

SIX. VEGETATIVE FUEL MANAGEMENT IN VERY HIGH FIRE HAZARD AREAS

California Public Resources Code, Section 4291, established state-mandated requirements for the reduction and mitigation of “flammable vegetation or other combustible growth” around buildings or structures in very high fire hazard areas prone to wildland fires - the “development-wildland interface.” The requirements are subject to local enforcement, and governing agencies may adopt additional code requirements in response to local conditions. This section is intended to implement City of Poway requirements for vegetative fuel management as outlined in Chapter 15.05 PMC, the WILDLAND--URBAN INTERFACE BUILDING CODE and Chapter 8.76 PMC, DEFENSIBLE SPACE, VEGETATION MANAGEMENT AND WASTE ACCUMULATIONS.

For additional information refer to Section Five herein for slope revegetation guidelines; the *Poway Subarea Habitat Conservation Plan* for land use and habitat management requirements, available at the City of Poway Development Services Department; and the State of California, Office of the State Fire Marshal, for building standards when in proximity to native vegetation.

A. DEFINITION OF VEGETATIVE FUEL MANAGEMENT

To prevent the spread of wildland fires, management of vegetative fuels shall be implemented around structures and developments in and adjacent to chaparral, coastal sage scrub, and grassland plant communities. Vegetative fuels shall be managed to control flame length, rate of spread, and heat intensity. Developers/Owners of structures and development projects located within and adjacent to wildland areas shall comply with the requirements of the Development Services Department and Safety Services Department for:

1. Fire Protection (including building design, materials, and setbacks).
2. Vegetative Fuel Management (fuel reduction and thinning).
3. Fire-Resistant and Low-Fuel Plantings.

B. GENERAL REQUIREMENTS

Vegetative Fuel Management Plans:

Plans shall be approved prior to fuel modification work. Plans shall be based on site plans and grading plans showing elevation contours (slopes). Plans shall indicate the widths of the fuel modification zones on the site, including slopes. Plans shall include, at a minimum: (1) plan showing existing vegetation; and, (2) grading plans showing location of proposed structures and setback from top of slope to all structures.

Fuel Modification Installations:

All fuel modification work shall be completed prior to the final inspection for issuance of a certificate of occupancy.

Plant Selection and Removal:

Plant lists at the end of this Section (Tables 6-1 and 6-2) suggest species that should be avoided or removed, and are acceptable fire-resistant species. Prior to removal of vegetation, consult a qualified professional landscape architect or biologist to identify desirable native plants to remain. Removal of native trees, as outlined in Chapter 12.32 PMC, URBAN FORESTRY, requires a separate Tree Removal Permit from the City. Native tree species are defined in the City of Poway Urban Forestry Ordinance.

Tree Pruning:

1. Native trees to be retained within fuel modification zones shall be pruned to maintain a vertical separation of not less than six (6) feet above underlying groundcover. If shrubs are located underneath the drip line of a tree, the lowest branch should be at least three times as high as the understory shrubs or 10 feet, whichever is greater. Pruning of the shrubs and groundcover will minimize the impact of the tree pruning.
2. Trees shall not be topped, as defined in the City of Poway Urban Forestry Ordinance.
3. Tree pruning work shall be in accordance with the standards of the International Society of Arboriculture (ISA), Western Chapter. Refer to Section Four, Landscape Planting Requirements, herein for pruning standards.

C. LANDSCAPE DESIGN, INSTALLATION, AND MAINTENANCE REQUIREMENTS

The requirements for vegetative fuel management are implemented in two fuel modification zones. The minimum width for each zone shall be required unless otherwise approved by the City Fire Chief. Fuel modification zones are measured outward from the furthest building projection, generally the building eaves, but may include architectural features such as attached patio covers. See Figure 6-1 in this Section for graphic reference.

