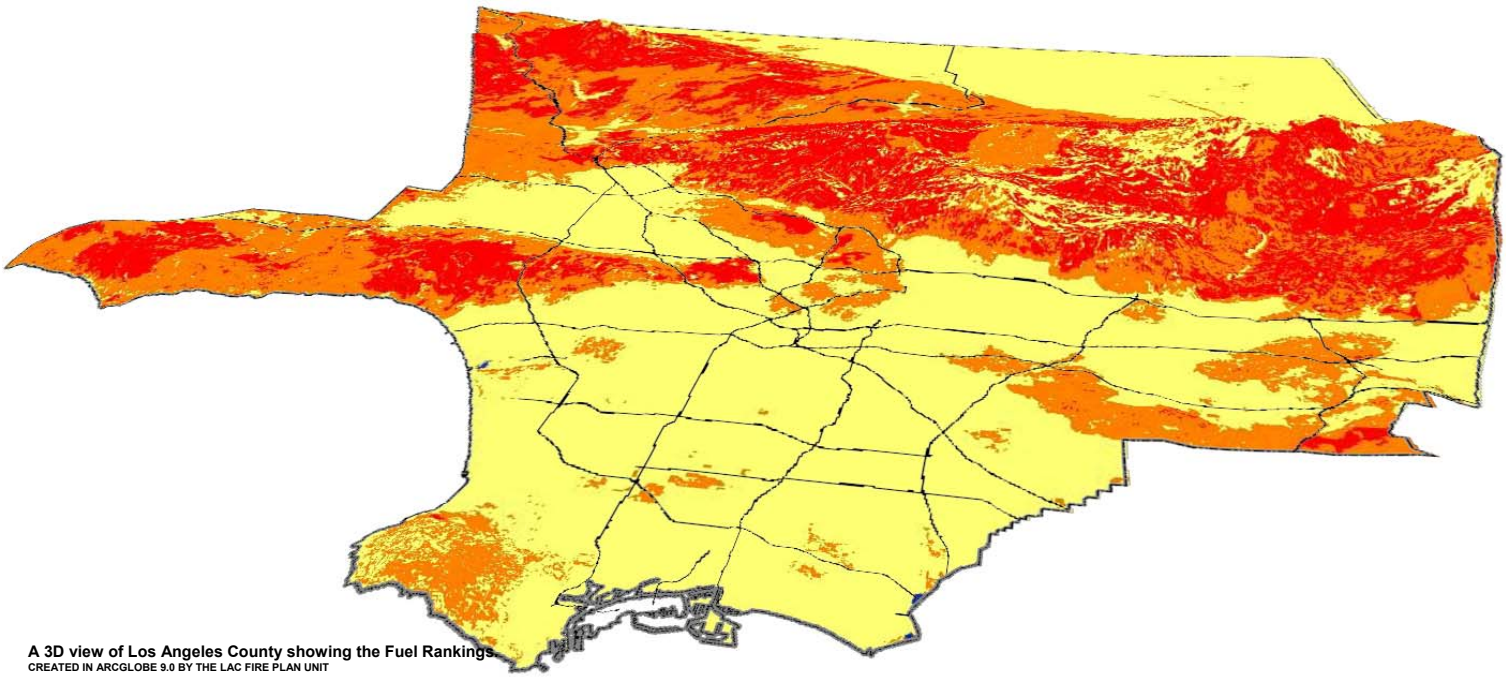
COUNTY OF LOS ANGELES FIRE DEPARTMENT



A 3D view of Los Angeles County showing the Fuel Rankings
CREATED IN ARCGLOBE 9.0 BY THE LAC FIRE PLAN UNIT

PRE-FIRE MANAGEMENT PLAN

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Acknowledgements and Disclaimer

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Fire management plans from the following agencies were used as guides for this plan: California Department of Forestry and Fire Protection, Santa Barbara County Fire Department, Ventura County Fire Protection District, Orange County Fire Authority, CDF-Butte County Unit.

Executive Summary

THE CALIFORNIA FIRE PLAN

The State Board of Forestry and the California Department of Forestry and Fire Protection (CDF) have drafted a comprehensive update of the fire plan for wildland fire protection in California. The planning process defines a level of service measurement, considers assets at risk, incorporates the cooperative inter-dependent relationships of wildland fire protection providers, provides for public stakeholder involvement, and creates a fiscal framework for policy analysis. The County of Los Angeles Fire Department is one of six Contract Counties that maintain a contractual relationship with CDF and utilizes the California Fire Plan within Los Angeles County as the primary wildland fire protection plan.

Goals and Objectives
The overall goal is to reduce total cost and losses from wildland fire in California by protecting assets at risk through focused pre-fire management prescriptions and increased initial attack success.

The California Fire Plan has five strategic objectives:

- To create wildfire protection zones that reduces the risks to citizens and firefighters.
- To assess all wildlands. Analyses will include all wildland fire service providers – federal, state, local government and private. The analysis will identify high risk, high value areas, and develop information on and determine who is responsible, who is responding, and who is paying for wildland fire emergencies.
- To analyze and identify key policy issues and develop recommendations for changes of public policy. Analysis will include alternatives to reduce total cost and losses by increasing the fire protection system effectiveness.
- To have a strong fiscal policy focus and monitor the wildland fire protection system in fiscal terms. This will include all public and private expenditures and economic losses.
- To translate this analyses into public policy.

Fire Plan Framework
Five major components will form the basis of an ongoing fire planning process to monitor and assess California's wildland fire environment.

Wildfire Protection Zones
A key product of this Fire Plan is the development of wildfire safety zones to reduce citizen and firefighter risk from future large wildfires.

Initial Attack Success
The fire plan defines an assessment protection system for wildland fire. This measure can be used to assess the department's ability to provide an equal level of protection to lands of similar type, as required by Public Resources Code 4130. This measurement is the percentage of fires that are successfully controlled before unacceptable cost is incurred. Knowledge of the level of service will help define the risk to wildfire damage faced by Public and private assets in the wildland.

Assets Protected
The plan will establish a methodology for defining assets protected and their degree of risk from wildfire. The assets addressed in the plan are citizen and firefighter safety, watersheds and water, timber, wildlife and habitat (including rare and endangered species), unique areas (scenic, cultural, and historic), recreation, range, structures, air quality. Stakeholders - national, state, local, and private agencies, interest groups, etc., will be identified for each asset at risk. The assessment will define the areas where assets are at risk from wildfire, enabling fire service managers and stakeholders to set priorities for pre-fire management project work.

Pre-fire Management
This aspect focuses on system analysis methods that assess alternatives to protect assets from unacceptable risk of wildland fire damage. Projects include a combination of fuels reduction, ignition management, fire-safe engineering activities, and forest health to protect public and private assets. The priority for projects will be based on asset owners and other stakeholders' input and support. Pre-fire management prescriptions designed to protect these assets will also identify who benefits and who should share in the project cost.

Fiscal Framework
The Board of Forestry and Fire Protection and CDF are developing a fiscal framework for assessing and monitoring annual and long-term changes in California's wildland fire protection systems. State, local and federal wildland fire protection agencies, along with the private sector, have evolved into an interdependent system of pre-fire management and suppression forces. As a result, changes to budgeted levels of service of any the entities directly affect the others and the services delivered to the public. Monitoring system changes through this fiscal framework will allow the Board of Forestry and Fire Protection and CDF to address public policy issues that maximize the efficiency of local, state, and federal firefighting resources.

The Fire Plan framework applications:

The Fire Plan framework identifies for state, federal, and local officials and for the public those areas of concentrated assets and high risk.

- 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 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.

Description of the County of Los Angeles and the County of Los Angeles Fire Department

Los Angeles County Overview

Los Angeles County, one of California's original 27 counties, was established on February 18, 1850. Originally the County occupied a comparatively small area along the coast between Santa Barbara and San Diego, but within a year its boundaries were enlarged from 4,340 square miles to 34,520 square miles, an area sprawling east to the Colorado River.

In 1853, a bill was introduced to divide the eastern portion of Los Angeles County and San Bernardino County was formed. During subsequent years, Los Angeles County slowly ebbed to its present size, the last major detachment occurring in 1889 with the creation of Orange County. Los Angeles County remains one of the nation's largest counties with 4,081 square miles, an area 800 square miles larger than the combined area of the states of Delaware and Rhode Island. Of the 4,081 square miles, 1,741 square miles are flat, 1,875 square miles are mountains, 246 square miles are comprised of hills, there are 131 square miles of island (Santa Catalina and San Clemente), 59 square miles of mountain valleys, and 28 square miles of marshland.

Los Angeles County includes the islands of San Clemente and Santa Catalina. It is bordered on the east by Orange and San Bernardino Counties, on the north by Kern County, on the west by Ventura County, and on the south by the Pacific Ocean. Its coastline is 81 miles long.

It has the largest population (10,047,300 as of July 2003) of any county in the nation, and is exceeded by only eight states. Approximately 28 percent of California's residents live in Los Angeles County.

The Board of Supervisors, created by the state Legislature in 1852, is the governing body. Five supervisors are elected to four-year terms by voters within their respective districts. The Board has executive, legislative and quasi-judicial roles. It appoints all department heads other than the assessor, district attorney and sheriff, which are elective positions.

As a subdivision of the state, the County is charged with providing numerous services that affect the lives of all residents. Traditional mandatory services include fire protection, law enforcement, property assessment, tax collection, public health protection, public social services and relief to indigents. Among the specialized services are parks and recreation, lifeguard, flood control, water conservation, forestry including brush clearance, fuel modification, vegetation

management, environmental review, and many diversified cultural activities. There are 88 cities within the County, each with its own city council. All of the cities, in varying degrees, contract with the County of Los Angeles to provide municipal services. Thirty-seven cities contract for nearly all of their municipal services.

More than 65 percent of the County is unincorporated. For the one million people living in those areas, the Board of Supervisors is their "city council" and County departments provide the municipal services. The 2003-2004 County adopted budget is approximately $17.127 billion. Twenty-six percent of the revenue comes from the state, 30% from the federal government, 15% from property taxes, and 29% from other sources. The largest percentage of the budget, 27%, goes to pay for social services, while 20% is spent on public protection and 25% on health services.

The County, with 92,687.5 budgeted employees, is the largest employer in the five-county region. Of these, 26,304 of the positions are in law and justice; 26,819.9 are in health services; and 20,518.5 are in social services. The spectrum of job listings, from clerk to truck driver, sanitarian to psychiatrist, scientist to scuba diver, and attorney to helicopter pilot, encompasses nearly every trade and profession and illustrates the complexity of County government.

The County of Los Angeles Fire Department

The history of the County of Los Angeles Fire Department started in the early 1900s with the formation of two separate departments. The County Forester, in charge of protecting forest lands and responsible for planting and maintaining the landscape, and the County Fish and Game Warden, who was assigned the additional position of County Fire Warden.

In 1919, over 135,000 acres of wildland fires blackened the County of Los Angeles prompting the merging of these two separate departments and resulting in a greater emphasis on fire suppression. Between September 1923 and 1925, 31 separate fire districts were formed; the first two being in Signal Hill and Santa Monica Canyon.

In 1956, the late Fire Chief Emeritus Keith E. Klinger created the visionary Lakewood Plan, allowing incorporated cities within the County to contract with the Department for fire protection services. Today, 57 cities contract with the County of Los Angeles Fire Department which staffs a total of 163 engine companies, 31 truck companies, 79 paramedic units, and numerous other pieces of specialized apparatus.

The County of Los Angeles Fire Department is credited with the creation of the nation's second Firefighter Paramedic Program and the nation's first 911 Emergency Calling System. Throughout its history, the Department has emerged as a leader in the fire service on local, regional and national levels, growing to become the nation's second largest fire protection agency.

Operating 9 divisions, 20 battalions, 159 fire stations and 11 fire suppression camps, the County of Los Angeles Fire Department answers over 234,000 emergency calls annually. Additionally, the Department has Planning, Information Management, Fire Prevention, Air and Wildland, Lifeguard, Forestry and Health Hazardous Materials Divisions which provide valuable services to the more than 3.5 million people who reside in the 1.1 million housing units located throughout the Department's 2,278 square mile area.

The County of Los Angeles Fire Department currently has 159 fire stations, 235 fire engines, 21 ladder trucks, 20 quints, 85 paramedic squads, 11 wildland fire suppression camps, 8 bulldozers, 7 helicopters, 23 Prevention Offices, 12 Forestry Units and numerous other response vehicles and facilities. The Department serves 57 incorporated, as well as the unincorporated areas of the County.

Wildland Fire Protection Strategy

Prevention

The most effective way to limit damage and loss due to wildfire is to prevent all but the most blatant ignitions due to arson or unforeseeable circumstances. The focus of the entire Department is on prevention through educational programs, development and enforcement of fire codes and building codes in the Very High Fire Hazard Severity Zones, Pre-Fire Planning, Vegetation Management, Brush Clearance, Environmental Review and Fuel Modification Programs. These programs are focused on awareness and mitigation of fire causes, fire spread potential, total costs and effects of fire damage associated with the protection of life, property and the environment. The Department's Fire Plan Unit coordinates the efforts and activities of these programs with the intent of creating efficient and timely Pre-Fire Management projects.

