

Fuel Management Standards for the Santa Lucia Preserve

February 18, 2013

*Prepared by
Carol Rice, Wildland Resource Management*

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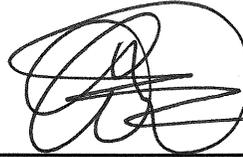
This plan has been approved by:



Michael Urquides
Monterey County Regional Fire District
Carmel, California

Date

2/21/2013



Christina Fischer
Santa Lucia Conservancy
Carmel, California

Date

2/25/13

Fuel Management Standards for the Santa Lucia Preserve

A. Introduction

1. Purpose and Content

The purpose of this document is to guide homeowners' vegetation management around homes and other structures within the Santa Lucia Preserve, in order to comply with local ordinances and with the 2006 Revised Fuel Management Plan for the Santa Lucia Preserve. These recommendations are intended to provide sufficient fire safety for homeowners, while still maintaining the natural and aesthetic values of the Santa Lucia Preserve, as well as minimizing surface soil erosion and other impacts to sensitive natural habitats.

Fire safety goals are attained by continually maintaining vegetation around homes, with the purpose of (1) preventing flame lengths from exceeding 2 feet within 30 feet from structures, (2) reducing a fire's ability to climb into the tree canopy, and (3) providing a safe egress by residents and ingress by emergency personnel. In general, mowing grass slows the spread of a fire, reduces its capacity to carry fire, and reduces the flame lengths. Reducing shrub height and creating shrub groupings lessens the fuel volume and continuity, reduces fire intensity, and limits the spread of fire. Pruning lower tree branches and removing shrubs under trees prevent fire from spreading into a tree canopy where firebrands are produced and distributed.

Vegetation treatment standards in this document are organized within fuel management zones, delineated by factors such as existing vegetation types, distance from structures, and site topography. Within each fuel management zone, treatments are designed to achieve compliance utilizing the best current fire safety and vegetation management practices, consistent with the 2006 Revised Fuel Management Plan for the Santa Lucia Preserve ("2006 FMP"), and the Conservation Easements for the Openlands of the Santa Lucia Preserve. While standard treatment buffer distances might extend outside a homeowner's property, this document does not authorize homeowners to take fuel management actions outside their property, without the express written prior approval of the neighboring landowner and the Santa Lucia Conservancy.

2. Roles and Responsibilities

Fuel management treatments are permitted within the Homelands of each residential lot, and these treatments may extend into adjacent Openlands and Wildlands only if prescribed within an approved lot-specific fuel management plan.

a. Homeowners

Homeowners are solely responsible for implementation of a lot-specific fuel management plan as provided below, consistent with the terms and requirements of the Openlands Conservation Easements and Declarations of Protective Restrictions in place on all residential lots, as well as terms and requirements of any Archeological/Wetlands/ Conservation/Scenic easements (if any) which are present on the lot.

Homeowners should plan to consult early with the Conservancy through the Design Review Board process if new construction is contemplated, and can contact Conservancy staff regarding initiating or updating plans for existing structures.

Homeowners should initiate implementation of treatments prior to the beginning of construction activities, and only after a homeowner has obtained a lot-specific fuel management plan that has been approved by the Santa Lucia Conservancy and Monterey County Regional Fire District.

Homeowners are responsible for initiating updates to their lot-specific fuel management plans as required by that plan.

b. The Santa Lucia Conservancy

The Santa Lucia Conservancy reviews and approves this Fuel Management Standards document, and each lot-specific fuel management plan, as they are developed and updated from time to time, prior to implementation. Conservancy staff are also available to offer support and guidance in landowners' efforts to plan and implement fuel management activities.

3. Lot-Specific Fuel Management Plans

In addition to the general treatment standards prescribed by this document, the Santa Lucia Conservancy will assist in the development of a lot-specific fuel management plan for each home on the Santa Lucia Preserve, upon the written request of the landowner. As described below, each lot-specific fuel management plan will contain the following items:

- a. A brief description of the existing natural lot-specific fire hazards due to factors such as on-site topography, prevailing winds, and existing vegetation conditions and position of the structure in relation to these conditions.
- b. A brief description of the existing infrastructure and landowner activities, including structures, landscaping, driveways, roads, and previous vegetation modifications.
- c. A map of lot-specific predicted flame lengths, based on original, pre-treatment conditions.
- d. A map of lot-specific fuel management zones which summarize vegetation treatments.
- e. A list of lot-specific treatment recommendations within each fuel management zone.
- f. A list of lot-specific recommendations for implementing vegetation treatments.
- g. Photos that document fuel types and vegetation baseline.