Fuel Modification Zone A: Landscaped Area with Permanent Irrigation Adjacent to Buildings and Structures Minimum Width: 40 feet

1. Landscape professionals and homeowners should avoid landscape designs that increase wildland fire hazards. The following design criteria reduce fire hazards near buildings and structures:
 - 1.1 Do not place dense plant masses adjacent to structures and at bases of trees and tree clusters.
 - 1.2 Plants shall be fire-resistant and low-fuel species. Refer to the list of fire-resistant plant material at the end of this Section (Table 6-2).
 - 1.3 Trees may be planted as individual specimens, or clustered with no more than three (3) trees in a single cluster. The minimum distance between the mature canopies of individual trees or tree clusters shall be 20 feet.
 - 1.4 Tree canopies shall not be allowed to overhang building roofs. Trees shall be placed so that the outer edges of the canopies of mature trees are a minimum of ten (10) feet from building eaves for fire resistant trees, and 30 feet for non-fire resistant trees.
 - 1.5 Mature heights of new shrub plantings shall be a maximum of 36 inches.
 - 1.6 Mulch shall not be used directly adjacent to a structure.
 - 1.7 Mulch should not include large wood or bark chips. Mulch from shredded plant trimmings and composted landscape mulch are acceptable.
 - 1.8 Trees shall not be planted within ten (10) feet of the edge of the roadway.
2. Irrigation:
 - 2.1 Permanent automatic irrigation systems shall be installed and maintained for landscaped areas in Zone A.
 - 2.2 Irrigation systems shall be designed with conventional overhead sprinklers and automatic controllers. Irrigation systems shall utilize low precipitation rate sprinklers to prevent runoff and soil erosion.
 - 2.3 Micro-irrigation systems may be utilized as approved by the City, if spray irrigation is not required for fire and life safety.
3. Maintenance:
 - 3.1 Maintenance shall be performed year-round and include the following tasks:

- a. Prune and thin trees and shrubs around structures to decrease fuel volumes, and to provide adequate separation between structures and plants.
 - b. Remove dead vegetation from trees and shrubs.
 - c. Trash and debris shall be cleared from around structures, and removed from roofs and rain gutters.
 - d. Weeds shall be removed.
- 3.2 Irrigation systems shall function properly, and be maintained in good working order. Planting shall be sufficiently watered to maintain succulent growth.
4. Structures
- 4.1 Construction with combustible materials is regulated in this zone (decks, patio covers, fences, arbors, vineyard posts, etc.). Combustible materials are defined in the *Wildland-Urban Interface Building Code*.
 - 4.2 Placement of ground-mounted solar panel arrays is regulated in this zone.
5. Driveways and Emergency Apparatus Access Roads:
- 5.1 Areas within ten (10) feet on each side of driveways and access roads shall be thinned and reduced of undesirable flammable vegetation and planted with fire-resistant plant species. See Tables 6-1 and 6-2.
 - 5.2 The Fire Chief and/or his or her designee are authorized to require up to 30 feet of fuel thinning and reduction on each side for new access roadways as defined in Chapter 15.24 PMC, the City of Poway's Fire Code.
 - 5.3 Fuel Management at Existing Offsite Access Roadways: The Fire Chief and/or his or her designee are authorized to cause the area within 20 feet on each side of the improved width portions of highways and private streets or roads, which are improved, designed, or ordinarily used for vehicular traffic, to be thinned and reduced of flammable vegetation and other combustible growth, and shall comply with the requirements of a fuel modification zone.
 - 5.4 Trees shall not be planted within ten (10) feet of the edge of the roadway.

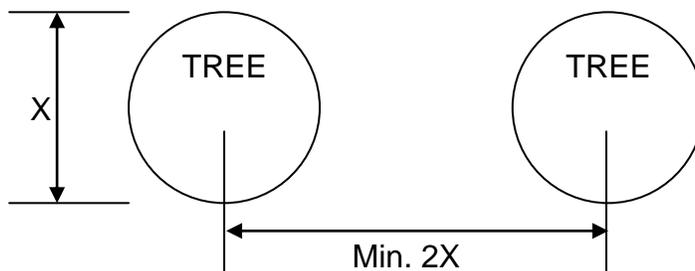
Fuel Modification Zone B: Transitional Landscaped Area with Irrigation to Establish Plantings Minimum Width: 60 feet

Zone B shall consist of predominantly low-growing, spreading and fire-resistant plant material in a transitional landscaped area between Zone A and native vegetation. See Figure 6-1 in this Section for reference.