Vegetation Management

Vegetation management, as it relates to wildland fire, refers to the total or partial removal of high fire hazard grasses, shrubs, or trees. This includes thinning to reduce the amount of fuel and modification of vegetation arrangement and distribution to disrupt fire progress. In addition to fire hazard reduction, vegetation management has other benefits. These include increased water yields, improved habitat for wildlife, reduction of invasive exotic plant species, and open access for recreational purposes.

The Vegetation Management Program (VMP) is a cost-sharing program that focuses on the use of prescribed fire, mechanical, biological and chemical means, for addressing wildland fire fuel hazards and other resource management issues on State Responsibility Area (SRA) and Local Responsibility Area (LRA) lands. The use of prescribed fire mimics natural processes, restores fire to its historic role in wildland ecosystems, and provides significant fire hazard reduction benefits that enhance public and firefighter safety.

VMP allows private landowners to enter into a contract with CDF to use prescribed fire to accomplish a combination of fire protection and resource management goals. The Forestry Division's Vegetation Management Unit and the Air and Wildland Division's Prescribed Fire Office implement the VMP projects which fit within the Department's priority areas (e.g., those identified through the fire plan) and are considered to be of most value to the County will be completed. The Vegetation Management Program typically treats about 40,000 acres each year statewide.

Brush Clearance

The Brush Clearance Program is a joint effort between the County of Los Angeles Fire Department and the County of Los Angeles Department of Agricultural Commissioner/Weights and Measures, Weed Hazard and Pest Abatement Bureau (Weed Abatement Division). This unified enforcement legally declares both improved and unimproved properties a public nuisance, and where necessary, requires the clearance of hazardous vegetation. These measures create "Defensible Space" for effective fire protection of property, life and the environment. The Department's Brush Clearance Unit enforces the Fire Codes as it relates to brush clearance on improved parcels, coordinates inspections and compliance efforts with fire station personnel, and provides annual brush clearance training to fire station personnel.

Fuel Modification

The Fuel Modification Program objective is to create the Defensible Space necessary for effective fire protection in newly constructed and/or remodeled homes within the Department's Very High Fire Hazard Severity Zones (VHFHSZ). Fuel modification reduces the radiant and convective heat, and provides valuable defensible space for firefighters to make an effective stand against an approaching fire front. Fuel modification zones are strategically placed as a buffer to open space, or areas of natural vegetation and generally would occur surrounding the perimeter of a subdivision, commercial development, or isolated development of a single-family dwelling.

The fuel modification plan identifies specific zones within a property which are subject to fuel modification. A fuel modification zone is a strip of land where combustible native or ornamental vegetation has been modified and/or partially or totally replaced with drought-tolerant, low-fuel-volume plants.

The Fuel Modification Unit provides guidelines and reviews the landscape and irrigation plans submitted by the property owner for approval before construction or remodeling of a structure. The fuel modification plans vary in complexity and reflect the fire history, the amount and type of vegetation, the arrangement of the fuels, topography, local weather patters, and construction, design and placement of structures.

Environmental Review

The Environmental Review Unit works with the County of Los Angeles Department of Regional Planning in implementing existing environmental ordinances. The unit personnel review all County Oak Tree Permit applications submitted to the Department of Regional Planning and develop recommendations for implementation. Additionally, the unit personnel produce environmental documentation and recommendations such as non-significant impact documents, negative declarations and mitigation measures consistent with the California Environmental Quality Act (CEQA) mandates for construction projects and developments. The Environmental Review Unit ensures that the statutory responsibilities of the County of Los Angeles Fire Department, Forestry Division are addressed in the project planning phase.

Passive Protection

When the inevitable wildfire does occur, the primary protection of life, property, and the environment will come from passive protection such as defensible space (fuel reduction/brush clearance), fire-resistive landscaping, fire-resistive construction and good housekeeping. Sufficient firefighting water sources must be on site for use by the property owner and/or the fire department. Moreover, residents must have the means of self-evacuating and escaping danger through safe and sufficient egress routes while maintaining appropriate ingress routes for responding fire equipment. The sum effect of passive protection is a force multiplier for active firefighting resources. A single firefighting resource may protect many more structures when passive protection is properly employed. In some cases, firefighting resources may not be necessary at all thus freeing them for other uses.

Fire Suppression

The most effective time to control a wildfire is in the incipient stages when intensities are lower and the perimeter is small. The combined resource attack is a coordinated suppression effort including ground assets (engines, crews & dozers), aviation assets (fixed and rotary wing), passive fire protection measures, and command elements. Using in-place passive fire protection systems, incident commanders weave the varied active fire suppression assets into an aggressive and coordinated fire fighting effort.

STAKEHOLDERS

Who are the Stakeholders?

A stakeholder can be defined as any person, agency or organization with a particular interest, a stake in fire safety, and protection of assets from wildfires. The stakeholders already identified include federal, state, local, private agencies, or interest groups, with assets at risk from wildfire. The County of Los Angeles Fire Department is constantly attempting to involve as many stakeholders as possible in the development of the County of Los Angeles Fire Department Pre-Fire Management Plan. The process of identifying stakeholders and their interests is an ongoing process and will be evaluated continuously through the evolution of future pre-fire management plans. It is the goal of the County of Los Angeles Fire Department to participate with as many stakeholders as is possible and continually update planning efforts involving stakeholder input.

Other Agencies

Other agencies within and which County of Los Angeles Fire Department works closely with are:

Political Entity	Jurisdiction
LOS ANGELES COUNTY SUPERVISORS	LOCAL GOVERNMENT
LOS ANGELES COUNTY SHERIFF'S DEPARTMENT	LOCAL GOVERNMENT/ LAW ENFORCEMENT
LOS ANGELES, CITY OF	LOCAL GOVERNMENT/LRA FIRE PROTECTION
MONROVIA, CITY OF	LOCAL GOVERNMENT/LRA FIRE PROTECTION
ORANGE COUNTY FIRE AUTHORITY	LRA AND SRA FIRE PROTECTION
KERN COUNTY FIRE DEPARTMENT	LRA AND SRA FIRE PROTECTION
VENTURA COUNTY FIRE DEPARTMENT	LRA AND SRA FIRE PROTECTION
NATIONAL PARK SERVICE	PUBLIC LAND OWNERSHIP, DPA FIRE PROTECTION
CLAREMONT, CITY OF	CONTRACT CITY
WHITTIER, CITY OF	CONTRACT CITY
MALIBU, CITY OF	CONTRACT CITY
INDUSTRY, CITY OF	CONTRACT CITY
GLENDORA, CITY OF	CONTRACT CITY
LA CANADA FLINTRIDGE, CITY OF	CONTRACT CITY
SANTA CLARITA, CITY OF	CONTRACT CITY
WESTLAKE VILLAGE, CITY OF	CONTRACT CITY
CALABASAS, CITY OF	CONTRACT CITY
CALIFORNIA STATE PARKS	PUBLIC LAND OWNERSHIP, SRA FIRE PROTECTION
SANTA MONICA MOUNTAINS CONSERVANCY	PUBLIC LAND OWNERSHIP, RECREATIONAL USE
LOCAL WATER COMPANIES	WATER STORAGE & TREATMENT
NON-PROFIT OPEN SPACE DISTRICTS	LOCAL GOVERNMENT
PUBLIC UTILITY COMPANIES	STATE/COUNTY
CALIFORNIA DEPARTMENT OF FORESTRY AND FIRE PROTECTION	STATE/COUNTY
AIR QUALITY MANAGEMENT DISTRICT	STATE/COUNTY
CALIFORNIA DEPARTMENT OF FISH AND GAME	STATE/COUNTY
USDA-SOILS CONSERVATION	FEDERAL GOVERNMENT

U.S FISH AND WILDLIFE SERVICE	FEDERAL GOVERNMENT
BUREAU OF RECLAMATION	FEDERAL GOVERNMENT
USDA- FOREST SERVICE	FEDERAL GOVERNMENT
USDI- NATIONAL PARK SERVICE	FEDERAL GOVERNMENT
TOPANGA COALITION FOR EMERGENCY PREPAREDNESS	HOMEOWNER'S ASSOCIATION
MALIBU LAKESIDE	HOMEOWNER'S ASSOCIATION
MALIBOU LAKE MOUNTAIN CLUB	HOMEOWNER'S ASSOCIATION
BIG ROCK	HOMEOWNER'S ASSOCIATION
HORIZON HILLS	HOMEOWNER'S ASSOCIATION
GANESHA HILLS	HOMEOWNER'S ASSOCIATION
THE COUNTRY ESTATES	HOMEOWNER'S ASSOCIATION
COLBY RANCH	RELIGIOUS FOUNDATION

Fire Safe Councils

Monrovia Fire Safe Council

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Angeles Forest Valleys & Lakes Fire Safe Council

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Topanga Citizen's Firesafe Committee

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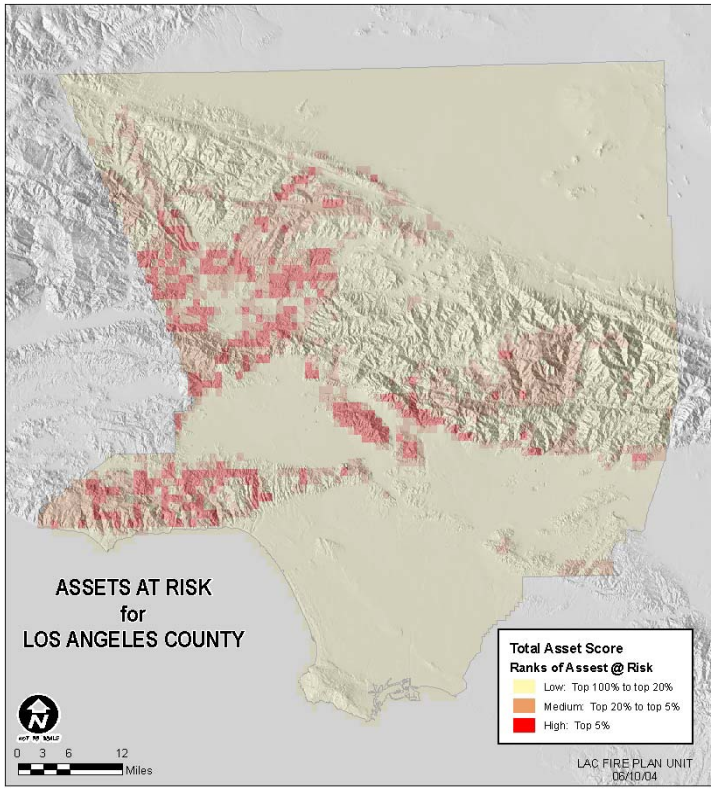
Assets at Risk

The assets addressed in the plan are citizen and firefighter safety, watersheds and water, timber, wildlife and habitat (including rare and endangered species), unique areas (scenic, cultural, and historic), recreation, range, structures, and air quality. As part of the overall fire plan process, assets will be addressed at two levels. First, generalized assets at risk need to be identified within the County to indicate what areas contain highly valuable assets. The areas with the highest combined asset values and fire risk are then targeted for pre-fire management

projects, particularly where such projects will reduce damage should a fire start in the project area during high fire hazard weather.

Second, as potential projects are identified, a subjective analysis will determine the degree to which the projects will reduce potential suppression costs and damage to assets. The asset framework and validation process will be refined as stakeholders are identified and are participating in the fire plan process. Diverse agencies have played a vital role in identifying the assets within Los Angeles County. Knowledge of the types and magnitudes of assets at risk to wildland fire, as well as their locations, are critical to fire protection planning. Given the limits on fire protection resources, they should be allocated, in part, based on the magnitude of the assets being protected.



This asset at risk map was calculated based on 7 critical assets found in Los Angeles County. These 7 assets include: Infrastructure, Water Supply, Fire/Flood Potential, Soils, Air Quality, Scenic Values, Recreation, Structure Densities, and the Ecosystems.

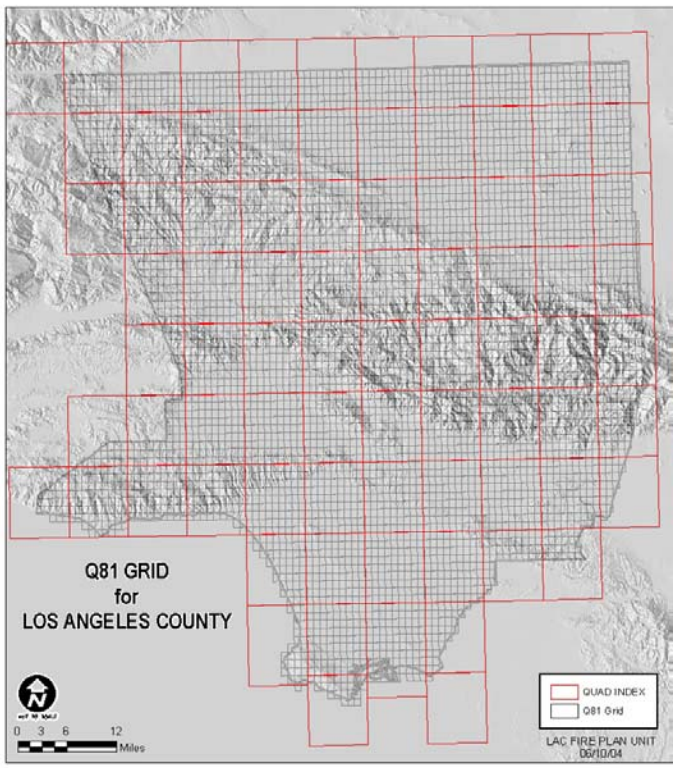
Knowledge of assets at risk is necessary to choose those pre-fire management projects that will provide the greatest benefit for a given amount of investment.

