

ORANGE COUNTY FIRE AUTHORITY

Planning & Development Services Section

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Vegetation Management

Technical Design for New Construction Fuel Modification Plans and Maintenance Program



Approved and Authorized by

Guideline C-05

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Fire Marshal / Assistant Chief

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INTRODUCTION

Proper management of vegetation in areas at risk from wildfires has proven to be a major factor in reducing the chances of homes burning, especially when combined with construction techniques designed to further protect a home from approaching flames and burning embers. Over the past 30 years these approaches have contributed to saving hundreds of homes during major wildfires in Orange County.

Vegetation Management practices are implemented and enforced in two ways. These two practices are titled Fuel Modification and Defensible Space. California state wide law requires that land owners in areas at risk from wildfires implement and maintain a Defensible Space landscape area between buildings and potential approaching wildfire. Since 1979, local agencies served by Orange County Fire Authority (OCFA) have adopted provisions in local fire codes requiring new buildings to be protected by a Fuel Modification Zone. During the design and construction process, land owners and builders are required to design, implement, and maintain a landscape Fuel Modification Zone. Generally, buildings built prior to 1979 have Defensible Space and buildings built after 1979 have a Fuel Modification Zone. This guideline addresses Fuel Modification design.

You can find the Defensible Space maintenance information by going to www.ocfa.org and the Ready, Set, Go! link. Inside the link, locate the document titled, Vegetation Management, "Maintenance Guideline for Property Owners".

PURPOSE

The purpose of this guideline is to provide information on how fuel modification zones are to be designed, installed, and maintained in order to meet safety requirements.

SCOPE

A fuel modification zone is a strip of land where combustible vegetation has been removed and/or modified and partially or totally replaced with more adequately spaced, drought-tolerant, fire-resistant plants in order to provide a reasonable level of protection to structures from wildland and vegetation fires. Development adjoining grass-covered, brush-covered or chaparral covered land, canyons, foothills, mountains, non-irrigated former farming areas, and other lands containing combustible vegetation requires modification of natural vegetation at the urban interface.

SUBMITTAL CRITERIA REQUIREMENTS

Fuel modification programs vary in complexity and are dependent upon the type, quantity, and spacing of vegetation, as well as topography, degree/type of exposure, local weather patterns, and the construction, design, and placement of structures. A typical fuel modification installation consists of a level 20-foot structure setback zone (Zone A), a minimum 50-foot irrigated zone (Zone B), with an additional 100-foot minimum of vegetation thinning zones (Zones C and D). The minimum width of a fuel modification area is 170 feet and in some cases the width increases due to type of terrain and/or type and mass of vegetation. *NOTE: Fuel modification or vegetation management can include areas within a tract located further from the edge of the community, based on the specific criteria noted in Section 7.* The many variables involved with fuel modification can sometimes make specific, uniform regulations impractical. The Orange County Fire Authority (OCFA) will not require an alternative means of protection proposal, if these guidelines are followed to the satisfaction of the OCFA.

The OCFA strongly encourages all project proponents to meet with OCFA staff prior to plan submittal to ensure an overall understanding of program scope and requirements during the design phase. Call 714-573-6100 to schedule an appointment.

1. Conceptual Fuel Modification Plans

Conceptual fuel modification plans must be approved by the OCFA Planning and Development Services Section. This approval occurs prior to, and/or concurrent, with review and approval of any tentative tract map or site grading permit, except for financing and conveyance purposes. This is usually in conjunction with the approval of an urban edge treatment plan by the jurisdiction's building/planning department. Refer to Section #10 for the timing of when fuel modification plans need to be approved.

Conceptual plans are optional. See Section 2 for the precise plan requirements. Precise plans shall include all submittal criteria information required for conceptual plans below. Approval of a fuel modification plan by the fire department does not eliminate the requirement to obtain appropriate environmental, grading, and zoning clearance/permits from the agency having jurisdiction. Conceptual plans show the area and location of fuel modification necessary to achieve the minimum acceptable level of risk to structures from combustible vegetation fires.

Submit three sets of plans prepared by a licensed landscape architect or other design professional with equivalent credentials to the appropriate jurisdiction for OCFA review. Contact OCFA in advance if not using a licensed landscape architect. An electronic copy of the plans is required in a .pdf format.

The following shall be included on the conceptual fuel modification plan (Refer to Attachment 1):

- A. Delineation of each zone (setback, irrigated, and thinning) with a general description of each zone's dimensions and character; 20 foot setback Zone "A" (Zone A shall not be less than a 20-foot minimum width. Zone A is to be located on a level, graded area at the top or base of the slope), 50-foot Irrigated Zone B, (Existing vegetation removed, and planted with adequately spaced plant material from Attachment 8) and Thinning Zones C and D (See Attachment 2). Provide the name(s) of the entity that is responsible for maintenance of each zone on the plan. Copy Attachment 6 onto the plans indicating appropriate spacing requirements will be designed for the precise plans.
- B. Identify the removal of undesirable plant species in accordance with the OCFA Fire Prone Plant Species List. (See Attachment 7) Copy Attachment 7 onto the plans.
- C. Existing plant species within the required fuel modification area planned to be retained and, if available, proposed plant materials to be planted in the fuel modification area. The plans shall address rare, protected, and endangered plant and animal species, tree ordinances, geological hazards, and other conflicting restrictions. The design professional must be prepared to address the disposition of these species with the submittal of the fuel modification plans.
- D. Identify the size of the proposed development by showing all tract and property lines and slope contour lines. Provide the proposed location of all structures nearest to the fuel modification area.
- E. Photographs of the area that show the type of vegetation that currently exists, including height and density, and the topography of the site.
- F. Description of the methods to be used for vegetation removal (i.e., mechanical or manual).
- G. Location of emergency and maintenance access easements within every 500 lineal feet of the fuel modification area. Access easements shall have a minimum 10-foot width; alternatively, 5-foot wide easements provided every 250 feet may be acceptable. Gates shall be installed into the fuel modification area and shall be a minimum of 36 inches wide. The easements shall be maintained free of vegetation or any structures greater than 5 inches in height.
- H. General description of what exists 300 feet beyond the development property lines in all directions; i.e., reserve lands, future construction, existing adjacent structures, natural vegetation, roads, parks, etc. The OCFA may require additional information on a project-specific basis.
- I. Identify any proposed off-site fuel modification areas and, in those cases, provide appropriate legal agreements with adjacent property owners. Copy the recorded easement on the plans. (Refer to Section 8)

- J. A note stating that within the fuel modification zones, the plant species will be selected from the OCFA approved plant palette.
- K. If you cannot meet the requirements of the fuel modification guideline for total distance of the zones, alternate plant species, or horizontal spacing/grouping distances, an Alternative Materials and Methods (AM & M) request letter shall be drafted by the applicant and submitted with the plans. Locate the OCFA Guideline A-01 on OCFA website at ocfa.org for assistance. If an alternative means of protection is approved by the OCFA, a copy of the AM & M request letter and an OCFA drafted response letter shall be copied onto the plans then re-submitted for the stamp of approval.

2. Precise Fuel Modification Plans

Precise fuel modification plans shall include all information required for conceptual fuel modification plans and the following additional information (Refer to Attachment 1).

- A. Location and detail of permanent zone markers. Copy Attachments 3 and 4 on the plans. Additionally, provide the degree or percentage of slope on the plan at the location of the zone markers. Some slopes may need to be surveyed. There is no specific lateral spacing requirement due to topography issues. However, adjacent markers shall be spaced to be visible laterally when standing at each marker regardless of how far apart the markers are.
- B. Plant palette to be designed and installed in accordance with this guideline. Include a plant legend for all trees, tree-form shrubs, shrubs, and ground cover in irrigated zones showing the maximum width of mature plants and proposed spacing in accordance with Attachment 6. Care should be taken to select plants that are sensitive to related resource agencies. (i.e., U.S. Fish and Wildlife Service, County Parks, The Nature Conservancy, Orange County Public Facilities and Resource Department, CA. Coastal Commission, and the Orange County Vector Control District). (Refer to the Attachment 8 code symbols and qualification statements to design the location of plants) See Section 3 for plant palette information.
- C. Irrigation plans indicating that an irrigation system is being designed and installed.
- D. If not available on the conceptual plan, building footprints or a statement that clearly indicates the limits of proposed structure(s).
- E. All applicable maintenance requirements and assignment of responsibility (Refer to Section 10F). Copy Section 10F on the plans. Additionally, copy Attachment 5 on the plan when any zone is maintained by a homeowners association.
- F. Copy Sections 4 through 6 and 10C-E on the plans. (Revise Section 4-6 as needed prior to copying).

G. For large developments, fuel modification zones should be located within common lettered lots owned and maintained by associations representing common ownership. When fuel modification zones are located on private property, deed restrictions, easements, or written disclosures are required to specifically identify the restrictions on any portion of the property subject to fuel modification. (Refer to Attachments 2 and 5).

H. See Section 1K.

3. OCFA Plant Palette Information

The plant species from Attachment 8 were approved by various resource agencies responsible for environmental protection. All plants installed shall be selected from Attachment 8 and be grouped and spaced in accordance with Attachment 6. Specific installation requirements are included for various plant species. (See plant code, legend, and qualification statements in Attachment 8). Retained plants shall be proposed for approval on the plans (See below for proposing alternate plant species). All plant species must be submitted in a legend on the plans containing both the botanical and common names. In irrigated zones plants must be fire resistant and drought-tolerant. New plant species introduced outside of the irrigated zones must be from Attachment 8 (Or see below). (All plants including species from Attachment 8 will burn given sufficient heat and low moisture content. Vegetative fire resistance may be enhanced through adequate irrigation rates or precipitation).

Proposing Alternate Species:

If alternate plant species are proposed, the landscape architect shall provide photographs as well as all data on the size and fire resistive characteristics for installation criteria. A maximum of 10 alternate species can be proposed per project. Plant selections need to have similar/equal properties to the plants from Attachment 8. OCFA will make a case-by-case determination as to acceptability of the proposed species. The proposed species must be spaced based on size and characteristics. If the plant materials are proposed to be planted within 300 feet of reserve lands (except plants on the interior of the tract), concurrence from the applicable agencies listed in Section #2.B would be required. If the proposed plants have received previous resource agency approval, no concurrence letter will be required. Contact OCFA prior to your submittal of alternate plant species if needed.

