: In this case, a condition whereby fire can spread through a community with minimal negative impact.

Photo-Point Monitoring: By utilizing a specific, identifiable point on a property from where photos are taken over time, it's possible to use the same view to compare and monitor changes.

Phos-Chek: A fire retardant (long-term) foam or gel applied to homes and vegetation ahead of wildfires. May come in the form of powder or concentrated liquid that needs water added to it.

Pilot Ignition Piles: Small piles of primarily small fine fuels such as branches, dead materials, and organic matter.

Pistol Butts: Trees 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 in response to environmental conditions.

Pole-Sized: Generally younger trees with a trunk diameter between 4 and 8 inches.

Pre-Fire Plan: A plan to address fire issues before ignition, including fire prevention actions such as hazardous fuel reduction. Occasionally these plans may extend into the suppression phase of fire protection and detail such items as evacuation routes, fuelbreaks, and fire-fighting strategies.

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 (or Controlled Burn): A management practice that uses fire to improve habitat or reduce hazardous fuels. A plan for the prescribed burn must be written out and approved by the local fire department, or CAL FIRE, depending on the location, and specific requirements must be met before commencing burning. *This practice is not recommended in this CWPP.*

Present Condition: The environmental conditions that occur on a property/area at the present time.

Productive: A term used for land or forests that are growing efficiently and in a vigorous manner.

Pruning: The act of cutting back the unwanted portions of a plant, or cutting for the purpose of enhancing growth.

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 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/professional_foresters_registration/about_registration/.

Relative Humidity: A measure of moisture in the air. If the humidity is 100%, the air is completely saturated with moisture. If the humidity is less than 20%, the air is very dry. When the air is dry, it absorbs moisture from the fuels in the forest, making them more flammable.

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 or ecosystem 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). In a forest, the range of size of the skips and gaps is from a few hundred square feet to up to an acre where site conditions dictate. In shrub systems the area is much smaller.

Residence Time: How long the flaming front of a fire 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.

Risk Assessment: The process of identifying and evaluating assets at risk.

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 the beginning stages of fire suppression 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 excessive 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.

Sense of Place: A feeling and understanding of the unique place in which one lives, derived from the mix of natural and cultural features in the landscape and community. Sense of place can also mean rooting and defining oneself in terms of a given piece of land, watershed, or bioregion.

Sensitive Species: A plant or animal species that can tolerate a small range of resources and environmental situations, or habitat. These species raise concerns about population numbers and may be recognized locally as rare, or listed as Threatened or Endangered by the state or federal Endangered Species Act.

Sequential Entries: Working in a given area several times over the course of years to spread out the impacts of treatments.

Serotinous: A condition where seeds are retained within cones that only open and release seeds en masse following fire. The mechanism varies, with some cones sealed by resin and waxes that melt during the fire, allowing the cones to open afterwards, releasing the seed.

Shade-Tolerant: Attribute of a species that is able to grow and mature normally in and/or prefers shaded areas.

Shaded: Blocked from light.

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.

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: The wood debris left on the ground after pruning, thinning, or vegetative clearing—may include branches, bark, chips, or logs.

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.

Slope: A percentage or degree change in elevation over a defined distance that measures the steepness of a landscape.

Slope Stability: The degree to which a slope is susceptible to erosion and slides, or the measure of its overall stability.

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.

Social Capital: The individual and communal time and energy that is available for such things as community improvement, social networking, civic engagement, personal recreation, and other activities that create social bonds between individuals and groups.

Soil Crust: A hard crust forming on exposed soils, usually found in semiarid and arid environments.

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.

Species Composition: The combination of species found in a particular site.

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.

Spur: A road branching off the main road to provide access to a designated area.

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

Stand: A group of trees or shrubs with similar species composition, age, and condition that makes the group distinguishable from other trees in the area.

Stand-Replacing Fires: A fire that kills the majority of the dominant aboveground vegetation in an ecosystem and encourages the start of regrowth.