At this stage of development of the Pre-Fire Management Plan, the County of Los Angeles Fire Department's primary concern is reducing the fire risk and potential loss of the various assets described herein to provide for the safety and protection of life, property and the environment while reducing suppression costs.

Assets at Risk Table

ASSET AT RISK	PUBLIC ISSUE CATEGORY	LOCATION AND RANKING METHODOLOGY
FIRE FLOOD WATERSHEDS	PUBLIC SAFETY, PUBLIC WELFARE	WATERSHED WITH A HISTORY OF PROBLEMS OR PROPER CONDITIONS FOR FUTURE PROBLEMS. RANKS ARE BASED ON AFFECTED DOWNSTREAM POPULATIONS
SOIL	ENVIRONMENT	WATERSHED RANKED BASED ON EROSION POTENTIAL
WATER SUPPLY	PUBLIC HEALTH	1) WATERSHED AREA UP TO 20 MILES FROM WATER SUPPLY FACILITY (HIGH RANK); 2) GRID CELLS CONTAINING DOMESTIC WATER DIVERSIONS, RANKED BASED ON NUMBER OF CONNECTIONS; 3) CELLS CONTAINING DITCHES THAT CONTRIBUTE TO THE WATER SUPPLY SYSTEMS (HIGH RANK)
SCENIC VALUE	PUBLIC WELFARE	FOUR MILE VIEWSHED AROUND SCENIC HIGHWAYS, RANKED BASED ON POTENTIAL IMPACT TO VEGETATION TYPES (TREE VERSUS NON-TREE TYPES)
AIR QUALITY	PUBLIC WELFARE, PUBLIC HEALTH, ENVIRONMENT	POTENTIAL DAMAGES TO HEALTH, MATERIALS, VEGETATION AND VISIBILITY; RANK BASED ON VEGETATION TYPE AND AIR BASIN
HISTORIC BUILDING	PUBLIC WELFARE	FROM STATE OFFICE OF HISTORIC PRESERVATION; RANKED BASED ON FIRE SUSCEPTABILITY
RECREATION	PUBLIC WELFARE	UNIQUE RECREATION AREAS OF AREAS WITH POTENTIAL DAMAGE TO FACILITIES, RANK BASED ON FIRE SUSCEPTABILITY
STRUCTURES	PUBLIC WELFARE, PUBLIC SAFETY	RANK BASED ON HOUSING DENSITY AND FIRE SUSCEPTABILITY
NON-GAME WILDLIFE	PUBLIC WELFARE, ENVIRONMENT	CRITICAL HABITATS AND SPECIES LOCATION BASED ON INPUT FROM CALIFORNIA DEPT. OF FISH AND GAME AND OTHER STAKEHOLDERS
GAME WILDLIFE	PUBLIC WELFARE, ENVIRONMENT	CRITICAL HABITATS AND SPECIES LOCATION BASED ON INPUT FROM CALIFORNIA DEPT. OF FISH AND GAME AND OTHER STAKEHOLDERS
INFRASTRUCTURE	PUBLIC WELFARE, PUBLIC SAFETY	INFRASTRUCTURE FOR DELIVERY OF EMERGENCY AND OTHER CRITICAL SERVICES (IE. REPEATER SITES, TRANSMISSION LINES)

General Description of Current Fire Situation



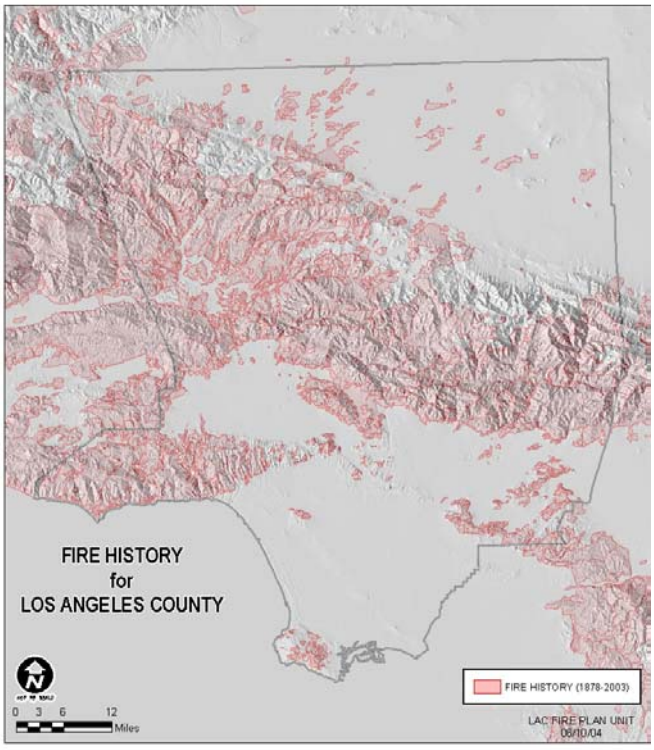
Determining the wildfire problem in Los Angeles County involves assessing the interrelated results of chaparral covered, fire dependent ecosystems, the resulting weather of a Mediterranean climate, the values at risk, and the fire protection system's ability to deal with the occurrence of wildfire (levels of service). A major element of the California Fire Plan is an extensive assessment process, that graphically depicts fuels, weather, level of service and assets at risk data, in a computer based Geographic Information System (GIS). The GIS thematic layers are then continually field-validated and used to identify the wildland urban-interface/intermix fire problem. The CDF Fire and Resource Assessment Program (FRAP) has built a methodology of assigning fire hazard ranks to the diverse landscapes of California using United States Geological Survey (USGS) 7.5 minute quadrangle maps, which are partitioned, nine by nine, into 81 cells. Each cell is approximately 450 acres and is referred to as Q81st cells.

It is a commonly accepted concept, that fire is a necessary part of the natural life cycle of the chaparral ecosystem in Los Angeles County. Without fire, the chaparral-covered terrain of Los Angeles County reaches an unhealthy state where the ratio of dead material to live plant structure becomes unbalanced. As the chaparral ages, more and more decadent growth adds to the fuel load (expressed in tons per acre), which contributes to the high intensity, costly, large loss wildfires. Historically, fires occurred naturally as a result of lightning and were introduced by native inhabitants. Native Americans, during the late 18th century, were said to have purposefully burned the native vegetation to promote the growth of certain plant resources.

The occurrence of fire on a regular basis whether natural or introduced tended to promote ecosystem health and reduced the number of large acreage, high intensity fires. As the County continues to grow in population, values at risk are encroaching on and intermixing with the wildlands. Consequently, wildfires threaten the values at risk and are seen as bad and should be extinguished promptly. Suppression efforts are quite successful, but result in the eventual, unnatural build-up of fuel for fire, making wildfires more intense and more destructive. Although the fire protection system has become more efficient, those fires that do escape initial attack efforts can quickly overwhelm the available suppression resources. Wildfires under certain severe fire weather conditions, such as a Santa Ana wind event, can prevent initial attack resources from suppressing the fire, while still small, and can spread so quickly and threaten so many values at risk that suppression resources cannot arrive quickly enough to prevent a majority of the damage.

Fire History

The County of Los Angeles and the State of California have experienced many large damaging and costly wildfires. A historical look at the damaging and costly wildfires indicates that all other threats to life, property and the economy pale in comparison. In one wildfire incident, the "Paint Fire" in Santa Barbara, more structures were lost at a higher cost, than individual structure fires occurring in a ten-year period (1991-2000). Considering that the County has experienced many catastrophic fires of this nature, it is evident that addressing the wildfire problem needs to be a top priority of the County of Los Angeles Fire Department.



SIGNIFICANT FIRES IN CALIFORNIA

Fire	Year	Lost Homes
Bel Air	1961	505
Oakland/Berkeley	1991	3,403
Painted Cave	1991	600
Kinneloa	1993	157
Old Topanga	1993	388
Southern California	2003	over 3,000

The Wildfire Environment

A cursory understanding of the wildfire environment is helpful in understanding the fire problem in Los Angeles County and what projects and programs are most effective in preventing large loss incidents. The wildfire environment can be regarded as the conditions, influences, and modifying forces that control the fire behavior. Firefighters become skilled at recognizing the status of the three components that make up the wildfire environment. The nature and or condition of fuels, weather and topography dictate the likelihood of a fire starting, the direction and rate of spread a fire takes and the intensity at which a fire burns.

FUEL

Wildland fuel is the vegetation layer that covers the topography. Fuel provides the thermal energy source upon which fire behavior relies.

WEATHER

Weather is the most variable component of the fire environment and can change rapidly in space and time. Weather represents such elements as temperature, wind, relative humidity, cloud cover, precipitation, and atmospheric stability.

TOPOGRAPHY

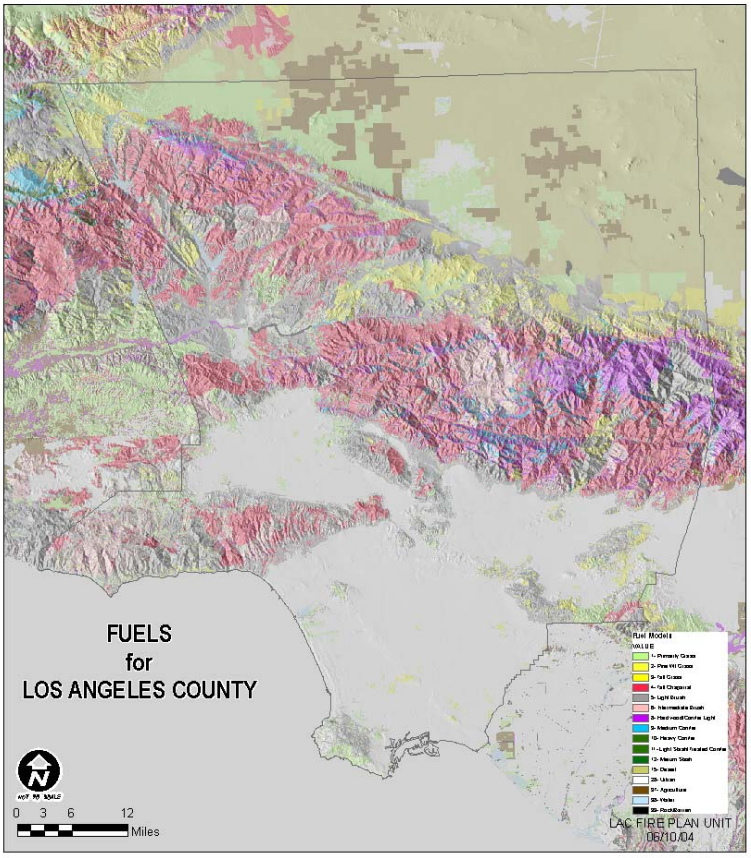
Topography includes such elements as slope, aspect, elevation and configuration or lay of the land. In relation to time, topography can be considered static, for the forces that change it generally work very slowly. In horizontal space, however, topography can change quickly, particularly in mountainous country.

HAZARDOUS FUELS

Los Angeles County has 515,817 acres of state responsibility area, the bulk of which is covered with fire prone vegetation. Additionally, there are 778,427 acres of federal responsibility area (FRA) and 847,768 acres of local responsibility area (LRA) within the County.

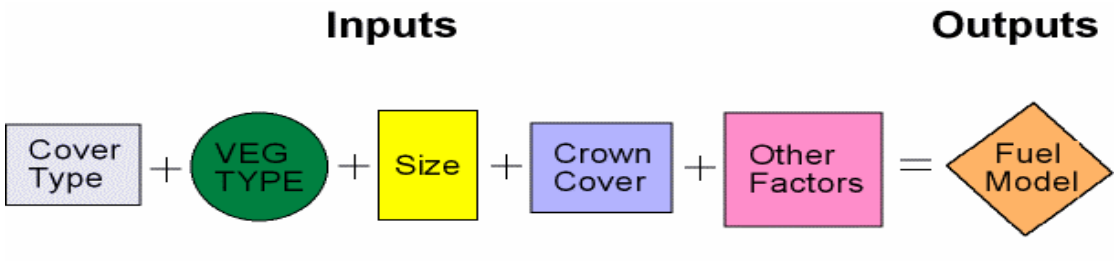
Chaparral provides the most widespread wildland threat in Los Angeles County. It can be found on the slopes of the Santa Monica Mountains throughout the San Gabriel Mountains. This chaparral community is characterized by woody shrubs of chamise, ceanothus, and sugar bush, which dominate dry rocky slopes and provide erosion control and watershed protection. Numerous grasslands and fields are found throughout the County, especially in the Antelope Valley, and present the potential for fast moving wildland fires that can transition into heavier fuel and tree canopies.