4. Zone A – Irrigated Structure Setback Zone (See Attachment 2)

The purpose of the setback zone is to provide a defensible space for fire suppression forces and to protect structures from radiant and convective heat. **Zone A shall not be less than a 20-foot minimum width. The entire zone is to be located on a level, graded area at the top or base of the slope.**

If Zone A is located within the lot containing the protected structure and another entity is maintaining the B-D zones, it shall be located at the most distal level 20 feet prior to the beginning of the slope. If Zone A is located outside of the lot containing the protected structure, it shall begin at the lot property line. The latter condition is preferred as it allows for combustible construction within privately owned individual lots. Typically, Zone A will not be approved when proposed more than 100 feet from the protected structure. Zone A may incorporate trails, roadways, and other level noncombustible surfaces that create defensible space for fire crews heat reduction between the protected structure and the fire.

Zone A – Specific Maintenance Requirements

- A. Automatic irrigation systems to maintain healthy vegetation with high moisture content and be regularly irrigated.
- B. Pruning of foliage to reduce fuel load, maintain vertical continuity, and removal of plant litter and dead wood in accordance with Attachment 6.
- C. Complete removal of undesirable plant species (See Attachment 7). There is also minimal allowance for retention of selected native vegetation.
- D. Plants in this zone shall be highly fire resistant and selected from the Attachment 8 for the setback zone and given geographical area. (Refer to Attachment 8 and Section 3).
- E. Tree species within Zone A are not allowed within 10 feet of combustible structures (measured from the edge of a full growth crown).
- F. Maintenance includes thinning and removal of over-growth, replacement of dead/dying fire resistant plantings, and maintenance of the operation of the irrigation system.
- G. Devices that burn solid fuels are not permitted in any fuel modification zone.
- H. No combustible construction shall be allowed within Zone A.

5. Zone B – Irrigated Zone

This portion of fuel modification consists of irrigated landscaping. This irrigated zone adjoins Zone A, and is a minimum of 50 feet in width and may be increased as conditions warrant. The plans must delineate that portion of the fuel modification area that will be permanently and regularly irrigated. The landscape architect shall select plant species, design an irrigation system, and design a maintenance program which sensitively addresses water conservation practices and includes methods of erosion control to protect against slope failure. All irrigation shall be kept a minimum of 20 feet from the drip line of any existing native *Quercus* (oak) species.

Zone B shall be cleared of all undesirable plant species, irrigated, and planted with species from Attachment 8. Exceptions to save desirable species may be submitted for approval by the OCFA on a site-specific basis.

Zone B – Specific Maintenance Requirements

- A. Groundcover shall be installed and maintained at a height not to exceed 2 feet.
- B. In order to maintain proper coverage, native grasses shall be allowed to go to seed. Native grasses shall be cut after annual seeding. Cut heights shall be approximately 4 -inches.
- C. Apply irrigation rates to maintain healthy vegetation with high moisture content based on plant species specific needs.
- D. All plant species designed for Zone B shall be selected from Attachment 8. Existing fuel modification maintenance programs are limited to the plants listed on the approved plans unless a revision is requested. Planting and maintenance shall be in accordance with planting restrictions from Attachments 6, 7, and 8.
- E. Groups of trees, tree-form shrubs, and shrubs that naturally exceed 2 feet in height shall be vertically pruned, and horizontally spaced in accordance with Attachment 6.
- F. Removal of dead and dying vegetation and undesirable plant species from Attachment 7.
- G. Devices that burn solid fuels are not permitted in any fuel modification zone.
- H. Combustible construction is not allowed within Zone B.

6. Zones C & D – Thinning Zones – Non-Irrigated

Zone C is 50 feet in width and requires horizontal and vertical spacing of plant groups in accordance with Attachment 6 and removal of all dead and dying vegetation and undesirable species from Attachment 7. Minimum thinning percentage of plant removal is 50%.

Zone D is 50 feet in width and requires horizontal and vertical spacing of plant groups in accordance with Attachment 6 and removal of all dead and dying vegetation and undesirable species from Attachment 7. Minimum thinning percentage of plant removal is 30%.

Thinning zones reduce the fuel load of a wildland area adjacent to the irrigated zones and urban development, reducing heat and ember production from wildland fires. Thinning zones adjoin Zone B and can extend 100 feet or more into wildland areas. The total percentage of vegetation to be removed is determined by many factors, including topography, exposure, vegetation type, and vegetation density. Sometimes a greater thinning percentage than the minimum may be temporarily needed to meet spacing requirements from Attachment 6 or the removal of dead and undesirable species.

Zone C and D – Specific Maintenance Requirements

- A. Removal of dead and dying vegetation and undesirable plant species from Attachment 7.
- B. In order to maintain proper coverage, native grasses shall be allowed to go to seed. Native grasses shall be cut after annual seeding. Cut heights shall be approximately 4 inches.
- C. Groups of trees, tree-form shrubs, and shrubs that naturally exceed 4 feet in height shall be vertically pruned, and horizontally spaced in accordance with Attachment 6.
- D. Plants species introduced into Zone C or D shall be selected from Attachment 8. Existing fuel modification maintenance programs are limited to the plants listed on the approved plans unless a revision is requested. Planting and maintenance shall be in accordance with planting restrictions from Attachments 7 and 8. (See Section 3)
- E. Reduce fuel loading by reducing fuel in each remaining shrub or tree without substantial decrease in the canopy cover or removal of tree holding root systems. Maintain sufficient cover to prevent erosion without requiring planting. Roots of species listed in Attachment 7 shall be removed from the zone unless an erosion analysis has been performed by a qualified professional or Geologist indicating the need to retain the root systems. Geology reports affecting the fuel modification program shall be provided to the OCFA.

7. Vegetation Management for Interior/Manufactured Slopes and Areas with Non-Irrigated Vegetation

Except in unique situations, the interior/manufactured slopes and non-irrigated native vegetation portions of a community are not standard fuel modification zones, but may be subject to planting restrictions, irrigation, and maintenance requirements to ensure structures are reasonably protected from flying embers that may be produced by a vegetation fire. The fuel modification plans shall set forth the maintenance requirements for designated interior areas of the community. Preliminary/conceptual master landscape plans, indicating the general plant palette and density, must be submitted with the fuel modification plans. The preliminary/conceptual master landscape plans will be evaluated to determine if the areas have the potential to increase the hazard to structures or if they will lessen the hazard. The assessment process is as follows:

- A. Applicant shall submit the preliminary/conceptual master landscape plans for all planted and native areas within the tract. It shall be combined in the plan set with the perimeter fuel modification plans (conceptual or precise).
- B. The areas will be evaluated, based on location, topography, size, and plant palette as to whether the proposed planting scheme and/or improper maintenance could create a hazard to adjacent homes. Specific criteria used in the assessment include:
 - 1) The community is in any designated Fire Hazard Severity Zone (FHSZ), Wildland-Urban Interface Area (WUI), or Special Fire Protection Area (SFPA).
 - 2) Homes adjacent to the areas are not proposed to have “special construction features.”
 - 3) There are no proposed restrictions on combustible construction on lots (patio covers, gazebos, etc.).
 - 4) There are no proposed planting restrictions on lots.
 - 5) The proximity between structures and landscape slopes is such that fire travel is probable.
 - 6) The area/slope is not proposed to be irrigated.
 - 7) The plant palette for the area/slope contains plant species from the OCFA undesirable plant list.
 - 8) The plant spacing is less than the minimum spacing requirements outlined in this guideline.
 - 9) The proposed plant arrangement creates a “fuel ladder.”

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- 10) The slope/area is contiguous with community perimeter fuel modification zones and/or the prevailing wind patterns are such that fire travel is probable.
- C. If the potential for a hazard exists, the OCFA shall notify the applicant of specific concerns that may require planting and maintenance restrictions. Those areas will be titled, "Vegetation Management Areas" on the plans. The OCFA may review alternate proposals by the applicant to gain acceptance of these areas without restrictions. Considerations include:
- 1) Use of species from the OCFA approved plant palette within 30 feet of structures.
 - 2) Use of "special construction features" on all structures throughout the community.
 - 3) Irrigation.
 - 4) Limited use of trees and/or large shrubs that are not on the Fuel Modification Zone Plant List and/or that are not planted in accordance with spacing requirements of this guideline.

NOTE: Irrigated, maintained streetscapes which are community perimeter edges and not part of the perimeter fuel modification will not be regulated unless a distinct hazard is created. Streetscapes are maintained by the HOA, irrigated, and are not more than 38 feet in width. If the OCFA determines the proposed planting of these areas creates a distinct hazard, the land developer will be contacted to assist them with a solution.

- D. If the interior/manufactured slope or non-irrigated native vegetation portion of a community has hazards are not otherwise mitigated, the area(s) shall be regulated as part of the fuel modification plan and subject to the specific requirements below, as well as approved/recorded maintenance provisions.
- E. If hazards do not exist or have been mitigated to an acceptable level, the information may be used to support fire protection plan proposals in the FHSZ's, WUI, or SFPA designations.

Specific Requirements

- A. The irrigation and maintenance requirements of perimeter fuel modification zones apply to these areas.
- B. The area is completely irrigated or the area is adequately separated from structures.
- C. There is a noncombustible setback zone of 15 feet from all structures (see Zone A requirements).

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- D. Only trees and shrubs from the Fuel Modification Zone Plant List, and planted in accordance with spacing requirements, can be used within the first 30 feet from any structure.
 - E. Selected Pinus, Palm, and Eucalyptus species must be a minimum of 30 feet from all structures (measured from mature canopy growth to the structure) and planted in clusters of no more than 5 to 7 trees per cluster with 30 feet between clusters. The areas between the clusters may be planted with allowable plants.
 - F. Vegetative under-story must not create a fuel ladder or create the potential for ground fires. Trees shall be limbed up to three times the height of the under-story vegetation height or no vegetation taller than 2 feet in height within 15 feet of trees is allowed.
 - G. Any plants proposed from the OCFA Attachment 7 undesirable list shall be reviewed through a Alternate Means of Protection process to determine the plants suitability, including spacing requirements, within the project boundary area.

NOTE: The identification of structures required to have special construction features from Chapter 7A of the California Building Code (CBC) relative to development/construction in any FHSZ, shall be done independently from the assessment of the proposed fuel modification plan. These construction features are required on the OCFA reviewed Fire Master Plan. (Refer to the OCFA Guideline B-09).

8. Off-Site Fuel Modification Requirements

Due to the variable and sometimes considerable amount of land necessary for fuel modification, development proposals often include a request to have the required fuel modification zones extend onto adjacent properties. However, off-site fuel modification is not allowed without a recorded easement from the adjacent land owner due to problems inherent with enforcement of regulations on the adjacent property, as well as the potential for confusion regarding responsibility for fuel modification on areas outside of legal ownership. Proper on-site fuel modification design should determine where development may safely be located, and should be an integral part of the development proposal.