1. Landscape Design and Plant Material:

- 1.1 Plant material on manufactured slopes shall be deep-rooting to control soil erosion and slippage. "Deep-rooting" refers to plant roots that may grow three to five feet deep in favorable soil conditions. At least 50 percent of Zone B area shall be planted with deep-rooted species. For examples of deep-rooted plant species, refer to Table 6-2, Fire-Resistant Plants.
- 1.2 Plant species shall be selected to provide good soil coverage for erosion prevention and slope stabilization.
- 1.3 Mature heights of new shrub plantings shall be a maximum of 24 inches to reduce flame length.
- 1.4 Plant species selected shall have low foliage mass to reduce the vegetative fire fuel load (fire-resistant).
- 1.5 Plant species selected shall be visually and ecologically compatible with native vegetation. Fire-resistant native plant species are encouraged in this zone. For examples of fire-resistant native plant species, refer to Table 6-2, Fire-Resistant Plants.
- 1.6 Tree Spacing and Canopy Coverage:

- a. Spacing between trees (trunk-to-trunk) in Zone B shall be no less than two times (2X) the diameter of the species' mature canopy (X) as shown in the diagram below. Spacing between trees of dissimilar species shall be no less than two times the diameter of the largest species' mature canopy.



- b. The mature canopy coverage of trees shall be limited to a maximum of 30% of Zone B area (total area of mature tree canopy cover ÷ total area of Zone B ≤ 0.30).
- c. Avoid planting trees directly uphill of one another.

- 1.7 Grove planting (agricultural or ornamental) is regulated by Chapter 15.05 PMC, the *Wildland-Urban Interface Building Code*.
2. Irrigation:
 - 2.1 Plants in this zone shall receive overhead irrigation with low precipitation rate equipment, or micro-irrigation if approved by the City Fire Marshal.
 - 2.2 Irrigation systems shall be adjusted to prevent runoff and overspray into adjacent undisturbed native vegetation.
 - 2.3 Irrigation shall be required with new planting for at least three years to ensure complete plant establishment.
3. Maintenance:
 - 3.1 Maintenance shall be performed on a seasonal basis.
 - 3.2 Maintenance shall include removal of dead plants and vegetation, weeding, pruning, and inspection and repair of irrigation systems.
 - 3.3 Invasive exotic plant species listed by the California Invasive Plant Council (Cal-IPC) latest edition, shall not be planted in this zone, and shall be removed if present. Refer to Table 6-1 for a list of invasive exotic plant species commonly available from nurseries. Highly combustible native plant species noted in Table 6-1, *Undesirable Plants*, shall not be planted or removed if present from Zone B.
 - 3.4 Highly combustible native plant species noted in Table 6-1, *Undesirable Plants*, along with annual weeds, shall be removed if present.
4. Structures:
 - 4.1 Construction with combustible materials is regulated in this zone (decks, patio covers, fences, arbors, vineyard posts, etc.). Combustible materials are defined in the *Wildland-Urban Interface Building Code*.
5. Driveways and Emergency Apparatus Access Roads:
 - 5.1 Areas within ten (10) feet on each side of driveways and access roads shall be cleared of undesirable flammable vegetation and planted with fire-resistant plant species. See Tables 6-1 and 6-2.
 - 5.2 The Fire Chief and/or his or her designee are authorized to require up to 30 feet of fuel thinning and reduction on each side for new access

roadways as defined in Chapter 15.24 PMC, the City of Poway's Fire Code.