The first step in the hazard assessment process is development of a land/ vegetation coverage map for the County from the most recent and detailed vegetation composition and structure information. Vegetation data from a variety of sources are patched together to provide a complete, albeit heterogeneous, surface fuel coverage map for the County. The various vegetation types (fuels) found in Los Angeles County, have specific characteristics that allow them to be categorized according to how they burn.



Translating the variety of vegetation data into stylized fuel characteristics models used to predict fire behavior develops the surface fuel map. This process, known as "cross walking", translates information on plant species, crown cover and tree size into 13 standard fuel models. The crosswalk process uses other factors, such as watershed boundaries; slope, aspect and elevation, to further refine vegetation/fuel model relationships. The system used to categorize these fuels is documented in the National Wildfire Coordinating Group (NWCG) document NFES 1574 "Aids to Determining Fuel Models for Estimating Fire Behavior" by Hal E. Anderson. These fuel models are commonly referred to as the Fire

Behavior Prediction System (FBPS) fuel models. The assessment process further creates four additional custom models to represent non-wildland fuels: (28) Urban Fuels, (97} Agricultural Lands, (98) Water and (99) Barren/Rock/ Other. This method produces a fine-grained portrayal of surface fuel conditions.

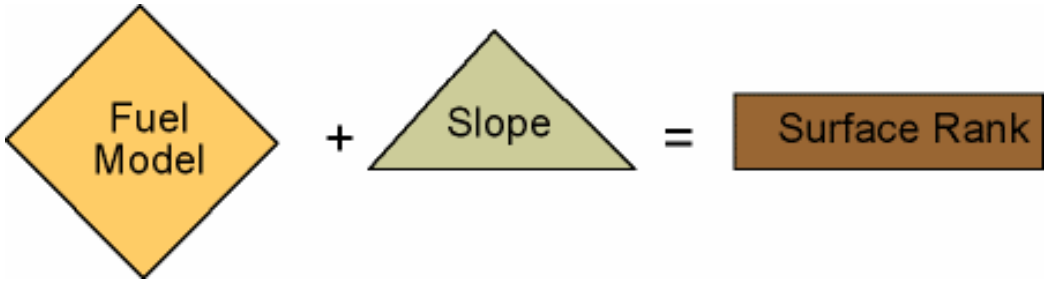


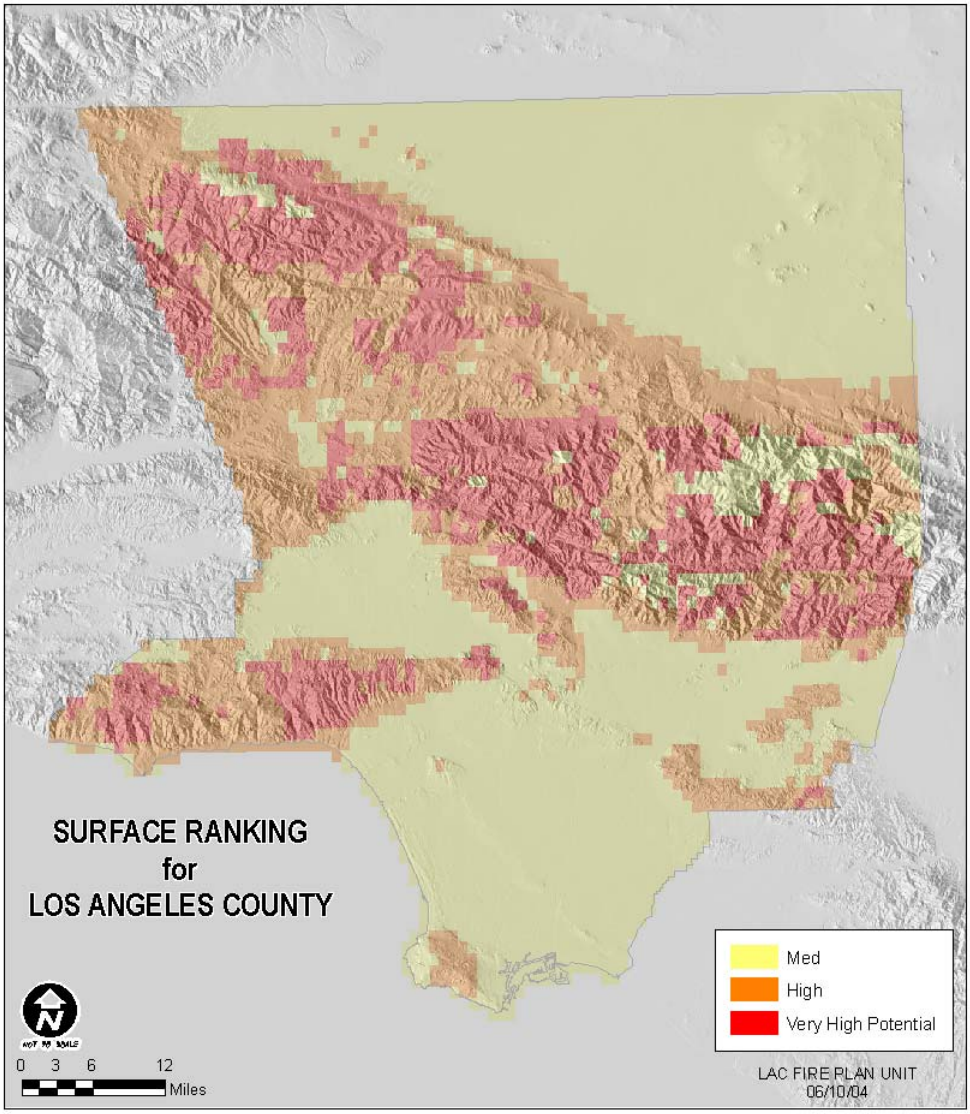
The second step is to assign a surface fuel ranking, which introduces topography into the fuels ranking equation. The method first calculates the fire behavior to be expected for unique combinations of topography and fuels under a given weather condition. BEHAVE (Fire Behavior Prediction and Fuel Modeling System - Andrews 1986) provided estimates of fire behavior under standard severe fire weather conditions for FBPS fuel models located on six slope classes: on flat ground and at the midpoints of the five National Fire Danger Rating System (NFDRS) slope classes (USDA Forest Service,1983). Surface ranks were assigned according to the rate of spread and heat per unit area associated with each unique fuel model-slope combination. The table below shows the surface rank, from Moderate to Very High, for unique combinations of surface fuel model and six different slope classes (0-10%, 11-25%, 26-40%, 41-55%, 56-75%, > 76) as derived from USGS 7 -1/2 minute Digital Elevation Models (DEM).

Fuel Model		Slope		Fuel Hazard Ranking
1	Grass	<10%	=	Moderate
1	Grass	>10%	=	High
2	Woodland	<40%	=	High
2	Woodland	>40%	=	Very High
6	Brush	<75%	=	High
6	Brush	>75%	=	Very High

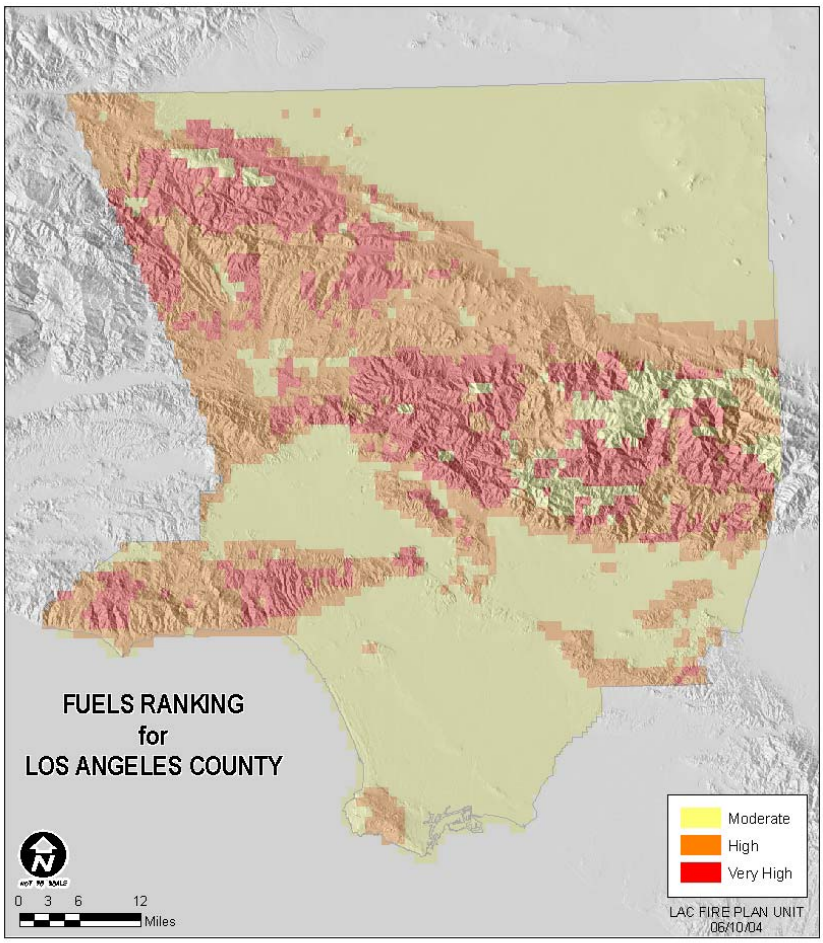
Finally, fire perimeter data are used to update fuel model characteristics based on "time since last burned," to account for both initial changes in fuels resulting from consumption by the fire and for vegetation re-growth. The fuels assessment process includes both current and historic fuel conditions. The historic fuels are those that existed in the climax or mature state before the occurrence of fire or other fuel modification process. After a fuel modification event, such as a fire, the re-growth process goes through a succession of fuel types on its way back to its climax fuel type. This succession is called the "Fuel Dynamic Pathway" (FDP).

The FDP is intended to account for growth rates, rainfall, elevation, aspect and other factors that influence an area's rate of growth.

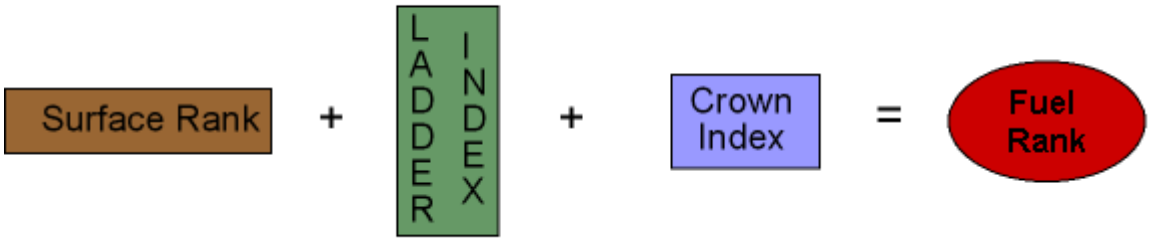




Total fire hazard includes not only hazard posed by surface fire, but also hazard posed by involvement of canopy fuels. The hazard ranking method includes this additional hazard component by adjusting the surface hazard rank according to the value of the ladder and crown fuel indices. Specifically, the surface hazard rank increases a maximum of one class in all situations where the sum of the ladder and crown fuel indices is greater than or equal to two. Otherwise the final fuel rank is identical to the initial surface rank.



For instance, lodge pole pine types modeled as fuel model 8 have a moderate surface rank on all slopes. However, the presence of ladder fuels in areas of dense canopy cover would result in a final fuel rank one class higher than the surface rank (high instead of moderate) in such areas. Estimates of ladder and crown fuels support assessment of crown fire potential. The ladder and crown fuel indices estimate the relative abundance of these fuels. These indices measure in a rough manner the probability that individual tree torching and/or crown fire would occur if the stand experienced a wildfire during extreme weather conditions. The indices take values ranging from 0 to 2, with 0 indicating "absent," 1 representing "present but spatially limited," and 2 indicating "widespread." CDF has determined that there are no "low" hazard fuels in California. Consequently, fuels are ranked medium, high or very high. Fuel models 4 (mature brush) and 10 (timber) are always ranked very high regardless of slope.



Fuel hazard ranking in Los Angeles County, 34% of the Q81st are ranked moderate, 36% high and 30% very high. Thus two thirds of the County has high ranked fuels. 66% of the County is ranked high to very high due to fuels.