Should off-site fuel modification be deemed a necessity, appropriate legally recorded instruments must be established that clearly state the responsibilities and rights of the parties involved relative to the establishment and maintenance of the fuel modification area. Appropriate recorded documents must include a recorded agreement between all parties or a grant of easement for the establishment and maintenance of the fuel modification area. It should be understood that the allowance of off-site fuel modification by an adjacent property owner may affect the rights, and/or use, of the off-site property. All agreements for any off-site fuel modification shall be integrated into fuel modification plans with a recorded document from adjoining property owner, giving rights to maintain fuels off-site.

9. Fuel Modification Plan Revisions

Revisions to previously approved fuel modification zones or plans shall follow procedures as established by the agency having jurisdiction. Existing fuel modification maintenance programs are limited to the plants and zone distances listed on the approved plans unless a revision is requested to the OCFA. Three sets of revised plans are to be submitted to the OCFA for review. The applicant shall provide a copy of the original, stamped OCFA approved plan for reference during the review. Some minor field changes may not need a plan submittal revision, yet those instances shall require approval by OCFA in writing prior to the field change.

10. Fuel Modification Implementation & Required Inspections

This following information shall be placed on precise fuel modification plans, verbatim:

- A. **Prior to Rough Grading Permit Issuance:** The developer/builder shall have approved/stamped Conceptual or Precise Fuel Modification Plan.
- B. **Prior to Precise Grading Permit Issuance:** The developer/builder shall have approved/stamped Precise Fuel Modification Plan, with applicable note stating maintenance language will be provided in CC&Rs and reviewed prior to issuance of certificate of occupancy (Refer to Attachment 5).
- C. **Prior to Building Permit Issuance:** Prior to dropping lumber, the developer/builder shall implement those portions of the approved fuel modification plan determined to be necessary by the OCFA prior to the introduction of any combustible materials into the area. Removal of undesirable species may meet this requirement or a separation of combustible vegetation for a minimum distance of 100 feet from the location of the structure and lumber stock-pile. This generally involves removal and thinning of plant materials indicated on the approved plan. An inspection and/or release letter to the building department is required.
- D. **Prior to Issuance of Certification of Occupancy:** The fuel modification zones adjacent to structures must be installed, irrigated, and inspected. This includes physical installation of features identified in the approved precise fuel modification plan (including, but not limited to, plant establishment, thinning, irrigation, zone markers, access easements, etc). An OCFA Inspector will provide written approval of completion at the time of this final inspection. A written disclosure may be requested by the OCFA Inspector indicating that the homeowner is aware of the fuel modification zone on their land and that they are aware of the associated restrictions of the zone. Copies of buyer or builder signed emergency and maintenance access easements shall be presented upon occupancy final (See Section 1G).

E. Prior to Home Owner Association (HOA) Maintenance Acceptance from Developer:

This inspection/meeting must include the Fire Inspector and the following representatives:

- Landscape design professional
- Installing landscape contractor
- HOA management representative
- HOA landscape maintenance contractor

The fuel modification areas shall be maintained as originally installed and approved. A copy of the approved plans must be provided to the HOA representatives at this time. Landscape professionals must convey ongoing maintenance requirements to HOA representatives. The CC&R language for maintenance must also be provided and approved by the OCFA (Refer to Attachment 5).

- F. Annual Inspection and Maintenance:** The property owner is responsible for all maintenance of the fuel modification. All areas must be maintained indefinitely in accordance with notes on the approved fuel modification plans. This includes a minimum of two growth reduction maintenance activities throughout all fuel modification zones each year. Perform maintenance sometime within time periods of mid to late spring and once again in early to mid fall. Other activities include maintenance of irrigation systems, replacement of dead or dying vegetation with approved species, removal of dead plant material, removal of trees and shrubs not on the approved plans, and removal of undesirable highly combustible species. The OCFA may conduct inspections of established fuel modification areas. Ongoing maintenance shall be conducted a minimum of twice each year regardless of the dates of these inspections. The property owner shall retain all approved fuel modification plans. The plans should be used to perform the maintenance. As property is transferred, property owners shall disclose the location and regulations of fuel modification zone to the new property owners.

11. Fees

Fees are charged for review of fuel modification plans. These fees also include a limited number of inspections necessary to approve the installation. Additional fees will be applied should a project require additional inspections. Fees may be charged for annual inspection of existing fuel modification areas. Additional non-compliance fees may be applied if identified deficiencies are not corrected within required time frames.

12. Glossary

CONDUCTION - Direct transfer of heat/flames by objects touching each other.

CONVECTIVE HEAT - Transfer of heat by atmospheric currents, which is most critical under windy conditions and in steep terrain.

CROWN - Upper part of tree or other woody plant carrying the main branch system and foliage.

CANOPY - More or less continuous cover of branches and foliage formed collectively by the crowns of adjacent trees or other woody growth.

DEFENSIBLE SPACE - An area around the perimeter of structures which are key points of defense/attack against encroaching wildfires or fires escaping the structure. Defensible space refers to the area between a structure and a potential on-coming wildfire. Defensible space is needed when structures are adjoining grass covered, brush covered, forest covered land, or any land which is covered with flammable material including a fuel modification zone.

DESIRABLE PLANT LIST - List of plants exhibiting characteristics of low fuel volume, fire resistance, and drought tolerance which make them desirable for planting in areas of high fire danger.

DRIPLINE - Ground area at the outside edge of the canopy.

DROUGHT TOLERANT - The ability of a plant or tree to survive on little water.

FIRE BREAK - Removal of growth, usually in strips, around housing developments to prevent a fire from spreading to the structures from open land or vice versa.

FIRE RESISTANT - Any plant will burn with enough heat and proper conditions. Resistance is often used as a comparative term relating to the ability of a plant to resist ignition.

FIRE RETARDANCE - Relative comparison of plant species related to differences in fuel volume, inherent flammability characteristics, and ease of fire spread.

FUEL BREAK - A wide strip or block of land on which the native or pre-existing vegetation has been permanently modified so that fires burning into it can be more readily extinguished.

FUEL LOAD - The weight of fuels in a given areas, usually expressed in tons per acre.

FUEL MODIFICATION ZONE - A strip of land where combustible native or ornamental vegetation has been modified and partially or totally replaced with drought tolerant, fire resistant, plants.

FUEL MOISTURE CONTENT - The amount of water in a fuel, expressed as a percentage of the oven dry weight of that fuel.

FUEL VOLUME - The amount of fuel in a plant in a given area of measurement. Generally, an open-spaced plant will be low in volume.

HORIZONTAL CONTINUITY - The extent or horizontal distribution of fuels at various levels or planes.

LADDER FUELS - Fuels which allow the vertical transmission of fire to over-story vegetation. Fire is able to carry from ground surface fuels into crowns with relative ease.

LITTER - The uppermost layer of loose debris composed of freshly fallen or slightly decomposed organic material such as dead sticks, branches, twigs, leaves or needles.

LONG TERM - In perpetuity of the fuel modification plan requirement.

PROBABILITY OF IGNITION - A rating of the probability that a glowing or flaming flying ember or heat will cause a fire, providing it lands on receptive fuels.

RADIANT HEAT - Transfer of heat by electromagnetic waves and can, therefore, travel against the wind. For example, it can preheat the opposite side of a burning slope in a steep canyon or a neighboring home to the ignition point.

RESERVE LANDS - As defined by the Central Coastal and Southern Natural Communities Conservation Plan or resource agencies.

TARGET SPECIES - Plant species that are generally removed as part of the fuel modification plan (see undesirable species).

UNDESIRABLE SPECIES - Those species of plants with inherent characteristics which make them highly combustible. These characteristics can be either physical or chemical. Physical properties include large amounts of dead material retained within the plant, rough or peeling bark, and the production of large amounts of litter. Chemical properties include the presence of volatile substances such as oils, resins, wax, and pitch. These plants are sometimes referred to as target species.

VEGETATION MANAGEMENT - Fuel Modification or Defensible Space plant installation or maintenance activities for the purposes of reducing the intensity of vegetation fires and to reduce the chances of the ignition of structures.

WILDLAND URBAN INTERFACE - That line, area, or zone where structures and other human development meet or intermingles.

FIRE HAZARD SEVERITY ZONES (FHSZ), WILDLAND URBAN INTERFACE (WUI) AND SPECIAL FIRE PROTECTION AREAS (SFPA) - The geographic areas designated on adopted local and state CALFIRE maps. The areas contain the type of vegetation, topography, weather, and fire history that have the possibility of conflagration fires.

ATTACHMENT 1

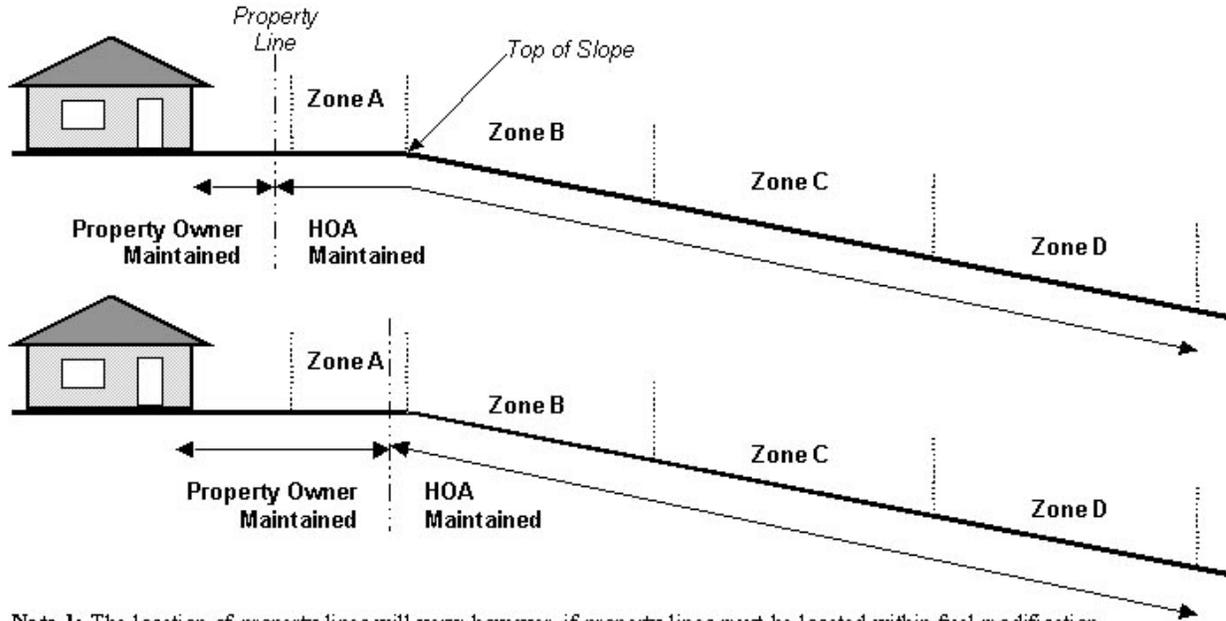
FUEL MODIFICATION PLAN SUBMITTAL CHECKLIST