5.3 Fuel Management at Existing Offsite Access Roadways: The Fire Chief and/or his or her designee are authorized to cause the area within 20 feet on each side of the improved width portions of highways and private streets or roads, which are improved, designed, or ordinarily used for vehicular traffic, to be thinned and reduced of flammable vegetation and other combustible growth, and shall comply with the requirements of a fuel modification zone.

5.4 Trees shall not be planted within ten (10) feet of the edge of the roadway.

D. EXPANDED FUEL MODIFICATION ZONES IN EXCESS OF 100 FEET FROM BUILDINGS AND STRUCTURES

1. In special circumstances deemed necessary for fire and life safety, and based on topography, vegetation types and fuel loads, the City Fire Chief may increase the total width of Zone A plus Zone B to a maximum of 200 feet. Habitat loss in excess of 100 feet may require habitat mitigation as determined by the City of Poway, Development Services Department.

2. Pruning and Thinning Guidelines in Natural Open Space Areas in Excess of 100 Feet from Buildings and Structures (including areas within the South Poway Specific Plan, Environmentally Sensitive Lands and Archeological Sites):

When fuel modification zones extend into natural open space areas, native vegetation in these areas shall be selectively thinned and pruned to reduce fuel load as determined by the Development Services Department and Safety Services Department.

2.1 Prune and thin dense masses of native vegetation in accordance with the guidelines established in Chapter 8.76 PMC, DEFENSIBLE SPACE, VEGETATION MANAGEMENT AND WASTE ACCUMULATIONS.

a. Remove all dead vegetative fuels.

2.2 Excessive removal of native vegetation resulting in soil erosion is prohibited. Thinning should both reduce vegetative fuel load and preserve the natural appearance of native plant communities.

a. Clearing and grubbing of native vegetation is prohibited without a City permit. Grubbing refers to the complete removal of an entire plant, including the root system. Mowing may be considered an approved alternative to clearing and grubbing, subject to City approval.

- b. If clearing and grubbing is permitted, then the City may require submittal of revegetation and erosion control plans for the cleared area. The Development Services Department shall review and approve revegetation and erosion control plans.

2.3 Irrigation shall not be provided in natural open space areas.

2.4 Maintenance:

- a. Vegetative fuel management may be required at three to five year intervals.annually. The Department of Safety Services shall dictate prescribed maintenance intervals in natural open space areas.

TABLE 6-1
UNDESIRABLE AND NON-FIRE RESISTIVE PLANTS
Within Vegetative Fuel Modification Zones A and B

This table lists several species of plants that generate very flammable vegetative fuel, or are invasive exotic plant species.

The plant species below, and other undesirable or invasive species, shall not be planted in fuel modification zones.

BOTANICAL NAME	COMMON NAME
Adenostoma sparsifolium	Red Shanks
Adenostoma fasciculatum	Chamise
Artemisia californica	California Sagebrush
*Cortaderia seloana	Pampas Grass
*Hedera helix	English Ivy
Malosma laurinnia	Laurel Sumac
*Pennisetum setaceum	Fountain Grass
Salvia (most species)	Sage
*Vinca major	Periwinkle

* invasive exotic plant species commonly available from nurseries

The species below, and other non-fire resistive species, may be planted in fuel modification Zone B if approved by the City Fire Chief. Non-fire-resistive species shall be placed so that the edge of the tree canopy (dripline) at plant maturity is a minimum of 30 feet from structures.

BOTANICAL NAME	COMMON NAME
Acacia (most species)	Acacia
Cedrus species	Cedar
Cupressus species	Cypress
Eucalyptus (most species)	Gum, Ironbark
Juniperus species	Juniper
Phoenix canariensis	Canary Island Palm
Pinus species	Pine
Washingtonia filifera	California Fan Palm
Washingtonia robusta	Mexican Fan Palm

**TABLE 6-2
FIRE-RESISTANT PLANTS**

For Use Within Vegetative Fuel Modification Zones

Any plant can burn given the right conditions of temperature, humidity, and wind. However, a carefully designed and well-maintained landscape can create defensible space to greatly enhance wildland fire safety. The suggested low-fuel and fire-resistant plants listed below are generally suitable for local soil and climate conditions. The City of Poway assumes no responsibility for the survival of plants in a particular location. Proper maintenance of plantings is the responsibility of the Property Owner/Applicant.