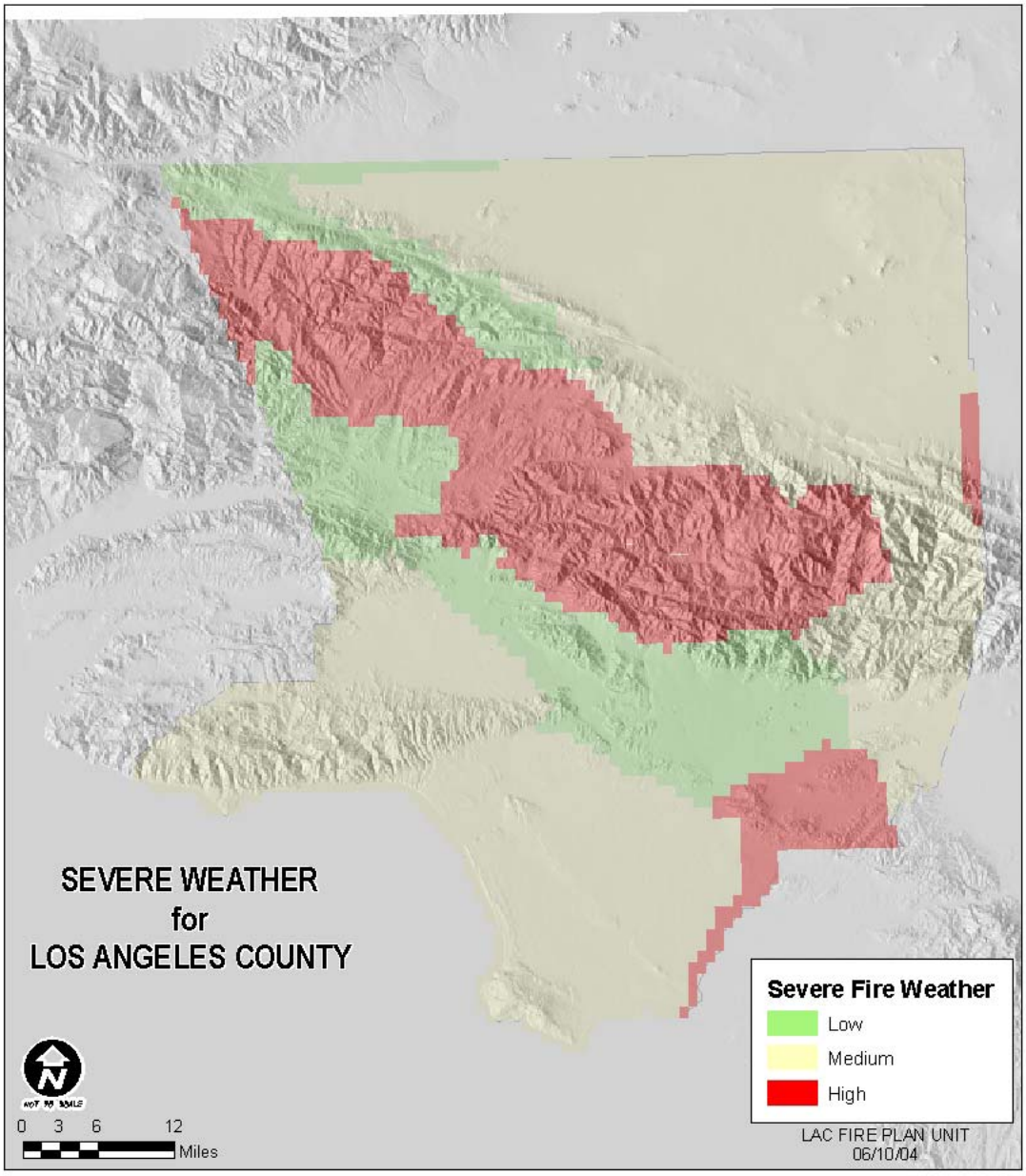
SEVERE FIRE WEATHER

Fire behavior is dramatically influenced by weather conditions. Large costly fires are frequently associated with severe fire weather conditions. High temperatures, low humidity, and strong surface winds typify fire weather. The weather assessment considers the different climates of the County, from the foggy coastline to the hot, dry interior valleys, to the cooler windy mountains, and to the arid and windy upper deserts. Each of these local climates experiences a different frequency of weather events that lead to severe fire behavior (severe fire weather). The weather assessment uses a Fire Weather Index (FWI) developed by USDA Forest Service researchers at the Riverside Fire Lab. This index combines air temperature, relative humidity, and wind speed into a single value index. This index can be calculated from hourly weather readings such as those collected in the Remote Automated Weather Station (RAWS) data collection system. The FWI does not include fuel moistures or fuel models.

The FWI includes topography only to the extent that RAWS station weather readings are influenced by local topography. Each quad 81st (Q81) in the County has a weather station assignment in order to establish a link between Q81s and weather data. This link enables the calculation of the number of days of severe fire weather for each Q81, and eventually a link will be established between CFIRS/NFIRS ignitions and Q81s, that will be used to determine the burn indices (from weather data) for each CFIRS/NFIRS ignition, which will be used as part of the Level of Service (LOS) calculation. Weather stations are assigned to Q81s based on local knowledge, completeness of weather data, proximity, and similarities in the weather environment such as elevation, landforms (e.g., within the same basin or ridge), and coastal influence.

Ideally the best weather station assignment is the closest weather station that is within the same fire weather forecast zone and has a complete stream of weather data. Because many zones have no weather stations, and some weather stations may have incomplete data, both the amount of data available for each station, and the similarity in weather environment of the weather station and Q81s will be considered. To the extent possible, weather stations are picked that have enough observations to adequately represent ignitions during the peak

fire season, and are in a physical setting that experiences similar weather conditions as the Q81s being validated.



FIRE PROTECTION LEVEL OF SERVICE

IGNITION/WORKLOAD ANALYSIS

Before discussing what constitutes an initial attack success or failure, we must first concede that our fire prevention efforts have failed or a natural event, such as lightning, has occurred. Once a fire starts, success is defined as the ability of the fire protection system to limit damage and costs within an acceptable level. Determining what an acceptable cost or damage amount is ultimately defining the level of service desired by the stakeholders involved.

Although the County of Los Angeles Fire Department management, working with stakeholders, must define and provide a particular level of service, the County Fire Department (as the California Department of Forestry and Fire Protection's agent in Los Angeles County) must, at a minimum, deliver a fire protection system that provides an equal level of protection to lands of similar type in State Responsibility Area (SRA). The legislature has charged the State Board of Forestry and CDF with providing this equal level of protection to lands of similar type (PRC 4130) in SRA.

To evaluate this, the Department is initially using both a performance-based fire protection planning system and a prescription based fire protection planning system. The performance-based approach is used on a limited basis since the dataset collected from the California Fire Incident Reporting System (CARS) needs to have fire intensity data attached. Another limiting factor is that the CDF uses an agency specific data collection system called Emergency Activity Reporting System (EARS) that is not consistent with CARS. Consequently the CARS data will need to be reviewed to categorize low, medium, and high fire intensity and will need to be exported to EARS. Once this is accomplished the CDF Level of Service (LOS) calculator can be used.

The performance based approach uses planning belts that group lands of similar type, along with a Level of Service Rating (LOS). The process measures the relative impact of fire on the various assets at risk and produces a level of service rating that is used to compare one area of the State with another, recognizing that the assets at risk may be quite different.

The level of service ranking is expressed as the percentage of incidents where initial attack effort succeeds. Successful initial attack is defined in terms of the amount of resources needed to suppress the fire and of fire intensity. It is that effort which contains the fire within an acceptable level of resource commitment, acceptable suppression cost and minimal damage to assets at risk.

$$\frac{\text{Number of initial attack successes}}{\text{Total initial attack workload}} = \text{Percent LOS rating}$$

A matrix is used to define and display successful initial attacks in this framework. The matrix axes, represents fire sizes and intensities. The body of the matrix contains the fire activity workload for each planning belt. The shaded portion of the matrix indicates fires that would be expected to exceed budgeted suppression costs. The non-shaded portion indicates successful initial attack suppression, fires that are normally contained within allowable suppression cost. The successful initial attacks represented in the non-shaded portion would also represent wildfires that are managed without either adversely affecting the initial attack system's ability to respond to other incidents, or expending significant unallocated resources.

Assuming that the prescription based planning fire protection system is properly applied, an appropriate and timely response, with properly equipped and trained firefighters based on fire danger, the matrix can provide wildfire managers with a simple tool to determine where the suppression system would be expected to fail. For example: a medium size, high intensity wildfire might overwhelm a "high" level initial attack response, even if an equal level of protection were provided statewide. This might be the threshold where wildfire managers decide to focus intense pre-fire mitigation projects in order to bring initial attack efforts back into the successful range. On the other hand, a large fire of low intensity where initial attack fails may indicate an un-equal level of protection or some other weakness in the prescription based system.

The prescription based approach focuses primarily on the reasons for an initial attack success or failure. Unfortunately, the prescription based approach makes it difficult to integrate the interrelationships of various fire protection programs, such as the value of fuel reduction programs in reducing the level of fire suppression effort required. The prescription-based approach is useful for establishing initial attack fire suppression standards on those fires that don't exceed expected suppression costs, as identified in the performance based approach, assuming an appropriate initial attack effort is applied.

Several factors influence the determination of what constitutes an appropriate initial attack effort. Detecting a wildfire in its incipient stage is vital if initial attack resources are to be successful. Response time for the initial attack resources to arrive at and begin taking suppression action on an incident is paramount to success. A response tailored to the incident potential increases the degree of success by applying appropriate reinforcement and resource type. For example, engine companies are usually the closest resource dispatched to a wildfire and are typically the measuring stick for response times.

However, an engine company that encounters an incipient wildfire with intensity beyond its ability might only be successful with resources such as water-dropping helicopters and bulldozers included in the initial attack response. The Fire Characteristics charts are useful guidelines for understanding initial attack resource capability. Staffing levels, training and physical fitness are also important elements of wildland fire company success.

Ignitions Workload Analysis Matrix

Unit: LAC

Planning Belt: B (brush)