(Use Sections 1 and 2 criteria to design your plan. This Attachment is only a quick reference)

	CONCEPTUAL PLANS	PRECISE PLANS
<input type="checkbox"/> Prior to or Concurrent with review and approval of tentative map (If applicable)	X	
<input type="checkbox"/> Prior to issuance of grading permit (If no grading permit is required, prior to issuance of building permit)		X
<input type="checkbox"/> Number of plans sets to the processing jurisdiction	3 sets	3 sets
PLAN REQUIREMENTS (Use Sections 1 and 2 for detailed requirements)		
<input type="checkbox"/> Delineation of each fuel modification zone	X	X
<input type="checkbox"/> Scale Dimensions	X	X
<input type="checkbox"/> Site Characterization	X	X
<input type="checkbox"/> Photographs of area with emphasis on existing vegetation and topography	X	X
<input type="checkbox"/> Indication of permanent zone marker locations and detail		X
<input type="checkbox"/> Delineation of impacted existing vegetation	X	X
<input type="checkbox"/> Description of vegetation removal methodology	X	X
<input type="checkbox"/> Note indicating compliance with approved OCFA plant palette	X	
<input type="checkbox"/> Plan shall include both landscape areas and fuel modification zones.	X	
<input type="checkbox"/> Plant palette & specifications, including a plant legend (botanical & common names) for existing and proposed plants. <i>A matrix of typical spacing requirements, as well as the following information: planting lines, topography, wind direction, neighboring lot lines.</i>		X
<input type="checkbox"/> Designation of irrigated zone	X	X
<input type="checkbox"/> Irrigation plans and specifications (engineer scale) shall be provided upon request		X
<input type="checkbox"/> Removal of undesirable species (Attachment 7)	X	X
Delineation of proposed development:		
<input type="checkbox"/> Property lines	X	X
<input type="checkbox"/> Contour lines	X	X
<input type="checkbox"/> Building lines or statement indicating limits of proposed development	X	X
<input type="checkbox"/> Emergency and maintenance access easements	X	X
Generally describe characteristics, existing improvements, land uses, wetland and riparian areas & vegetation for 300 feet beyond property lines in all directions	X	X
<input type="checkbox"/> Statement, on the plans, of ultimate maintenance responsibility requirement	X	X
<input type="checkbox"/> Notes to indicate information in CC&Rs, and/or deed restrictions, recorded easements relative to fuel modification areas	X	X
<input type="checkbox"/> Location of all proposed offsite fuel modification areas with easements	X	X

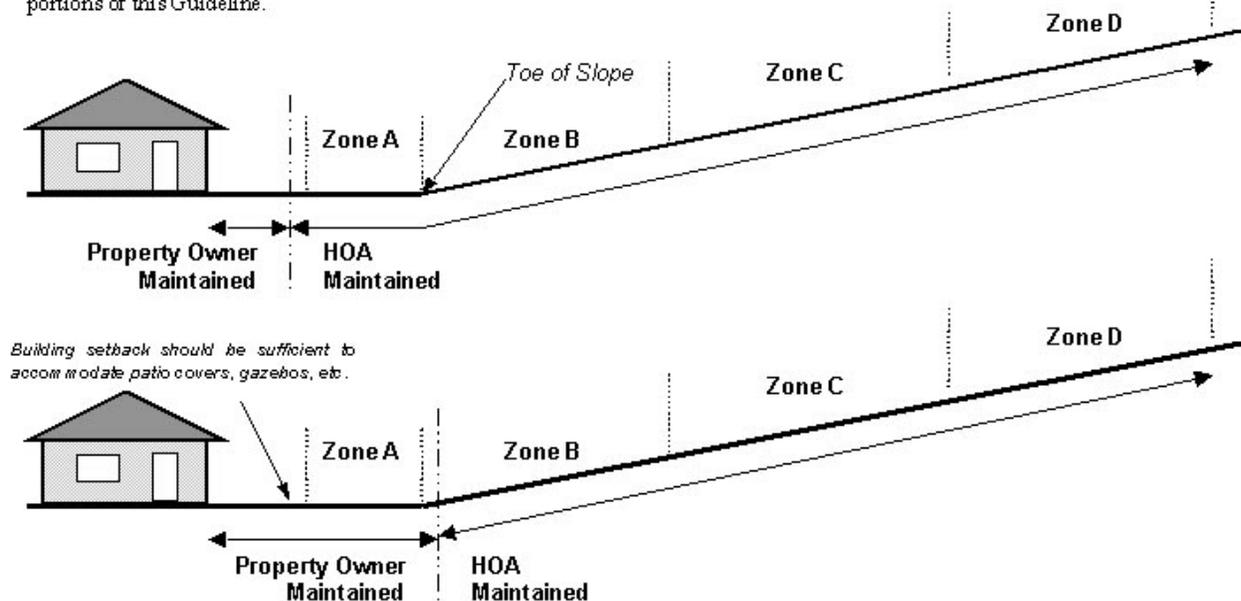
ATTACHMENT 2

FUEL MODIFICATION CONFIGURATION OPTIONS



Note 1: The location of property lines will vary, however, if property lines must be located within fuel modification areas, appropriate documentation (e.g., Maintenance easements and/or deed restrictions) shall be established to: 1) restrict certain activities and uses on those portions of any private property within the fuel modification area, and 2) identify those responsible for the establishment and continued maintenance of the fuel modification area located on private property.

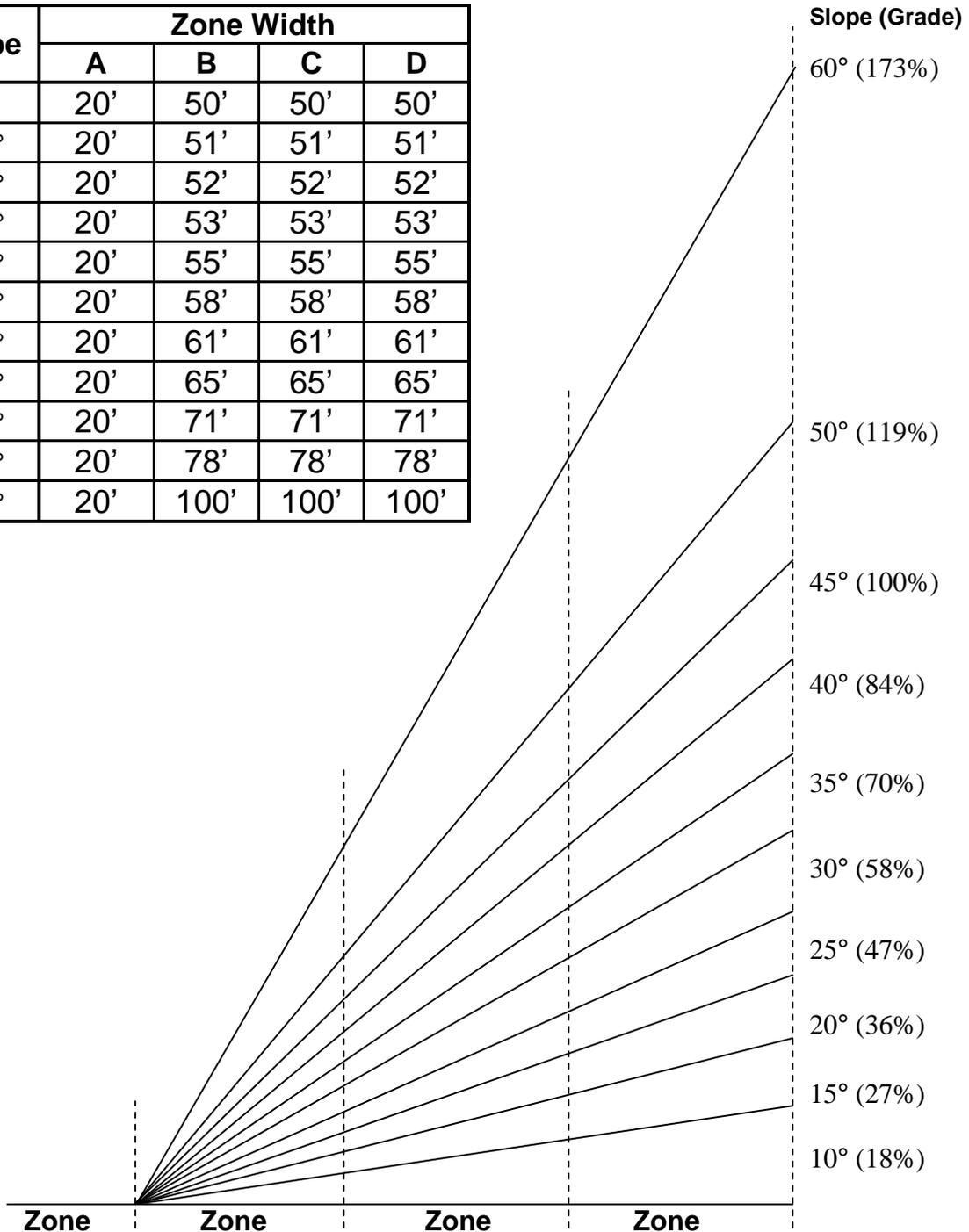
Note 2: Regardless of the entity responsible for fuel modification maintenance, the continued maintenance shall be in accordance with Section 10 "Fuel Modification Implementation & Required Inspections" and other applicable portions of this Guideline.