Stand Structure Model: The spatial arrangement of the forest stand, describing the density and connectivity of the understory, mid-story, and overstory vegetation.

State Responsibility Area (SRA): An area that has fire protection provided at the state level. Incorporated cities and federal land do not fall in this area. Legal responsibility is at a state level.

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.

Stroke Size: In this case, the minimum required inch width (3/8) of the brush used for letters, numbers, and symbols for street and road signs.

Structural Ignitability: The ease with which a home or other structure ignites.

Structural Protection Zone: Immediate 30-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.

Subsidence: Settling of the Earth's surface downward, creating a sinking motion.

Surface Fire: A fire at the ground level 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 6 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 effects of weather for animals. For example, deer may move into riparian areas with 70% canopy to avoid very hot weather.

Thicket: A dense area of brush containing close-growing plants. Provides habitat to wildlife but may be difficult for humans to pass through.

Thinning: The act of removing a percentage of vegetation to encourage an open space and healthy growth for the remaining vegetation.

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."

Threatened Species: Any species including animals, plants, fungi, etc., that is vulnerable to extinction in the near future, and is so classified by the state or federal government.

Tillering: The process by which new aerial shoots emerge from the base of the plant. To send forth shoots from the base of grass, for example.

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 controlled burning (or prescribed fire) operation performed by a forestry or fire crew, where large quantities of forest treatment slash are arranged in hand piles and ignited with drip torches simultaneously 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.

Type Conversion: The unintended replacement of native plant communities due to various disturbances such as more frequent and unnatural fires. Typically replacement is by invasive or non-native plants.

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 plant layer 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 steep slopes or crumbly soils.

Untreated: Not altered from a natural or original state; unprocessed, e.g. no fuel-reduction or defensible-space activities.

Urban Fuels: Any flammable materials within a landscape as a result of urban development. Examples include urban structures, landscaping, and urban debris such as wood piles, trash dumps along roadsides, and die-back from weedy invaders.

Variable-Density Thinning: Thinning or selectively cutting trees or shrubs in a manner to restore repeating variability or redundancy in an ecosystem. This technique ensures diversity in stand density and canopy cover.

Variable Density Treatment: Silvicultural thinning practice where some portions of a stand are left lightly or completely un-thinned ("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 similarly applied in a typical variable-density prescription. This practice is also known as "free thinning."

Vascular: Plants that have lignified tissues for conducting water, minerals, and photosynthetic products through the plant.

Vernal Pool: Seasonal amphibious environments dominated by annual herbs and grasses adapted to germination and early growth under water. Spring desiccation triggers flowering and fruit set, resulting in colorful concentric bands around the drying pools.

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).

Viewscape: The line-of-sight from one location to another in its entirety or a portion of it.

Viewshed: The landscape or topography visible from a geographic point, especially that having aesthetic value.

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.

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. Using this tool is called "weed-eating," "weed-whacking," or "weed-whipping."

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.

Wildfire/Fire Risk: The combination of vegetation, topography, weather, ignition sources, and fire history that leads to the probability that something will ignite and/or burn.

Wildland-Urban Interface (WUI): The area where wildlands and communities converge, often assumed to be at high risk of wildfire, which can be due to increased sources of human-caused ignitions.

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.

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

Windthrow: Trees that are uprooted by wind events. Formerly protected stands whose edges are opened up become vulnerable to this effect.

Yarding: A technique for moving felled trees, limbs, and brush by hauling them to the road or landing with a cable and tractor.

Reference II–Reference Documents and Internet Resources[1]

Part I: Chapters

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California Department of Fish and Game: www.dfg.ca.gov/wildlife/nongame/t_e_spp/

California Department of Forestry and Fire Protection: www.fire.ca.gov/education_homeowner.php

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California Invasive Plant Council: www.cal-ipc.org

California Native Plant Society: www.cnps.org/cnps/nativeplants

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Chapter 2 – Santa Monica Mountains Fire-Safe Planning Process

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Chapter 3 – Wildfire: Current Environment and Behavior

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Part III: Appendices

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