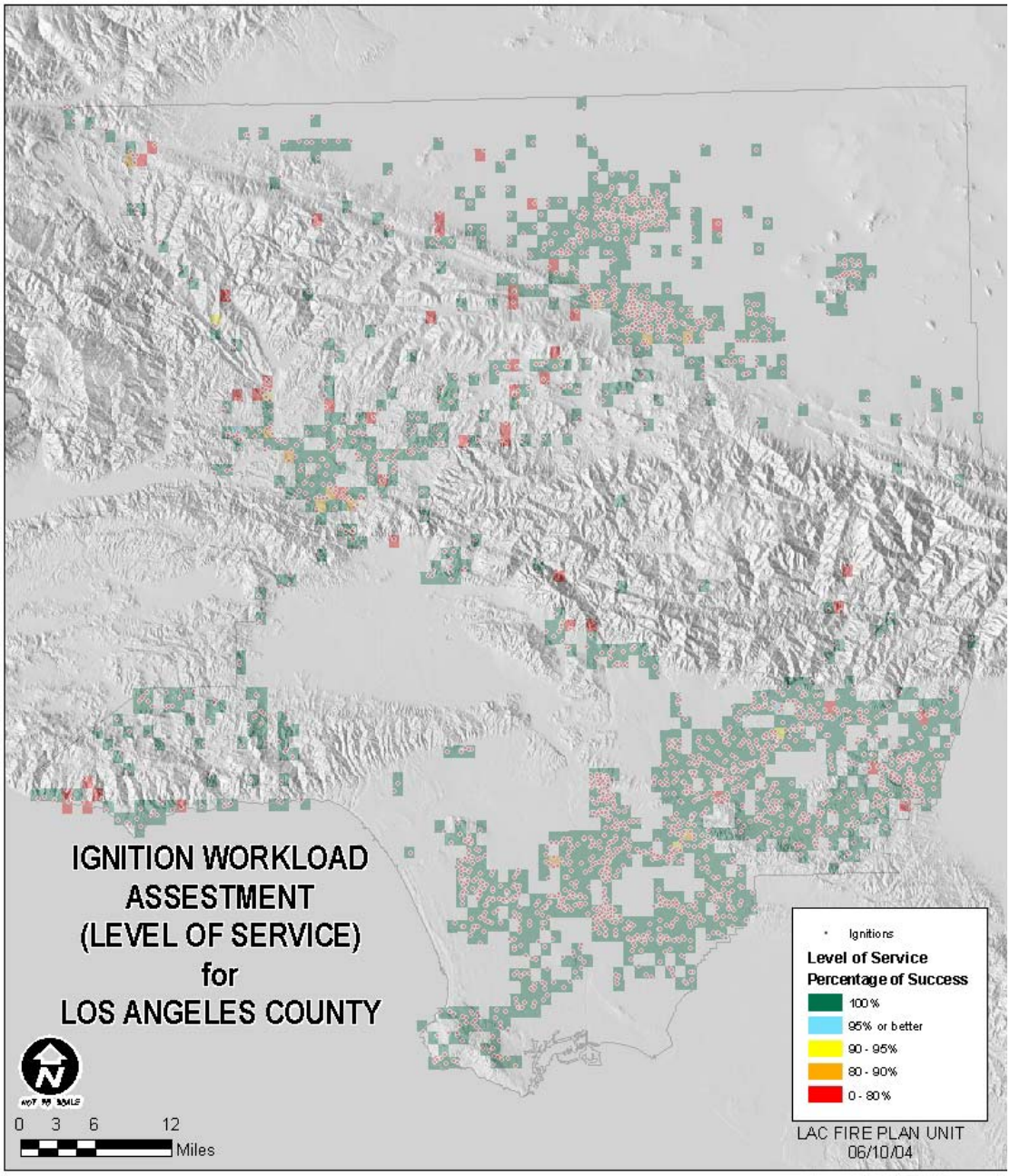
FIRE SIZE

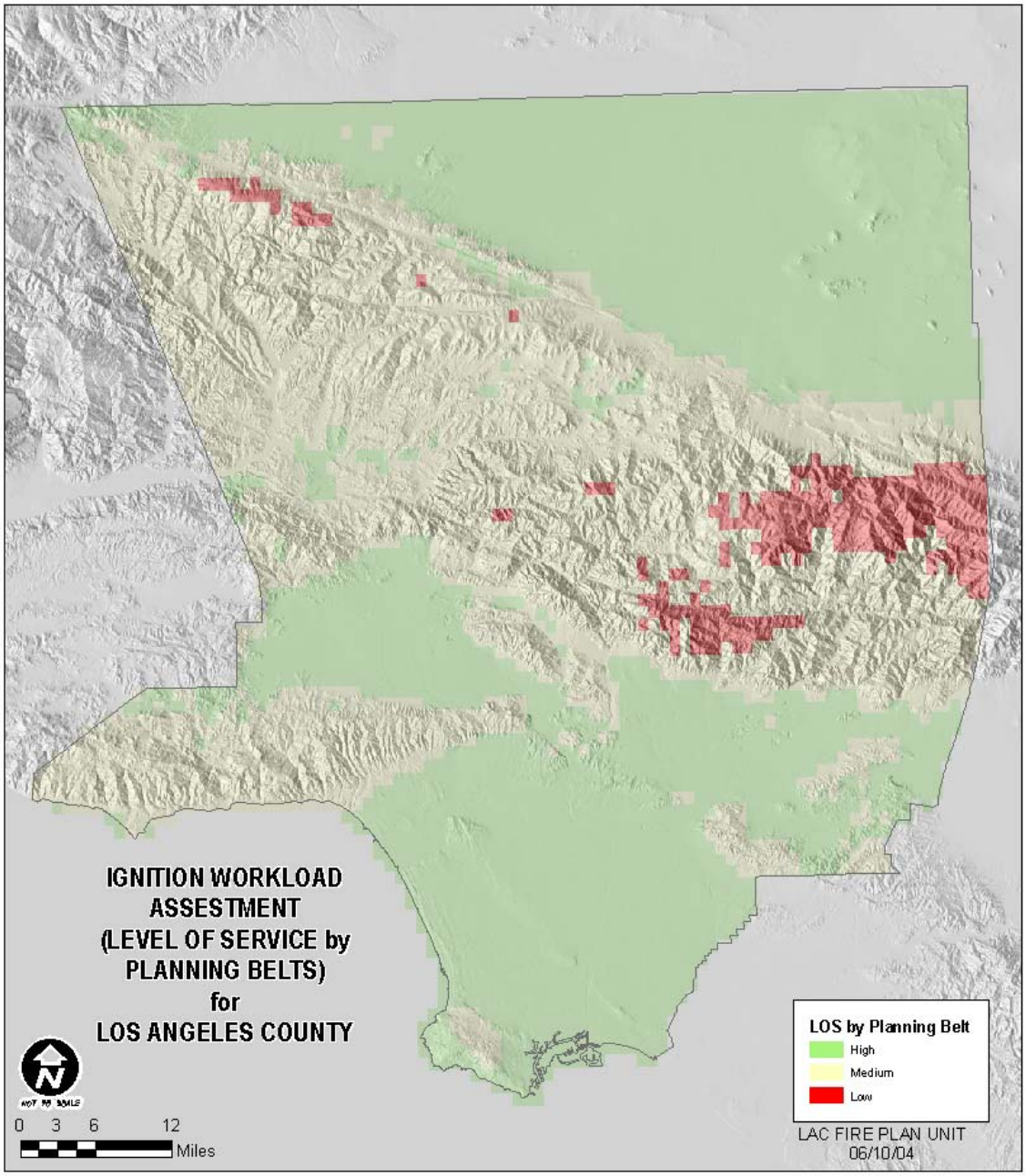
FWI	Spot	Small	Medium	Large	Escape
LOW	186	25	17	3	4
	49	3	0	1	1
HIGH	27	4	1	1	1
UNMATCHED	273	40	17	7	14

Planning Belt ID: B (brush) **Unit ID:** LAC Refresh Matrix

Success: 93 %

Fire Size class Cutoffs for brush planning belt	FWI Index Intensity Cutoffs
Spot: Less than 1 acre(s)	Low: less than 15
Small: 1 - 5 acres	Medium: 15 - 30
Medium: 5 - 25 acres	High: greater than 30
Large: 25 - 100 acres	Unmatched: no weather observation available
Escape: greater than 100 acres	


IGNITION WORKLOAD
ASSESTMENT
(LEVEL OF SERVICE)
for
LOS ANGELES COUNTY
0 3 6 12
Miles
Ignitions
Level of Service
Percentage of Success
100%
95% or better
90 - 95%
80 - 90%
0 - 80%
LAC FIRE PLAN UNIT
06/10/04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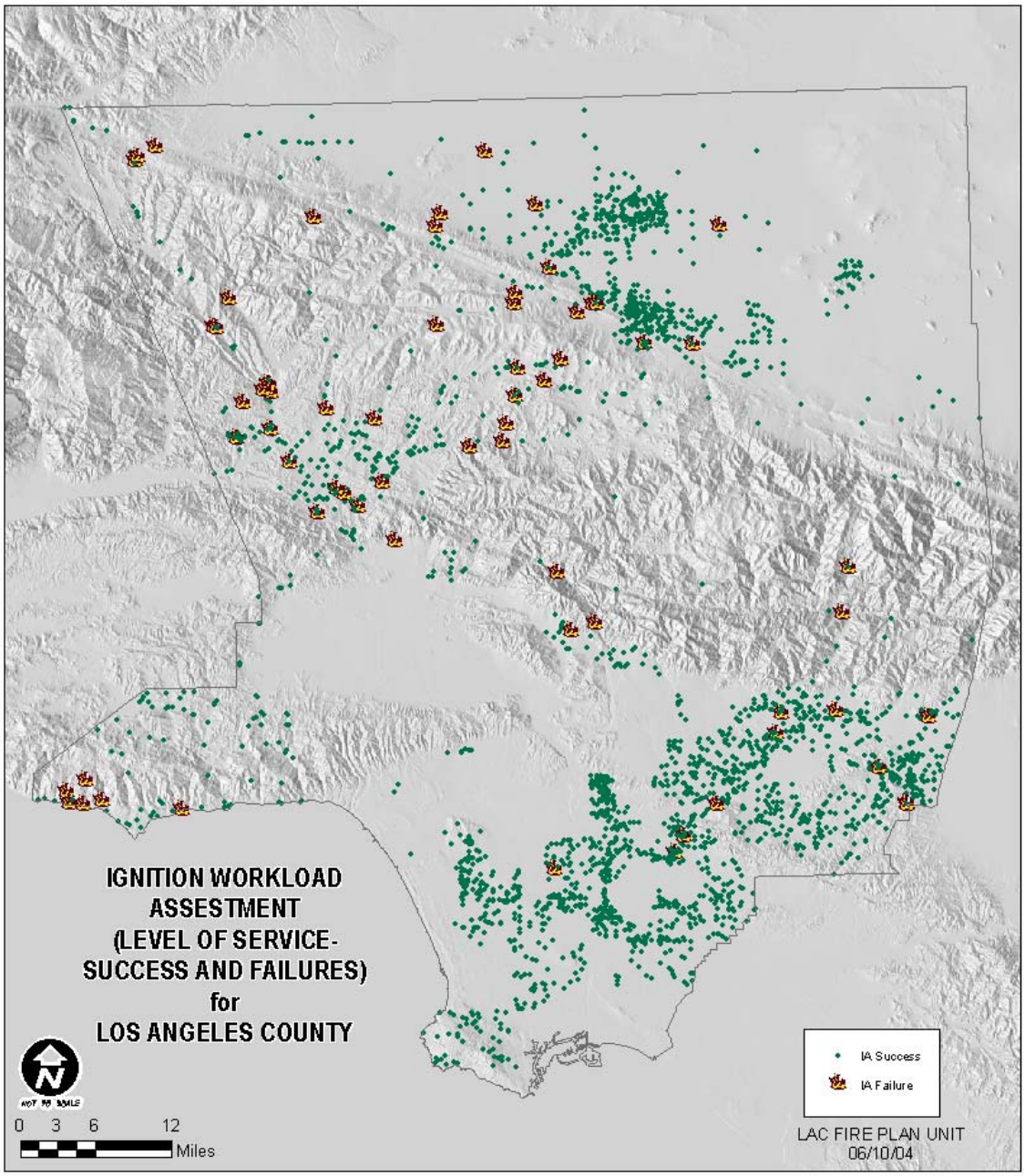
06/10/04


IGNITION WORKLOAD
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LAC FIRE PLAN UNIT
06/10/04

FIRE SUPPRESSION PHILOSOPHY

As mentioned in other areas of this document, "initial attack" is the focus of all wildfire suppression activities for the County of Los Angeles Fire Department. With so much emphasis placed on quickly extinguishing all wildfires, it might seem that all fire in the wildland is a bad thing. Quite to the contrary, fire is absolutely a necessary element in the County's ecosystem. Since too many assets are at risk to allow the natural occurrence of wildfire, prescribed or controlled burns must take the place of naturally occurring wildfire.

The human element is always the number one priority for all fire suppression efforts. Many rules and guidelines have been developed to stress firefighter and public safety during wildfires. These rules and guidelines can be helpful for the layperson to understand why firefighters may say or do certain things related to wildfire. Some of these rules and guidelines are: "The Ten Standard Firefighting Orders," "The Eighteen Watch out Situations," "Common Denominators of Fire Behavior on Tragedy and Near-miss Forest Fires," "LCES - Lookouts, Communications, Escape Routes, Safety Zones," "Look Up, Look Down, Look Around." With all wildfires, certain strategic and tactical actions must take place. From the time of alarm to the abandonment or closure of a wildfire, one single unified entity must be in command of the incident. To accomplish this, all fire agencies in the County and in the State, for that matter, use the Incident Command System (ICS). Tactically all wildfires must be anchored, which means that a secure starting point is established from which all other strategic and tactical decision-making can build upon.

Once a wildfire grows beyond the initial attack stage where there are assets at risk, particularly in the wildland/urban interface/intermix, two additional dimensions are added to the already complex nature of wildland firefighting. In addition to anchoring and flanking the fire, to narrow the flame front, firefighting resources must also be committed to protecting assets out in front of the fire and resources must be left to protect assets from residual embers and fire after the fire passes through.

THE FIRE PROTECTION SYSTEM

Although fire is a necessary component of the local ecosystem, in most cases, unchecked wildfire is no longer a viable fire/fuel management option in Los Angeles County. Mostly because of population growth, assets at risk have interfaced and intermixed with the wildlands to such an extent that uncontrolled fires must be quickly extinguished. Therefore, at the heart of the wildfire protection system in Los Angeles County is an aggressive initial attack firefighting strategy.

The County of Los Angeles Fire Department actually has a dual fire protection role. The County of Los Angeles Fire Department provides structural fire protection and rescue services to the Los Angeles County unincorporated areas and contract cities.

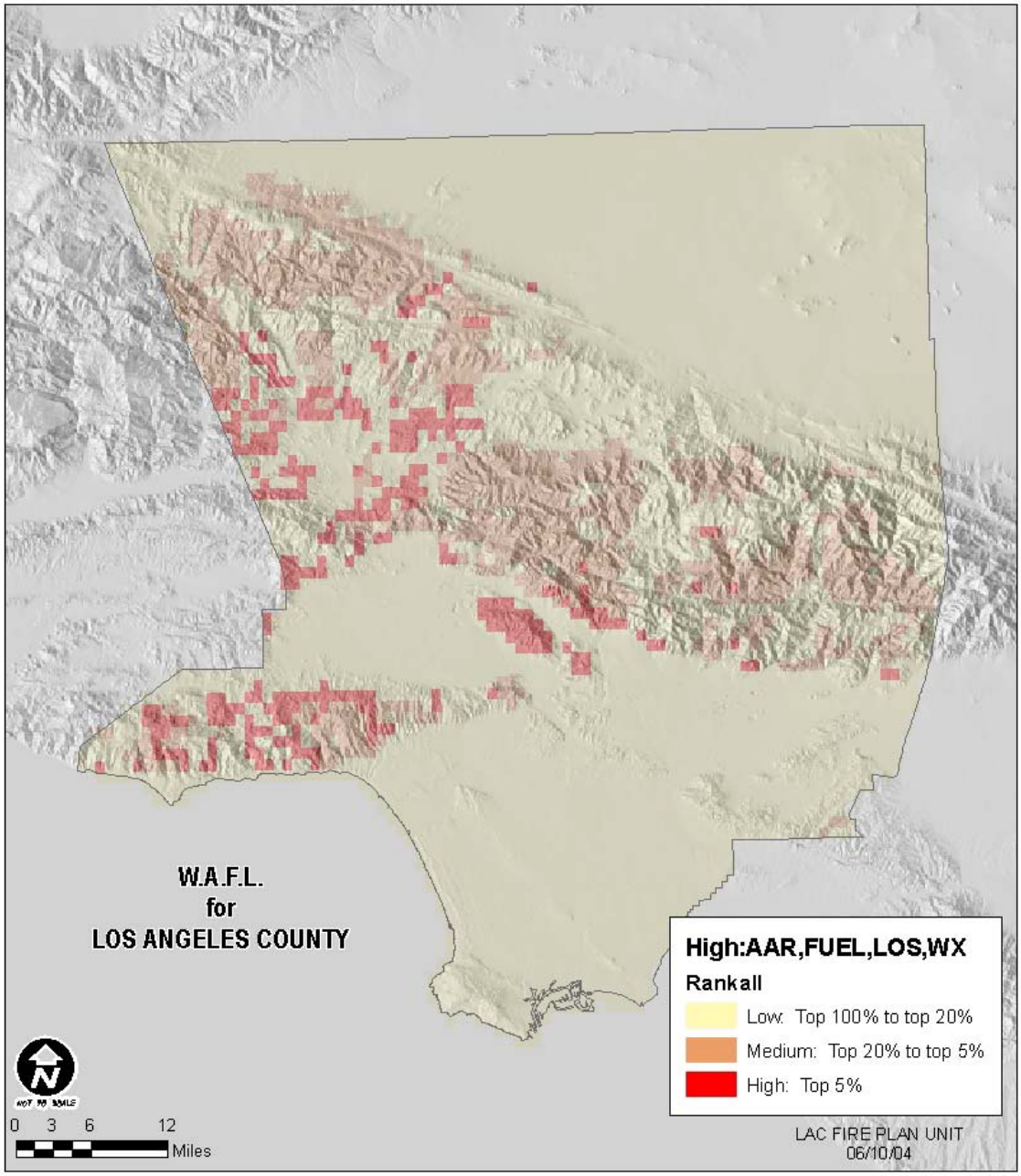
The Los Angeles County Fire Department is also one of six contract counties, which has executed a contract with the State of California to provide wildland fire protection on state responsibility area (SRA). The SRA within the jurisdiction of the County of Los Angeles Fire Department is 515,817 acres.