Attachment 3

INCLINE MEASUREMENT FOR SELECTED SLOPES (See Attachment 4)

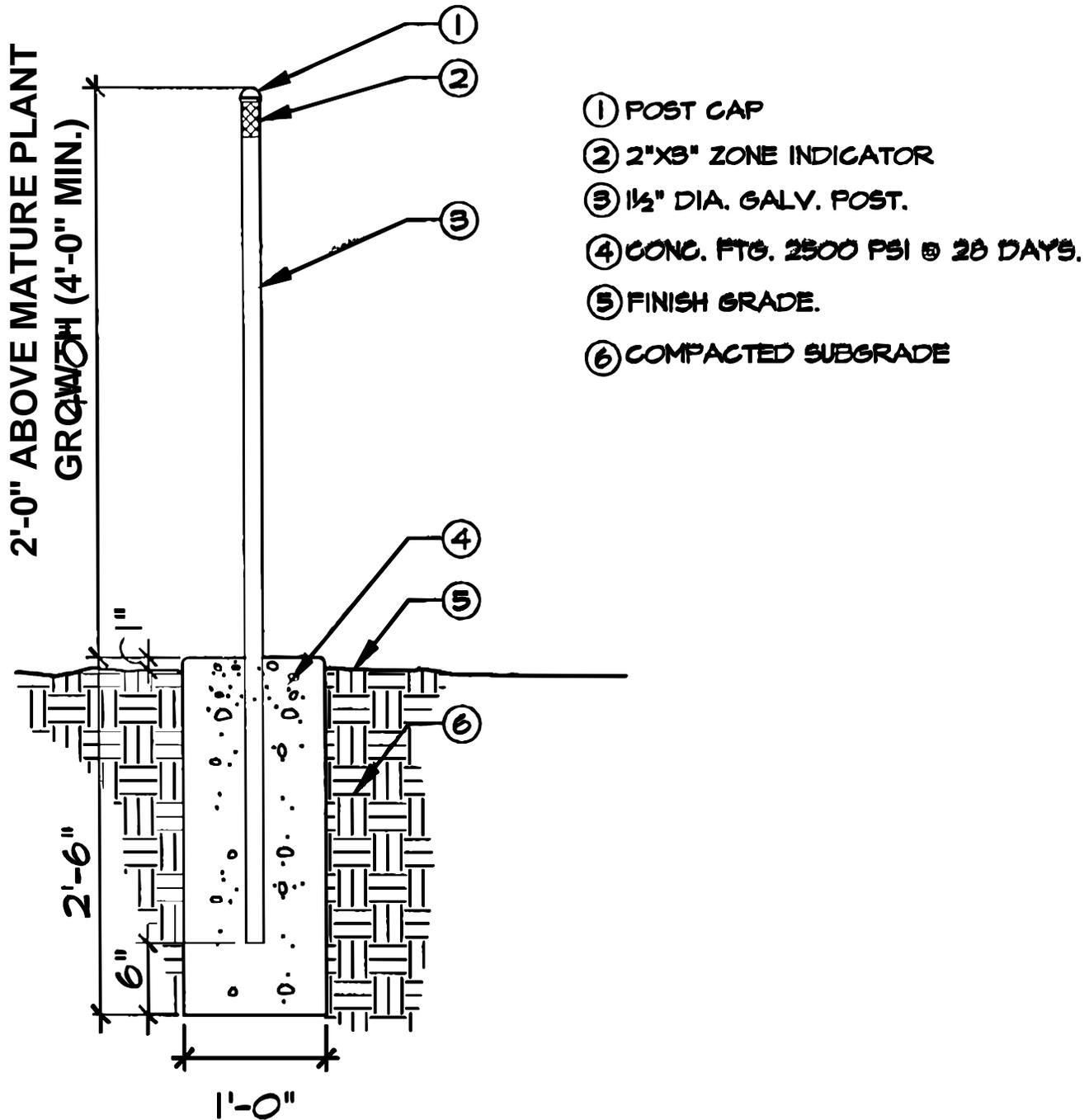
Slope	Zone Width			
	A	B	C	D
0°	20'	50'	50'	50'
10°	20'	51'	51'	51'
15°	20'	52'	52'	52'
20°	20'	53'	53'	53'
25°	20'	55'	55'	55'
30°	20'	58'	58'	58'
35°	20'	61'	61'	61'
40°	20'	65'	65'	65'
45°	20'	71'	71'	71'
50°	20'	78'	78'	78'
60°	20'	100'	100'	100'



Attachment 4

ZONE MARKER DETAILS

(Marker Distances Shall Be Increased on Slopes to Accommodate Incline Measurements in Accordance With Attachment 3)



Attachment 5

SAMPLE CC&R MAINTENANCE LANGUAGE

It is recommended that the following language be included in the CC&Rs recorded for a common interest development:

The duty of the homeowners' association to perform "Fire Prevention Maintenance" (as defined below) for all Fuel Modification Zones and manufactured interior slopes within the development shall be included as an express obligation in the recorded CC&Rs for the development. Similarly, each Owner whose Lot (or Condominium) is subject to Fuel Modification Zone restrictions (e.g., non-combustible structure setback, etc.) shall be obligated to comply with such restrictions.

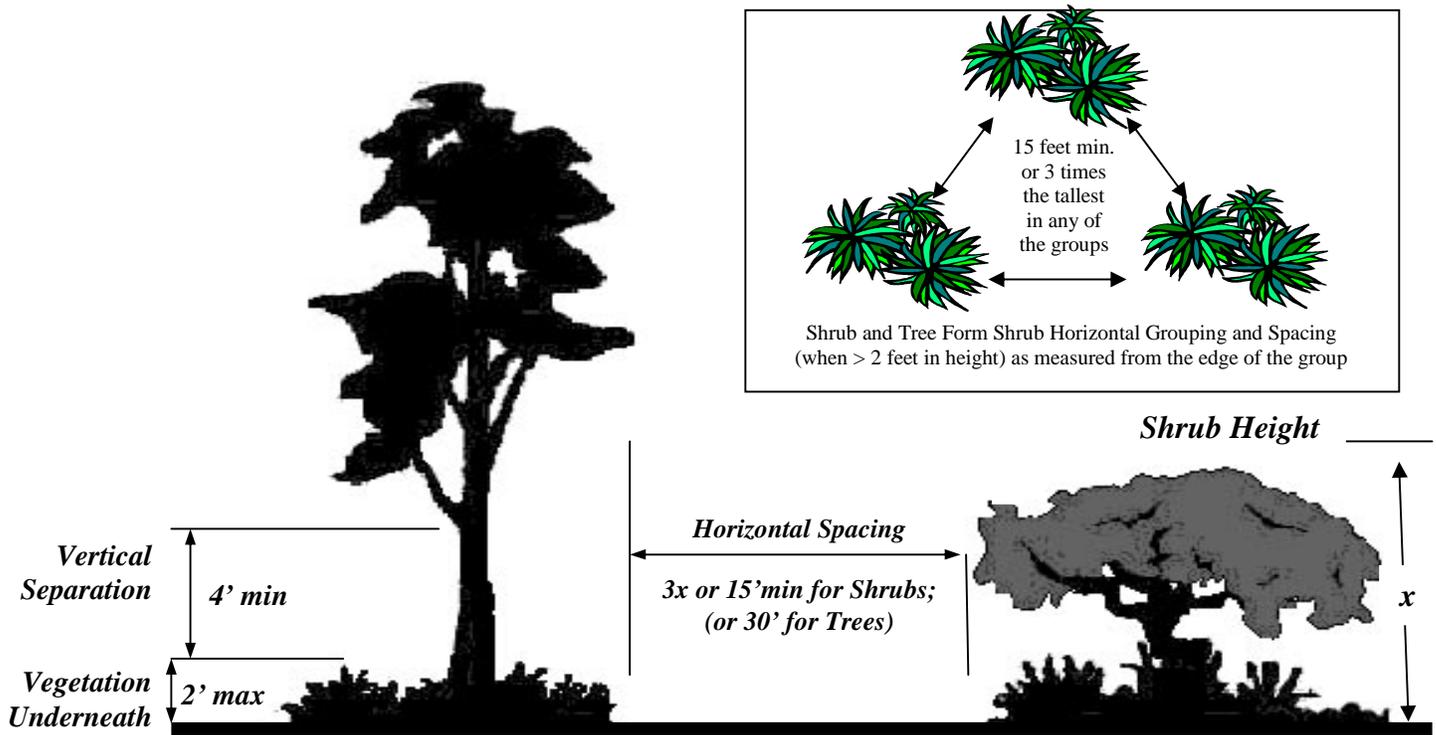
1. The OCFA will be designated as a third party beneficiary of a homeowner association's duty to perform "Fire Prevention Maintenance" (as defined below) for all portions of the Association Property (or Common Area) that constitute fuel modification zones and designated interior/manufactured slopes to be maintained by the homeowners' association, and of any Owner's duty to comply with any fuel modification zone restrictions applicable to their lot (or condominium). Additionally, OCFA shall have the right, but not the obligation, to enforce the homeowners' association's duty to perform such Fire Prevention Maintenance, and to enforce compliance by any owner with any fuel Modification zone restrictions applicable to their lot (or Condominium). In furtherance of such right the OCFA shall be entitled to recover its costs of suit, including its actual attorneys' fees, if it prevails in an enforcement action against a homeowners' association and/or an individual owner. (A sample third party beneficiary provision to be incorporated into the CC&Rs is attached hereto as Addendum "1").
2. As used herein, "Fire Prevention Maintenance" shall mean the following:
 - (i) All portions of the Association Property (or Common Area) that constitute fuel modification zones or designated interior/manufactured slopes shall be regularly maintained by the homeowners association on a year-round basis in accordance with the fuel modification plan on file with the property manager for the development.
 - (ii) The irrigation system for fuel modification zones or designated interior/manufactured slopes shall be kept in good condition and proper working order at all times. The irrigation system shall not be turned off except for necessary repairs and maintenance.

ADDENDUM “1”

Enforcement by the OCFA: The OCFA is hereby designated as an intended third party beneficiary of the Association’s duties to perform “Fire Prevention Maintenance” for all portions of the Association Property (or Common Areas) consisting of fuel modification zones or designated interior/manufactured slopes in accordance with the fuel modification plan, and of each Owner’s duty to comply with any fuel modification zone or designated interior/manufactured slopes restrictions applicable to his Lot (or condominium) as set forth in the fuel modification plan. In furtherance thereof, the OCFA shall have the right, but not the obligation, to enforce the performance by the association of its duties and any other fire prevention requirements which were imposed by the OCFA or other public agency as a condition of approval for the development (e.g. , prohibition of parking in fire lanes, maintenance of the blue reflective markers indicating the location of fire hydrants, etc.) and shall also have the right, but not the obligation, to enforce compliance by any owner with any fuel modification zone or designated interior/manufactured slopes restrictions applicable to his lot (or condominium) as set forth in the fuel modification plan. If in its sole discretion, the OCFA shall deem it necessary to take legal action against the association or any owner to enforce such duties or other requirements, and prevails in such action, the OCFA shall be entitled to recover the full costs of said action including its actual attorneys' fees, and to impose a lien against the association property, or an owner’s lot (or condominium), as the case may be, until said costs are paid in full.