This is not a list of required plants, other suitable low-fuel and fire-resistant plant species may be proposed by qualified professionals.

ZONE A Landscaped Area with Permanent Irrigation

BOTANICAL NAME	COMMON NAME
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Groundcovers and Low Shrubs (under 36 inches mature height):

Achillea tomentosa	Woolly Yarrow
Baccharis pilularis 'Twin Peaks'	Dwarf Coyote Brush
Cotoneaster dammeri	Bearberry Cotoneaster
Delosperma 'Alba'	White Trailing Ice Plant
Fragaria chiloensis	Wild Strawberry
Lantana montevidensis	Purple Trailing Lantana
Malephora crocea	Croceum Ice Plant

Myoporum parvifolium
 Rosmarinus officinalis 'Prostratus'
 Santolina chamaecyparissus
 Sedum album
 Senecio serpens

Myoporum
 Rosemary
 Lavender Cotton
 Sedum
 Senecio

Trees, Low Shrubs, and Turf:

Many ornamental plant species may be utilized in Zone A landscaped areas provided that the requirements of this Section are met with regard to fire-resistance, maintenance, plant spacing and height, and placement around structures.

ZONE B Transitional Landscaped Area with Irrigation

BOTANICAL NAME

COMMON NAME

Groundcovers and Low Shrubs (under 24 inches mature height):

² Arctostaphylos 'Pacific Mist'	Manzanita
² Baccharis pilularis 'Twin Peaks'	Dwarf Coyote Brush
² Ceanothus griseus hor. 'Yankee Point'	Wild Lilac
² Cistus crispus 'Descanso'	Rockrose
² Cistus salviifolius	Sageleaf Rockrose
^{1,2} Encelia californica	Bush Sunflower
¹ Epilobium canum	California Fuchsia
¹ Eriophyllum confertiflorum	Golden Yarrow
¹ Eschscholzia californica	California Poppy
¹ Helianthemum scoparium	Peak Rush-Rose
^{1,2} Iva hayesiana	San Diego Marsh Elder
^{1,2} Lotus scoparius	Deerweed
¹ Lupinus bicolor	Dove Lupine
¹ Mimulus aurantiacus	Monkey Flower
¹ Mirabilis californica	Wishbone Bush
Myoporum parvifolium	Myoporum
Penstemon spectabilis	Showy Penstemon
^{1,2} Rosa californica	California Rose
² Rosmarinus officinalis 'Prostratus'	Rosemary
Salvia sonomensis	Creeping Sage
Santolina chamaecyparissus	Lavender Cotton
Santolina virens	Green Santolina
¹ Sisyrinchium bellum	Blue-Eyed Grass
¹ Trichostema lanatum	Woolly Blue Curls
^{1,2} Yucca whipplei	Our Lord's Candle

Trees:

Arbutus unedo	Strawberry Tree
Ceratonia siliqua	Carob
Cercis occidentalis	Western Redbud
¹ Heteromeles arbutifolia	Toyon
¹ Platanus racemosa	California Sycamore
Prunus ilicifolia ssp. ilicifolia	Hollyleaf Cherry
Prunus ilicifolia ssp. lyonii	Catalina Cherry
¹ Quercus agrifolia	Coast Live Oak
¹ Quercus berberidifolia	Scrub Oak
Rhus lancea	African Sumac
¹ Rhus ovata	Sugarbush
¹ Sambucus mexicana	Mexican Elderberry

¹ *species native to San Diego County (use is encouraged in fuel modification zones)*

² *deep-rooted groundcover and shrub species (trees are considered deep-rooted)*

FIGURE 6-1
FUEL MODIFICATION ZONES
NOT TO SCALE