PRIORITY AREAS

The fire plan assessment process utilizes a W.A.F.L. calculator to combine the four fire plan assessments (weather, assets at risk, fuel & level of service) in to an aggregate score which can be used to help target critical areas and prioritize projects. The W.A.F.L. score, however, does not take in to consideration subjective factors critical to achieving on the ground fuel reduction. Fire plan assessments aside, it is extremely difficult if not impossible to achieve fuel reduction on the ground without community involvement, whether that be in the form of a community fire safe council, homeowners association or other organized forum. With that said, the W.A.F.L. score, with its science-based approach is evaluated in conjunction with other intangibles to arrive at a "reasonable" assessment of the needs and likelihood of accomplishing a project. A simple glance at the W.A.F.L. score map below indicates that there is a significant need throughout the foothills, especially in the urban interface areas of Los Angeles County for hazardous fuel reduction.

Each of Department's battalions are consulted for pre-fire projects they consider important to achieving their goals of reducing the potential and impact of catastrophic fire. Projects are assigned a relative ranking by combining the four fire plan assessments, fuel hazard ranking, severe fire weather, level of service (workload), total assets at risk, with subjective factors including fire history and community involvement. Values are assigned by looking at the fire plan assessment maps and interpolating the assessment output which best represents each project.

Theoretically, the project with the highest score would have the first priority for funding of any given project or other pre-fire program. However, there are a number of circumstances where other then the highest priority would be given preference to a project. Circumstances when this might occur include the following: the Department's current commitment to an existing pre-fire project, community participation necessary to complete a project, preparatory work and ease of instituting the project, project type and match for grant funding and simply sharing the wealth and commitment toward pre-fire projects between the Department and communities. The Fire Plan Unit acts to coordinate countywide projects, and projects occurring between battalions, and provides direction in the planning of pre-fire projects.


W.A.F.L.
for
LOS ANGELES COUNTY
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Low: Top 100% to top 20%
Medium: Top 20% to top 5%
High: Top 5%
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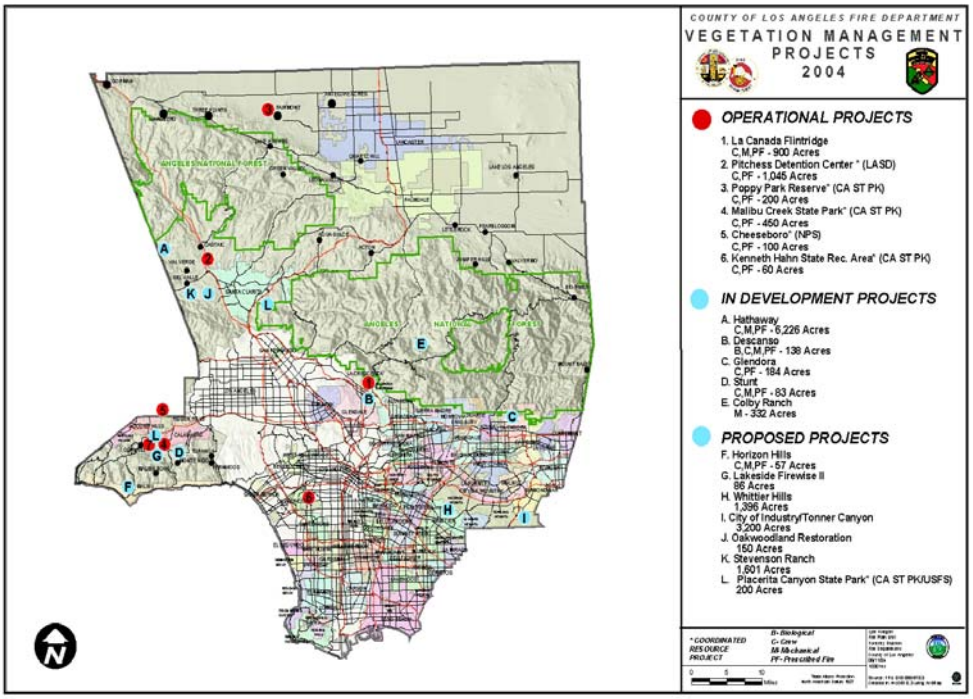
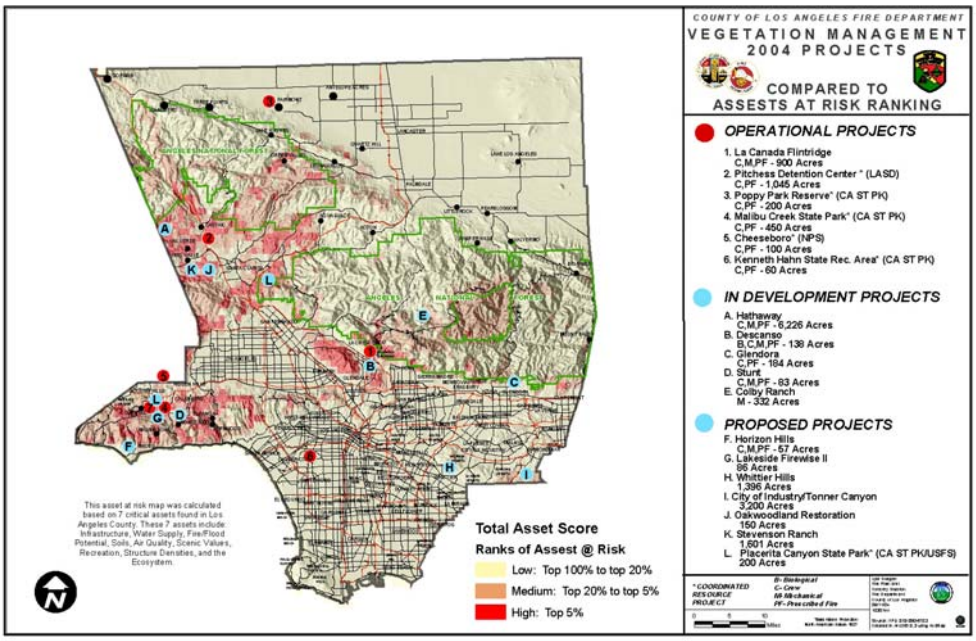
LAC FIRE PLAN UNIT
06/10/04

TARGET AND PRIORITY AREAS

VMP MATRIX MAP



VMP MATRIX MAP with Assets at Risk



OPERATIONAL PROJECTS

1) LA CANADA FLINTRIDGE PROJECT

This project is located in the center of the County and consists of the treatment of 900 acres using manual (crews), biological (goats), mechanical (brush crusher) and prescribed fire. The project provides protection to the City of La Canada Flintridge, La Cresenta, and Pasadena. The project started in 2001 and a total of 183 acres have been burned. The biological treatment will continue in 2004 and 30 additional acres will be burned in 2004 and 2005.

2) PITCHESS DETENTION CENTER (NO MAP)

This project is located in the Santa Clarita area and consists of the treatment of 1,045 acres using manual (crews) and prescribed fire. This is a Coordinated Resource Project with the Los Angeles County Sheriff's Department. This project provides fire protection to the Pitchess Ranch Detention Center. A secondary benefit to the project is the annual training of firefighters on firing operations and grass fire fighting.

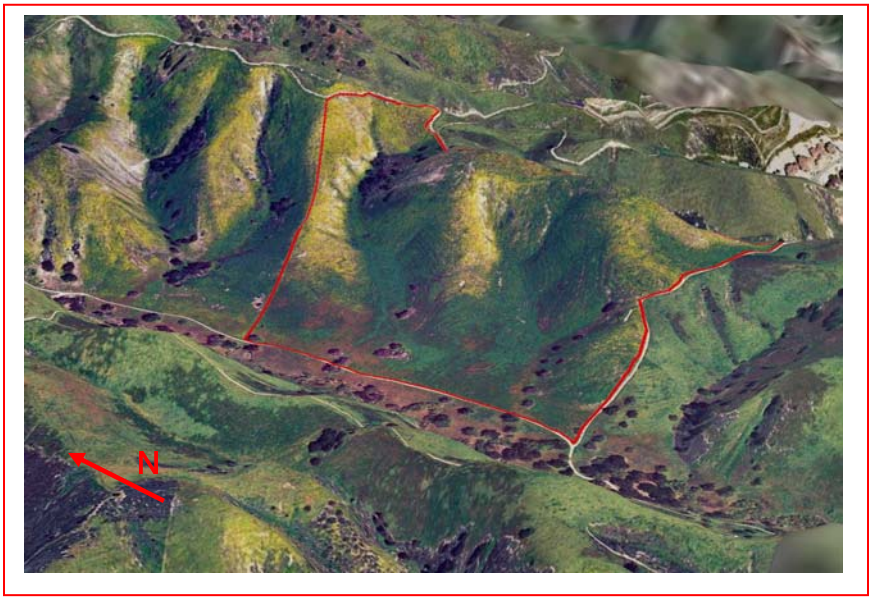
3) POPPY PARK RESERVE

This project is located in northern Los Angeles County and consists of the treatment of 200 acres using prescribed fire to enhance the growth of California Poppies and eliminating non-native vegetation. The project also provides fire protection to the Poppy Park Reserve Visitor Center and the community of Lake Hughes.

4) MALIBU CREEK STATE PARK (NO MAP)

This project is located in the Santa Monica Mountains and consists of the treatment of 450 acres using manual (crews) and prescribed fire. This is a Coordinated Resource Project with the California State Parks. This project provides fire protection to the Malibu Creek State Park and the City of Malibu including enhancing the growth of native vegetation and eliminating non-native vegetation. A secondary benefit to the project is the annual training of firefighters on fire control of grasses and thistle.

5) CHEESEBORO



This project is located in the Santa Monica Mountains and consists of the treatment of 100 acres using manual (crews) and prescribed fire. This is a Coordinated Resource Project with the National Parks Service. This project provides fire protection to the Cheeseboro Park and the City of Agoura Hills including enhancing the growth of native vegetation by eliminating non-native vegetation. A secondary benefit to the project is the annual training of firefighters on fire control of grasses and thistle.

6) KENNETH HAHN STATE RECREATIONAL AREA (NO MAP)

This project is located in the Kenneth Hahn State Recreational Area and consists of the treatment of 60 acres using prescribed fire to enhance the growth of native species and eliminating non-native vegetation. The project also provides fire protection to the Park's Visitor Center and the Cities of Los Angeles, Culver City Inglewood, and the unincorporated community of Baldwin Hills.

IN DEVELOPMENT PROJECTS

A) HATHAWAY

The Hathaway Project is a 6,226-acre area located northwest of the City of Santa Clarita. The County of Los Angeles Fire Department has determined the need of a Vegetation Management Plan to provide a long-term mitigation for the hazardous wildfire problem affecting the communities in Hasley and Oak Canyons, and the communities of Castaic, Piru, Del Valle and Valverde.

The County and the property owners recognize the potential threat of catastrophic wildfires burning in the ranch property and surrounding lands. This plan addresses the potential wildfire problem through the use of current technologies, scientific studies, and related fire behavior computer programs. Laws and regulations which could affect fire hazard reduction activities have also been considered. This plan is being developed to improve the fire safety for residents and firefighters without compromising environmental concerns and to manage the fire/flood cycle, which characterizes most urban/wildland interface areas located throughout Southern California.