Attachment 6

Horizontal Spacing and Vertical Separation Requirements for Installation and Maintenance in All Fuel Modification Zones



Horizontal Spacing

Less than 2 Feet in Height (Ground Cover / Grasses):

- No horizontal spacing or vertical separation is required. Ground cover / Grasses should cover the entire ground between groups of shrubs or trees. Ground cover shall not exceed 2 feet in height.

2 Feet in Height or Greater:

Shrub and Tree Group Size:

- All Shrubs and Trees can be in groups of 3 specimens or less. No horizontal spacing is required inside the group.

Shrub / Tree-form Shrub Group Spacing:

- Groups of shrubs shall be spaced by the greater of the following two measurements: A distance of 15 feet minimum (or) 3 times the height of the tallest specimen in any of the groups.
- No vegetation over 2 feet in height is allowed within 15 feet from the edge of tree canopy(s).

Tree Group Spacing:

- Groups of Trees shall be spaced by a distance of 30 feet minimum regardless of height.

Vertical Separation

Less than 10 Feet in Height:

- When the fuel modification zone is within 30 feet of the structure, a vertical separation of 2 feet minimum is required from the vegetation below. (Not required if shrubs are further than 30 feet from structure).

10 Feet in Height or Greater:

- A vertical separation of 4 feet minimum is required to be maintained from the vegetation below.
- Trees only: All vegetation located underneath trees, shall be a maximum of 2 feet in height.

Attachment 7

UNDESIRABLE PLANT SPECIES (Target Species)

Certain plants are considered to be undesirable in the landscape due to characteristics that make them highly flammable. These characteristics can be either physical or chemical. Physical properties that would contribute to high flammability include large amounts of dead material retained within the plant, rough or peeling bark, and the production of copious amounts of litter. Chemical properties include the presence of volatile substances such as oils, resins, wax, and pitch. Certain native plants are notorious for containing these volatile substances.

Plants with these characteristics shall not be planted in any of the fuel modification zones. Should these species already exist within these areas, they shall be removed because of the potential threat they pose to any structures. They are referred to as target species since their complete removal is a critical part of hazard reduction. These fire-prone plant species include (but not limited to):

FIRE PRONE PLANT SPECIES (MANDATORY REMOVAL)

<u>Botanical Name</u>	<u>Common Name</u>
Cynara Cardunculus	Artichoke Thistle
Ricinus Communis	Castor Bean Plant
Cirsium Vulgare	Wild Artichoke
Brassica Nigra	Black Mustard
Silybum Marianum	Milk Thistle
Salsola Austails	Russian Thistle/Tumblewood
Nicotiana Bigelevil	Indian Tobacco
Nicotiana Glauca	Tree Tobacco
Lactuca Serriola	Prickly Lettuce
Conyza Canadensis	Horseweed
Heterothaca Grandiflora	Telegraph Plant
Anthemix Cotula	Mayweed
Urtica Urens	Burning Nettle
Cardaria Draba	Noary Cress, Perennial Peppergrass
Brassica Rapa	Wild Turnip, Yellow Mustard, Field Mustard
Adenostoma Fasciculatum	Chamise
Adenostoma Sparsifolium	Red Shanks
Cortaderia Selloana	Pampas Grass
Artemisia Californica	California Sagebrush
Eriogonum Fasciculatum	Common Buckwheat
Salvia Mellifera	Black Sage
Ornamental:	
Cortaderia	Pampas Grass
Cupressus sp	Cypress
Eucalyptus sp	Eucalyptus
Juniperus sp	Juniper
Pinus sp	Pine

Attachment 8

FUEL MODIFICATION ZONE PLANT LIST

(Note: Legend can be found on page 35)

	<u>Code</u>	<u>Botanical Name</u>	<u>Common Name</u>	<u>Plant Form</u>
1.	W	Abelia x grandiflora	Glossy Abelia	Shrub
2.	n	Acacia redolens desert carpet	Desert Carpet	Shrub
3.	o	Acer macrophyllum	Big Leaf Maple	Tree
4.	X	Achillea millefolium	Common Yarrow	Low Shrub
5.	W	Achillea tomentosa	Woolly Yarrow	Low Shrub
6.	X	Aeonium decorum	Aeonium	Ground cover
7.	X	Aeonium simsii	no common name	Ground cover
8.	W	Agave attenuata	Century Plant	Succulent
9.	W	Agave shawii	Shaw's Century Plant	Succulent
10.	N	Agave victoriae-reginae	no common name	Ground Cover
11.	X	Ajuga reptans	Carpet Bugle	Ground Cover
12.	W	Alnus cordata	Italian Alder	Tree
13.	o	Alnus rhombifolia	White Alder	Tree
14.	N	Aloe arborescens	Tree Aloe	Shrub
15.	N	Aloe aristata	no common name	Ground Cover
16.	N	Aloe brevifoli	no common name	Ground Cover
17.	W	Aloe Vera	Medicinal Aloe	Succulent
18.	W	Alogyne huegeii	Blue Hibiscus	Shrub
19.	o	Ambrosia chammissonis	Beach Bur-Sage	Perennial
20.	o	Amorpha fruticosa	Western False Indigobush	Shrub
21.	W	Anigozanthus flavidus	Kangaroo Paw	Perennial/accent

22.	o	<i>Antirrhinum nuttalianum</i> ssp.	no common name	Subshrub
23.	X	<i>Aptenia cordifolia</i> x 'Red Apple'	Red Apple Aptenia	Ground cover
24.	W	<i>Arbutus unedo</i>	Strawberry Tree	Tree
25.	W	<i>Arctostaphylos</i> 'Pacific Mist'	Pacific Mist Manzanita	Ground Cover
26.	W	<i>Arctostaphylos edmundsii</i>	Little Sur Manzanita	Ground Cover
27.	o	<i>Arctostaphylos glandulosa</i> ssp.	Eastwood Manzanita	Shrub
28.	W	<i>Arctostaphylos hookeri</i> 'Monterey Carpet'	Monterey Carpet Manzanita	Low Shrub
29.	N	<i>Arctostaphylos pungens</i>	no common name	Shrub
30.	N	<i>Arctostaphylos refugioensis</i>	Refugio Manzanita	Shrub
31.	W	<i>Arctostaphylos uva-ursi</i>	Bearberry	Ground Cover
32.	W	<i>Arctostaphylos</i> x 'Greensphere'	Greensphere Manzanita	Shrub
33.	N	<i>Artemisia caucasica</i>	Caucasian Artemisia	Ground Cover
34.	X	<i>Artemisia pycnocephala</i>	Beach Sagewort	Perennial
35.	X	<i>Atriplex canescens</i>	Four-Wing Saltbush	Shrub
36.	X	<i>Atriplex lentiformis</i> ssp. <i>breweri</i>	Brewer Saltbush	Shrub
37.	o	<i>Baccharis emoyi</i>	Emory Baccharis	Shrub
38.	W o	<i>Baccharis pilularis</i> ssp. <i>consanguinea</i>	Chaparral Bloom	Shrub
39.	X	<i>Baccharis pilularis</i> var. <i>pilularis</i>	Twin Peaks #2'	Ground Cover
40.	o	<i>Baccharis salicifolia</i>	Mulefat	Shrub
41.	N	<i>Baileya multiradiata</i>	Desert Marigold	Ground Cover
42.	W	<i>Beaucarnea recurvata</i>	Bottle Palm	Shrub/Small Tree
43.	N n	<i>Bougainvillea spectabilis</i>	Bougainvillea	Shrub
44.	N n	<i>Brahea armata</i>	Mexican Blue Palm/Blue Hesper Palm	Palm
45.	N n	<i>Brahea brandegeei</i>	San Jose Hesper Palm	Palm
46.	N n	<i>Brahea edulis</i>	Guadalupe Palm	Palm
47.	o	<i>Brickellia californica</i>	no common name	Subshrub

48.	W o	<i>Bromus carinatus</i>	California Brome	Grass
49.	o	<i>Camissonia cheiranthifolia</i>	Beach Evening Primrose	Perennial Shrub
50.	N	<i>Carissa macrocarpa</i>	Green Carpet Natal Plum	Ground Cover/Shrub
51.	X	<i>Carpobrotus chilensis</i>	Sea Fig Ice Plant	Ground Cover
52.	W	<i>Ceanothus gloriosus</i> 'Point Reyes'	Point Reyes Ceanothus	Shrub
53.	W	<i>Ceanothus griseus</i> 'Louis Edmunds'	Louis Edmunds Ceanothus	Shrub
54.	W	<i>Ceanothus griseus horizontalis</i>	Yankee Point	Ground Cover
55.	W	<i>Ceanothus griseus</i> var. <i>horizontalis</i>	Carmel Creeper Ceanothus	Shrub
56.	W	<i>Ceanothus griseus</i> var. <i>horizontalis</i>	Yankee Point Ceanothus	Shrub
57.	o	<i>Ceanothus megarcarpus</i>	Big Pod Ceanothus	Shrub
58.	W	<i>Ceanothus prostratus</i>	Squaw Carpet Ceanothus	Shrub
59.	o	<i>Ceanothus spinosus</i>	Green Bark Ceanothus	Shrub
60.	W	<i>Ceanothus verrucosus</i>	Wart-Stem Ceanothus	Shrub
61.	W	<i>Cerastium tomentosum</i>	Snow-in-Summer	Ground cover/Shrub
62.	W	<i>Ceratonia siliqua</i>	Carob	Tree
63.	W	<i>Cercis occidentalis</i>	Western Redbud	Shrub/Tree
64.	X	<i>Chrysanthemum leucanthemum</i>	Oxeye Daisy	Ground Cover
65.	W	<i>Cistus Crispus</i>	no common name	Ground Cover
66.	W	<i>Cistus hybridus</i>	White Rockrose	Shrub
67.	W	<i>Cistus incanus</i>	no common name	Shrub
68.	W	<i>Cistus incanus</i> ssp. <i>Corsicus</i>	no common name	Shrub
69.	W	<i>Cistus salviifolius</i>	Sageleaf Rockrose	Shrub
70.	W	<i>Cistus x purpureus</i>	Orchid Rockrose	Shrub
71.	W	Citrus species	Citrus	Tree
72.	o	<i>Clarkia bottae</i>	Showy Fairwell to Spring	Annual
73.	o	<i>Cneoridium dumosum</i>	Bushrue	Shrub