Fuel reduction zones in open space areas within the Hathaway property will substantially reduce the potential hazard posed by airborne embers. Embers have been documented to cause 40 to 60 percent of structure losses in catastrophic wildfires.

The following treatment methods will be used throughout this project: biological: strategic recycling, grazing; manual: clearing, mowing, thinning, multi-cutting; equipment: brush crusher and prescribed fire.

B) DESCANSO

The Descanso project area is a 138-acre area located in the City of La Canada Flintridge. The County of Los Angeles Fire Department, The City of La Canada Flintridge and the Descanso Gardens Board have determined the need of a Vegetation Management Plan to provide a long-term mitigation for the hazardous wildfire problem affecting the communities La Canada, Montrose, Glendale and the Historical Descanso Gardens.

The County and the property owners recognize the potential threat of catastrophic wildfires burning in the Gardens property and surrounding lands. This plan addresses the potential wildfire problem through the use of current technologies, scientific studies and related fire behavior computer programs. Laws and regulations which could affect fire hazard reduction activities have also been considered. This plan is being developed to improve the fire safety for residents and firefighters without compromising environmental concerns and to manage the fire/flood cycle, which characterizes most urban/wildland interface areas located throughout Southern California.

Fuel reduction zones in open space areas within the Descanso Project will substantially reduce the potential hazard posed by airborne embers. Embers have been documented to cause 40 to 60 percent of structure losses in catastrophic wildfires.

The following treatment methods will be used throughout this project: biological: strategic recycling, grazing; manual: clearing, mowing, thinning, multi-cutting; equipment: brush crusher and prescribed fire.

C) GLENDORA

The Glendora Project area is a 184-acre area located in the San Gabriel Mountains Conservancy Land north of the City of Glendora. The County of Los Angeles Fire Department, the City of Glendora and the San Gabriel Mountains Conservancy have determined the need of a Vegetation Management Plan to provide a long-term mitigation for the hazardous wildfire problem affecting the cities of Glendora, San Dimas and Azusa. The enhancement of the growth of native vegetation that requires fire for propagation and by eliminating non-native vegetation is also a primary goal of this project.

This plan addresses the potential wildfire problem through the use of current technologies, scientific studies and related fire behavior computer programs. Laws and regulations which could affect fire hazard reduction activities have also been considered. This plan is being developed to improve the fire safety for residents and firefighters without compromising environmental concerns and to manage the fire/flood cycle, which characterizes most urban/wildland interface areas located throughout Southern California.

Fuel reduction zones in open space areas within the Glendora Project will substantially reduce the potential hazard posed by airborne embers. Embers have been documented to cause 40 to 60 percent of structure losses in catastrophic wildfires.

The following treatment methods will be used throughout this project: biological: strategic recycling, grazing; manual: clearing, mowing, thinning, multi-cutting; equipment: brush crusher and prescribed fire.

D) STUNT

The Stunt Project area is an 83-acre area located in the Santa Monica Mountains eight miles north of the City of Malibu. The County of Los Angeles Fire Department and the National Park Service have determined the need of a Vegetation Management Plan to provide a long-term mitigation for the hazardous wildfire problem affecting the communities of Monte Nido, El Nido, Calabasas, Agoura Hills and the City of Malibu.

This plan addresses the potential wildfire problem through the use of current technologies, scientific studies and related fire behavior computer programs. Laws and regulations which could affect fire hazard reduction activities have also been considered. This plan is being developed to improve the fire safety for residents and firefighters without compromising environmental concerns and to manage the fire/flood cycle, which characterizes most urban/wildland interface areas located throughout Southern California.

Fuel reduction zones in open space areas within the Stunt Project will substantially reduce the potential hazard posed by airborne embers. Embers have been documented to cause 40 to 60 percent of structure losses in catastrophic wildfires.

The following treatment methods will be used throughout this project: biological: strategic recycling, grazing; manual: clearing, mowing, thinning, multi-cutting; equipment: brush crusher and prescribed fire.

E) COLBY RANCH

The Colby Ranch project area is a 332-acre area nestled in Angeles National Forest north of the City of La Canada Flintridge. The County of Los Angeles Fire Department, the U.S. Forest Service and the Colby Ranch have determined the need of a Vegetation Management Plan to provide a long-term mitigation for the hazardous wildfire problem affecting the ranch, the Angeles National Forest and surrounding cities and communities.

The County and the property owner recognize the potential threat of catastrophic wildfires burning in the Angeles National Forest and surrounding lands. This plan addresses the potential wildfire problem through the use of current technologies, scientific studies and related fire behavior computer programs. Laws and regulations which could affect fire hazard reduction activities have also been considered. This plan is being developed to improve the fire safety for residents and firefighters without compromising environmental concerns and to manage the fire/flood cycle, which characterizes most urban/wildland interface areas located throughout Southern California.

Fuel reduction zones in open space areas within the Colby Ranch Project will substantially reduce the potential hazard posed by airborne embers. Embers have been documented to cause 40 to 60 percent of structure losses in catastrophic wildfires.

The following treatment methods will be used throughout this project: biological: strategic recycling: manual: clearing, mowing, thinning, and multi-cutting.

PROPOSED PROJECTS

F) HORIZON HILLS

The Horizon Hills Project is a California Fire Safe Council sponsored vegetation management project. The project area is 57 acres located in the City of Malibu. The County of Los Angeles Fire Department, the Horizon Hills Homeowners Association and the California Fire Safe Council have determined the need of a Vegetation Management Plan to provide a long-term mitigation for the hazardous wildfire problem affecting the communities Horizon Hills and the City of Malibu.

The County and the property owners recognize the potential threat of catastrophic wildfires burning in the Horizon Hills property and surrounding lands. This plan addresses the potential wildfire problem through the use of current technologies, scientific studies and related fire behavior computer programs. Laws and regulations which could affect fire hazard reduction activities have also been considered. This plan is being developed to improve the fire safety for residents and firefighters without compromising environmental concerns and to manage the fire/flood cycle, which characterizes most urban/wildland interface areas located throughout Southern California.

Fuel reduction zones in open space areas within the Horizon Hills Project will substantially reduce the potential hazard posed by airborne embers. Embers have been documented to cause 40 to 60 percent of structure losses in catastrophic wildfires.

The following treatment methods will be used throughout this project: biological: strategic recycling, grazing; manual: clearing, mowing, thinning, multi-cutting.

G) LAKESIDE FIREWISE II

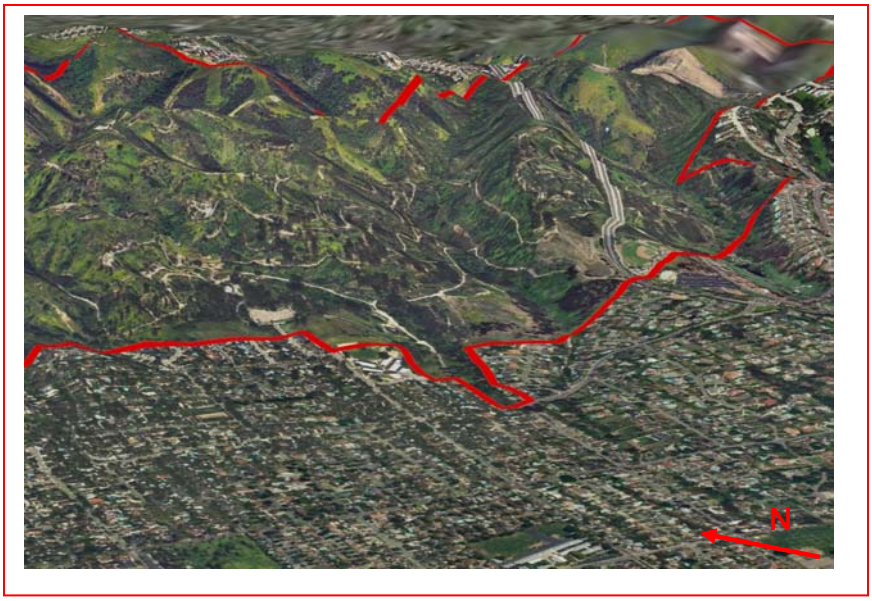
The Lakeside Firewise II Project is a California Fire Safe Council sponsored vegetation management project. The project area is 86 acres located in the community of Malibu Lake. The County of Los Angeles Fire Department, the Malibu Lakeside Homeowners Association and the California Fire Safe Council have determined the need of a Vegetation Management Plan to provide a long-term mitigation for the hazardous wildfire problem affecting the community of Malibu Lake and the Cities of Agoura Hills and Malibu.

The County and the property owners recognize the potential threat of catastrophic wildfires burning in the Malibu Lake property and surrounding lands. This plan addresses the potential wildfire problem through the use of current technologies, scientific studies and related fire behavior computer programs. Law and regulations which could affect fire hazard reduction activities have also been considered. This plan is being developed to improve the fire safety for residents and firefighters without compromising environmental concerns and to manage the fire/flood cycle, which characterizes most urban/wildland interface areas located throughout Southern California.

Fuel reduction zones in open space areas within the Lakeside Firewise II Project will substantially reduce the potential hazard posed by airborne embers. Embers have been documented to cause 40 to 60 percent of structure losses in catastrophic wildfires.

The following treatment methods will be used throughout this project: biological: strategic recycling, grazing; manual: clearing, mowing, thinning, multi-cutting.

H) WHITTIER HILLS



The Whittier Hills is a 1,396-acre area located north of the City of Whittier. The County of Los Angeles Fire Department and the Whittier City Council have determined the need of a Vegetation Management Plan to provide a long-term mitigation for the hazardous wildfire problem affecting the City of Whittier and community of Hacienda Heights.

The County and the property owners recognize the potential threat of catastrophic wildfires burning in the Wilderness Park property and surrounding lands. This plan addresses the potential wildfire problem through the use of current technologies, scientific studies and related fire behavior computer programs. Laws and regulations which could affect fire hazard reduction activities have also been considered. This plan is being developed to improve the fire safety for residents and firefighters without compromising environmental concerns and to manage the fire/flood cycle, which characterizes most urban/wildland interface areas located throughout Southern California.

Fuel reduction zones in open space areas within the Whittier Hill Wilderness Park property will substantially reduce the potential hazard posed by airborne embers. Embers have been documented to cause 40 to 60 percent of structure losses in catastrophic wildfires.

The following treatment methods will be used throughout this project: biological: strategic recycling, grazing; manual: clearing, mowing, thinning, multi-cutting; and prescribed fire.

I) CITY OF INDUSTRY/TONNER CANYON

The Tonner Canyon Project is a 3,200-acre area located south of the City of Diamond Bar. The County of Los Angeles Fire Department and the cities of Industry and Diamond Bar have determined the need of a Vegetation Management Plan to provide a long-term mitigation for the hazardous wildfire problem affecting the City of Diamond Bar, Chino Hills, Brea, La Habra, La Habra Heights, and Industry.

The County and the property owners recognize the potential threat of catastrophic wildfires burning in the Tonner Canyon property and surrounding lands. This plan addresses the potential wildfire problem through the use of current technologies, scientific studies and related fire behavior computer programs. Laws and regulations which could affect fire hazard reduction activities have also been considered. This plan is being developed to improve the fire safety for residents and firefighters without compromising environmental concerns and to manage the fire/flood cycle, which characterizes most urban/wildland interface areas located throughout Southern California.

Fuel reduction zones in open space areas within the Tonner Canyon property will substantially reduce the potential hazard posed by airborne embers. Embers have been documented to cause 40 to 60 percent of structure losses in catastrophic wildfires.

The following treatment methods will be used throughout this project: biological: strategic recycling, grazing; manual: clearing, mowing, thinning, multi-cutting; mechanical: brush crusher and prescribed fire.

J) OAK WOODLAND RESTORATION (NO MAP)

This project is a parcel dedicated as open space and is located in the City of Santa Clarita and consists of the treatment of 150 acres using biological (goats), manual (crews) and prescribed fire methods. This project provides fire protection to the West Ridge Development and the City of Santa Clarita. Additional goals are the enhancement of native vegetation growth by eliminating non-native vegetation, and the annual training of firefighters on fire control of non-native vegetation facilitating the establishment of native species.

K) STEVENSON RANCH (NO MAP)

This project is located in the City of Santa Clarita adjacent to the Oak Woodland Restoration Project and consists of the treatment of 1,501 acres using biological: strategic recycling, grazing; manual: clearing, mowing, thinning, multi-cutting; mechanical: brush crusher and prescribed fire methods. This project provides fire protection to the Cities of Santa Clarita and Valencia, and the community of Stevenson Ranch. An added goal to the project is the annual training of firefighters on fire control of non-native vegetation facilitating the establishment of native species.

L) PLACERITA CANYON STATE PARK (NO MAP)

This project is located in the Santa Susana Mountains and consists of the treatment of 200 acres using biological: strategic recycling, grazing; manual: clearing, mowing, thinning, multi-cutting; mechanical: brush crusher and prescribed fire methods. This is a Coordinated Resource Project with the California State Parks. This project provides fire protection to the Placerita Canyon State Park, the City of Santa Clarita and the Angeles National Forest. An additional benefit will be the enhancement of growth native vegetation growth and reduction of non-native vegetation. A secondary benefit to the project is the annual training of firefighters on fire control of brush fires.