74.	o	<i>Collinsia heterophylla</i>	Chinese Houses	Annual
75.	W o	<i>Comarostaphylis diversifolia</i>	Summer Holly	Shrub
76.	N	<i>Convolvulus cneorum</i>	Bush Morning Glory	Shrub
77.	W	<i>Coprosma kirkii</i>	Creeping Coprosma	Ground Cover/Shrub
78.	W	<i>Coprosma pumila</i>	Prostrate Coprosma	Low shrub
79.	o	<i>Coreopsis californica</i>	California Coreopsis	Annual
80.	W	<i>Coreopsis lanceolata</i>	Coreopsis	Ground Cover
81.	N	<i>Corea pulchella</i>	Australian Fuscia	Ground Cover
82.	W	<i>Cotoneaster buxifolius</i>	no common name	Shrub
83.	W	<i>Cotoneaster congestus</i> 'Likiang'	Likiang Cotoneaster	Ground Cover/Vine
84.	W	<i>Cotoneaster aprneyi</i>	no common name	Shrub
85.	X	<i>Crassula lactea</i>	no common name	Ground Cover
86.	X	<i>Crassula multicava</i>	no common name	Ground Cover
87.	X	<i>Crassula ovata</i>	Jade Tree	Shrub
88.	X	<i>Crassula tetragona</i>	no common name	Ground Cover
89.	W o	<i>Croton californicus</i>	California Croton	Ground Cover
90.	X	<i>Delosperma 'alba'</i>	White trailing Ice Plant	Ground Cover
91.	o	<i>Dendromecon rigida</i>	Bush Poppy	Shrub
92.	o	<i>Dichelostemma capitatum</i>	Blue Dicks	Herb
93.	N	<i>Distinctis buccinatoria</i>	Blood-Red Trumpet Vine	Vine/Climbing vine
94.	N	<i>Dodonaea viscosa</i>	Hopseed Bush	Shrub
95.	X	<i>Drosanthemum floribundum</i>	Rosea Ice Plant	Ground Cover
96.	X	<i>Drosanthemum hispidum</i>	no common name	Ground Cover
97.	X	<i>Drosanthemum speciosus</i>	Dewflower	Ground Cover
98.	o	<i>Dudleya lanceolata</i>	Lance-leaved Dudleya	Succulent
99.	o	<i>Dudleya pulverulenta</i>	Chalk Dudleya	Succulent

100.	W	<i>Elaeagnus pungens</i>	Silverberry	Shrub
101.	o	<i>Encelia californica</i>	California Encelia	Small Shrub
102.	o *	<i>Epilobium canum</i> [<i>Zauschneria californica</i>]	Hoary California Fuschia	Shrub
103.	o	<i>Eriastrum Sapphirinum</i>	Mojave Woolly Star	Annual
104.	N	<i>Eriobotrya japonica</i>	Loquat	Tree
105.	o	<i>Eriodictyon crassifolium</i>	Thick Leaf Yerba Santa	Shrub
106.	o	<i>Eriodictyon trichocalyx</i>	Yerba Santa	Shrub
107.	W o	<i>Eriophyllum confertiflorum</i>	no common name	Shrub
108.	W	<i>Erythrina species</i>	Coral Tree	Tree
109.	N	<i>Escallonia species</i>	Several varieties	Shrub
110.	W o	<i>Eschscholzia californica</i>	California Poppy	Flower
111.	X	<i>Eschscholzia mexicana</i>	Mexican Poppy	Herb
112.	N	<i>Euonymus fortunei</i>	Winter Creeper Euonymus	Ground Cover
113.	N	<i>Feijoa sellowiana</i>	Pineapple Guava	Shrub/Tree
114.	N	<i>Fragaria chiloensis</i>	Wild Strawberry/Sand Strawberry	Ground Cover
115.	o	<i>Frankenia salina</i>	Alkali Heath	Ground Cover
116.	W	<i>Fremontondendron californicum</i>	California Flannelbush	Shrub
117.	X	<i>Gaillardia x grandiflora</i>	Blanketflower	Ground Cover
118.	W	<i>Galvezia speciosa</i>	Bush Snapdragon	Shrub
119.	W	<i>Garrya ellipta</i>	Silktassel	Shrub
120.	X	<i>Gazania hybrids</i>	South African Daisy	Ground Cover
121.	X	<i>Gazania rigens leucolaena</i>	Training Gazania	Ground Cover
122.	o	<i>Gillia capitata</i>	Globe Gilia	Perrenial
123.	W	<i>Gilia leptantha</i>	Showy Gilia	Perrenial
124.	W	<i>Gilia tricolor</i>	Bird's Eyes	Perrenial
125.	W	<i>Ginkgo biloba</i>	Maidenhair Tree	Tree

126.	o	<i>Gnaphalium californicum</i>	California Everlasting	Annual
127.	W	<i>Grewia occidentalis</i>	Starflower	Shrub
128.	o	<i>Grindelia stricta</i>	Gum Plant	Ground Cover
129.	N n	<i>Hakea suaveolens</i>	Sweet Hakea	Shrub
130.	W	<i>Hardenbergia comptoniana</i>	Lilac Vine	Shrub
131.	N	<i>Heliathemum muutabile</i>	Sunrose	Ground Cover/Shrub
132.	o	<i>Helianthemum scoparium</i>	Rush Rose	Shrub
133.	o	<i>Heliotropium curassavicum</i>	Salt Heliotrope	Ground Cover
134.	X	<i>Helix Canariensis</i>	English Ivy	Ground Cover
135.	W	<i>Hesperaloe parviflora</i>	Red Yucca	Perennial
136.	o n	<i>Heteromeles arbutifolia</i>	Toyon	Shrub
137.	X	<i>Hypericum calycimum</i>	Aaron's Beard	Shrub
138.	N	<i>Iberis sempervirens</i>	Edging Candytuft	Ground Cover
139.	N	<i>Iberis umbellatum</i>	Globe Candytuft	Ground Cover
140.	o	<i>Isocoma menziesii</i>	Coastal Goldenbush	Small Shrub
141.	o	<i>Isomeris arborea</i>	Bladderpod	Shrub
142.	W	<i>Iva hayesiana</i>	Poverty Weed	Ground Cover
143.	N	<i>Juglans californica</i>	California Black Walnut	Tree
144.	o	<i>Juncus acutus</i>	Spiny Rush	Perennial
145.	o	<i>Keckiella antirrhinoides</i>	Yellow Bush Penstemon	Subshrub
146.	o	<i>Keckiella cordifolia</i>	Heart Leaved Penstemon	Subshrub
147.	o	<i>Keckiella ternata</i>	Blue Stemmed Bush Penstemon	Subshrub
148.	W	<i>Kniphofia uvaria</i>	Red Hot Poker	Perennial
149.	W	<i>Lagerstroemia indica</i>	Crape Myrtle	Tree
150.	W	<i>Lagunaria patersonii</i>	Primrose Tree	Tree
151.	X	<i>Lamprathus aurantiacus</i>	Bush Ice Plant	Ground Cover

152.	X	Lampranthus filicaulis	Redondo Creeper	Ground Cover
153.	X	Lampranthus spectabilis	Trailing Ice Plant	Ground Cover
154.	W	Lantana camara cultivars	Yellow Sage	Shrub
155.	W	Lantana montevidensis	Trailing Lantana	Shrub
156.	o	Lasthenia californica	Dwarf Goldfields	Annual
157.	W	Lavandula dentata	French Lavender	Shrub
158.	W	Leptospermum laevigatum	Australian Tea Tree	Shrub
159.	W	Leucophyllum frutescens	Texas Ranger	Shrub
160.	o	Leymus condensatus	Giant Wild Rye	Large Grass
161.	N	Ligustrum japonicum	Texas privet	Shrub
162.	X	Limonium pectinatum	no common name	Ground Cover
163.	X	Limonium perezii	Sea Lavender	Shrub
164.	W n	Liquidambar styraciflua	American Sweet Gum	Tree
165.	W	Liriodendron tulipifera	Tulip Tree	Tree
166.	X	Lonicera japonica 'Halliana'	Hall's Japanese Honeysuckle	Vining Shrub
167.	o	Lonicera subspicata	Wild Honeysuckle	Vining Shrub
168.	X	Lotus corniculatus	Bird's Foot Trefoil	Ground Cover
169.	o	Lotus hermannii	Northern Woolly Lotus	Perennial
170.	o	Lotus scoparius	Deerweed	Shrub
171.	W	Lupinus arizonicus	Desert Lupine	Annual
172.	W	Lupinus benthamii	Spider Lupine	Annual
173.	o	Lupinus bicolor	Sky Lupine	Flowering annual
174.	o	Lupinus sparsiflorus	Loosely Flowered Annual Lupine/Coulter's Lupine	Annual
175.	W	Lyonothamnus floribundus ssp. Asplenifolius	Fernleaf Ironwood	Tree
176.	W	Macadamia integrifolia	Macadamia Nut	Tree
177.	W	Mahonia aquifolium 'Golden Abundance'	Golden Abundance Oregon Grape	Shrub

178.	W	Mahonia nevenii	Nevin Mahonia	Shrub
179.	o	Malacothamnus fasciculatus	Chapparal Mallow	Shrub
180.	X	Malephora luteola	Training Ice Plant	Ground Cover
181.	W	Maytenus boaria	Mayten Tree	Tree
182.	W	Melaleuca nesophila	Pink Melaleuca	Shrub
183.	N	Metrosideros excelsus	New Zealand Christmas Tree	Tree
184.	o *	Mimulus species	Monkeyflower	Flower
185.	o	Mirabilis californica	Wishbone Bush	Perrenial
186.	N	Myoporum debile	no common name	Shrub
187.	W	Myoporum insulare	Boobyalla	Shrub
188.	W	Myoporum parvifolium	no common name	Ground Cover
189.	W	Myoporum 'Pacificum'	no common name	Ground Cover
190.	o	Nassella (stipa) lepidra	Foothill Needlegrass	Ground Cover
191.	o	Nassella (stipa) pulchra	Purple Needlegrass	Ground Cover
192.	o	Nemophila menziesii	Baby Blue Eyes	Annual
193.	X	Nerium Oleander	Oleander	Shrub
194.	o	Nolina cismontana	Chapparal Nolina	Shrub
195.	N	Nolina species	Mexican Grasstree	Shrub
196.	W	Oenothera belandieri	Mexican Evening Primrose	Ground Cover
197.	N	Oenothera hookeri	California Evening Primrose	Flower
198.	W	Oenothera speciosa	Show Evening Primrose	Perrenial
199.	X	Ophiopogon japonicus	Mondo Grass	Ground Cover
200.	o *	Opuntia littoralis	Prickly Pear	Cactus
201.	o *	Opuntia oricola	Oracle Cactus	Cactus
202.	o *	Opuntia prolifera	Coast Cholla	Cactus
203.	W	Osmanthus fragrans	Sweet Olive	Shrub

204.	X	<i>Osteospermum fruticosum</i>	Training African Daisy	Ground Cover
205.	X	<i>Parkinsonia aculeata</i>	Mexican Palo Verde	Tree
206.	W	<i>Pelargonium peltatum</i>	Ivy Geranium	Ground Cover
207.	X	<i>Penstemon species</i>	Beard Tongue	Shrub
208.	W	<i>Photinia fraseria</i>	no common name	Shrub
209.	W	<i>Pistacia chinensis</i>	Chinese Pistache	Tree
210.	X	<i>Pittosporum undulatum</i>	Victorian Box	Tree
211.	o	<i>Plantago erecta</i>	California Plantain	Annual
212.	**	<i>Plantago insularis</i>	Woolly Plantain	Annual
213.	X	<i>Plantago sempervirens</i>	Evergreen Plantain	Ground Cover
214.	W	<i>Plantanus racemosa</i>	California Sycamore	Tree
215.	W	<i>Plumbago auriculata</i>	Plumbago Cape	Shrub
216.	o	<i>Populus fremontii</i>	Western Cottonwood	Tree
217.	X	<i>Portulacaria afra</i>	Elephant's Food	Shrub
218.	o	<i>Potentilla glandulosa</i>	Sticky Cinquefoil	Subshrub
219.	X	<i>Potentilla tabernaemontanii</i>	Spring Cinquefoil	Ground Cover
220.	X	<i>Prunus caroliniana</i>	Carolina Cherry Laurel	Shrub/Tree
221.	o	<i>Prunus ilicifolia ssp. Ilicifolia</i>	Holly Leafed Cherry	Shrub
222.	X	<i>Prunus lyonii</i>	Catalina Cherry	Shrub/Tree
223.	N	<i>Punica granatum</i>	Pomegranate	Shrub/Tree
224.	W	<i>Puya species</i>	Puya	Succulent/Shrub
225.	W	<i>Pyracantha species</i>	Firethorn	Shrub
226.	o	<i>Quercus agrifolia</i>	Coast Live Oak	Tree
227.	o n *	<i>Quercus berberdifolia</i>	California Scrub Oak	Shrub
228.	o n *	<i>Quercus dumosa</i>	Coastal Scrub Oak	Shrub
229.	X	<i>Quercus engelmannii</i>	Engelmann Oak	Tree

230.	X	<i>Quercus suber</i>	Cork Oak	Tree
231.	X	<i>Rhamnus alaternus</i>	Italian Buckthorn	Shrub
232.	o	<i>Rhamnus californica</i>	California Coffee Berry	Shrub
233.	o	<i>Rhamnus crocea</i>	Redberry	Shrub
234.	o	<i>Rhamnus crocea</i> ssp. <i>ilicifolia</i>	Hollyleaf Redberry	Shrub
235.	N	<i>Rhaphiolepis</i> species	Indian Hawthorne	Shrub
236.	o	<i>Rhus integrifolia</i>	Lemonade Berry	Shrub
237.	N	<i>Rhus lancea</i>	African Sumac	Tree
238.	o n	<i>Rhus ovata</i>	Sugarbush	Shrub
239.	o	<i>Ribes aureum</i>	Golden Currant	Shrub
240.	o	<i>Ribes indecorum</i>	White Flowering Currant	Shrub
241.	o	<i>Ribes speciosum</i>	Fuschia Flowering Gooseberry	Shrub
242.	W	<i>Ribes viburnifolium</i>	Evergreen currant	Shrub
243.	o *	<i>Romneya coulteri</i>	Matilija Poppy	Shrub
244.	X	<i>Romneya coulteri</i> 'White Cloud'	White Cloud Matilija Poppy	Shrub
245.	W n	<i>Rosmarinus officinalis</i>	Rosemary	Shrub
246.	W n	<i>Salvia greggii</i>	Autums Sage	Shrub
247.	W n	<i>Salvia sonomensis</i>	Creeping Sage	Ground Cover
248.	o	<i>Sambucus mexicana</i>	Mexican Elderberry	Tree
249.	W	<i>Santolina chamaecyparissus</i>	Lavender Cotton	Ground Cover
250.	W	<i>Santolina virens</i>	Green Lavender Cotton	Shrub
251.	o	<i>Satureja chandleri</i>	San Miguel Savory	Perennial
252.	o	<i>Scirpis scutus</i>	Hard Stem Bulrush	Perennial
253.	o	<i>Scirpus californicus</i>	California Bulrush	Perennial
254.	X	<i>Sedum acre</i>	Goldmoss Sedum	Ground Cover
255.	X	<i>Sedum album</i>	Green Stonecrop	Ground Cover

256.	X	<i>Sedum confusum</i>	no common name	Ground Cover
257.	X	<i>Sedum lineare</i>	no common name	Ground Cover
258.	X	<i>Sedum x rubrotinctum</i>	Pork and Beans	Ground Cover
259.	X	<i>Senecio serpens</i>	no common name	Ground Cover
260.	o	<i>Sisyrinchium bellum</i>	Blue Eyed Grass	Ground Cover
261.	o	<i>Solanum douglasii</i>	Douglas Nightshade	Shrub
262.	o	<i>Solanum xantii</i>	Purple Nightshade	Perennial
263.	W	<i>Stenocarpus sinuatus</i>	Firewheel Tree	Tree
264.	W	<i>Strelitzia nicolai</i>	Giant Bird of Paradise	Perennial
265.	W	<i>Strelitzia reginae</i>	Bird of Paradise	Perennial
266.	o	<i>Symphoricarpos mollis</i>	Creeping Snowberry	Shrub
267.	W	<i>Tecoma stans</i> (<i>Stenolobium stans</i>)	Yellow Bells	Shrub/Small Tree
268.	X	<i>Tecomaria capensis</i>	Cape Honeysuckle	Ground Cover
269.	N	<i>Teucarium chamedrys</i>	Germander	Ground Cover
270.	N	<i>Thymus serpyllum</i>	Lemon Thyme	Ground Cover
271.	N	<i>Trachelospermum jasminoides</i>	Star Jasmine	Shrub
272.	o	<i>Trichostems lanatum</i>	Woolly Blue Curls	Shrub
273.	X	<i>Trifolium hirtum</i> 'Hyron'	Hyron Rose Clover	Ground Cover
274.	X	<i>Trifolium fragerum</i> 'O'Connor's'	O'Connor's Legume	Ground Cover
275.	o	<i>Umbellularia californica</i>	California Laurel	Tree
276.	o	<i>Verbena lasiostachys</i>	Western Vervain	Perennial
277.	N	<i>Verbena peruviana</i>	no common name	Ground Cover
278.	X	<i>Verbena species</i>	Verbena	Ground Cover
279.	X	<i>Vinca minor</i>	Dwarf Periwinkle	Ground Cover
280.	o	<i>Vitis girdiana</i>	Desert Wild Grape	Vine
281.	X	<i>Vulpia myuros</i> 'Zorro'	Zorro Annual Fescue	Grass

282.	W	Westringia fruticosa	no common name	Shrub
283.	W	Xannithorrhoea species	Grass Tree	Perennial accent/shrub
284.	W	Xylosma congestum	Shiny Xylosma	Shrub
285.	X	Yucca Species	Yucca	Shrub
286.	o	Yucca whipplei	Yucca	Shrub

Legend:

- X = Plant species prohibited in wet and dry fuel modification zones adjacent to reserve lands. Acceptable on all other fuel modification locations and zones.
- W = Plant species appropriate for use in wet fuel modification zones adjacent to reserve lands. Acceptable in all other wet and irrigated dry (manufactured slopes) fuel modification locations and zones.
- o = Plant species native to Orange County. Acceptable in all fuel modification wet and dry zones in all locations.
- N = Plant species acceptable on a limited basis (maximum 30% of the area) in wet fuel modification zones *adjacent to reserve lands*. Acceptable on all other fuel modification zones.
- * = If locally collected.
- ** = Not native but can be used in all zones.
- n = Plant species acceptable on a limited use basis. Refer to qualification requirements following plant palette.

Approved Plant Palette – Qualification Statements for Select Plant Species

2. **Acacia redolens desert carpet:** May be used in the upper ½ of the “B” fuel modification zone. The plants may be planted at 8-foot on center, maximum spacing in meandering zones not to exceed a mature width of 24 feet or a mature height of 24 inches.
43. **Bougainvillea spectabilis (procumbent varieties):** Procumbent to mounding varieties may be used in the mid “B” fuel modification zone. The plants may be planted in clusters at 6-foot on center spacing not to exceed eight plants per cluster. Mature spacing between individual plants or clusters shall be 30-foot minimum.
44. **Brahea armata:** Additional information may be required as directed by the OCFA.
45. **Brahea brandegeel:** Additional information may be required as directed by the OCFA.

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- 46. *Brahea edulis*:** May be used in upper and mid “B” fuel modification zone. The plants shall be used as single specimens with mature spacing between palms of 20-foot minimum.
- 129. *Hakea suaveolens*:** May be used in the mid “B” fuel modification zone. The plants shall be used as single specimens with mature spacing between plants of 30-foot minimum.
- 136. *Heteromeles arbutifolia*:** May be used in the mid to lower “B” fuel modification zone. The plants may be planted in clusters of up to 3 plants per cluster. Mature spacing between individual plants or clusters shall be 30-foot minimum.
- 164. *Liquidambar styraciflua*:** May be used in the mid “B” fuel modification zone. The plant shall be used as single specimens with mature spacing between trees and 30-foot minimum.
- 227. *Quercus berberidifolia*:** Additional information may be required as directed by the OCFA.
- 228. *Quercus dumosa*:** May be used in the mid to lower “B” fuel modification zone. The plants may be planted in clusters of up to 3 plants per cluster. Mature spacing between individual plants or clusters shall be 30-foot minimum.
- 238. *Rhus ovata*:** May be used in the mid to lower “B” fuel modification zone of inland areas only. The plants may be planted in clusters of up to 3 plants per cluster. Mature spacing between individual plants or clusters shall be 30-foot minimum.
- 245. *Rosmarinus officinalis*:** Additional information may be required as directed by the OCFA.
- 246. *Salvia greggii*:** Additional information may be required as directed by the OCFA.
- 247. *Salvia sonomensis*:** May be used in the mid to upper “B” fuel modification zone. The plants may be planted in clusters of up to 3 plants per cluster. Mature spacing between individual plants or clusters shall be 15-foot minimum.