The standards in this document are to be incorporated into the design of the landscaped area, and to ensure the treatments are considered throughout the site planning process.

Each lot-specific fuel management plan shall be considered current for three years after implementation of the initial plan and for five years thereafter, unless significant changes to the site occur (such as a heavy infestation of shrubs or significant disease or death of trees or other woody plants). At the end of three, then five years or when site conditions are observed to have changed, it is the responsibility of the homeowner to engage a qualified consultant with expertise in fire ecology and management to update the plan in a manner consistent with the Openlands Conservation Easement, the Declarations of Protective Restrictions, any Wetlands/Scenic Easements present on the property and the standards contained in this document. Each update shall be submitted for approval by the Santa Lucia Conservancy prior to fuel management treatments in the Openlands or Wildlands.

B. Best Management Practices for Fuel Management

Consistent with the 2006 FMP, the Conservation Easements, and other legal conservation protections on the Santa Lucia Preserve, this document incorporates a number of standards that are intended to minimize the environmental impacts of fuel management treatments potentially associated with attaining fire safety goals in the 2006 Fuel Management Plan. The Santa Lucia Conservancy is available to consult with the homeowners' fuel management contractors regarding lot-specific suggestions to improve final results and to ensure the following best management practices:

1. **Treatment scheduling** shall be planned for times of the year which maximize effectiveness and minimize environmental impacts.
 - Large oak and pine trees should be pruned between November and April to avoid attracting pathogens.
 - Grasslands should be mowed to four inches in spring, but no later than June 1, unless otherwise recommended by the Monterey County Regional Fire District.
 - Desirable native annual wildflowers may remain un-mowed until after they have set seed, provided they do not form a means of rapidly transmitting fire to any structure.
 - Tree pruning and brush cutting should be timed to avoid bird nesting season (typically February to August)
 - Treatments shall not occur during extreme fire danger conditions, as defined the Monterey County Regional Fire District.
 - Fuel management contractors will have spark arrestors on all machinery and comply with PRC 4442.
 - Ground-disturbing activities shall not occur within one week following an inch of rain, or unless the ground is consistently firm and can support the weight of machinery without creating ruts.
2. **Diversity of plant species** shall be retained to the greatest extent possible while still achieving fire safety goals. It is sometimes beneficial to selectively reduce the dominance of aggressive, flammable species such as coyote brush and chamise. Retain specimens of plants that are unusual or uncommon on the site. Conversion of existing native habitat types to new habitat types is not permitted. For example, this plan does not authorize the conversion of chaparral to annual grassland.
3. **Vegetation disposal** shall be conducted in a way that does not impact the natural vegetation or increase flammability. Plant material can be composted on site, removed to an offsite location, mowed, or chipped and spread to a depth of less than 3 inches. In no case may unprocessed plant material be left in the Homelands or Openlands and no plant material of any kind shall be added to the Openlands.
4. **Bare soil** shall not be exposed in over 50% of the site, and no single bare patch will be larger than 15 square feet. Weed-free rice straw, or a seed mix approved by the Santa Lucia Conservancy, is to be broadcast by hand on the exposed soil patches before the end of the day (if during the wet season), or by October 15 (if during the dry season).
5. **Haul routes**, if used for removal of vegetation debris, shall be pre-approved by the Santa Lucia Conservancy before work commences, and shall be restored to natural conditions by the contractor upon completion of the project. Repair shall ensure the ground is protected from erosion, rainfall runoff is dispersed, and native vegetation is restored before Oct. 15.

6. **Large dead material**, larger than 6 inches in diameter, in the Openlands, should remain on the site if isolated from smaller dead material, smaller than 3 inches in diameter, if not under a tree canopy, or if moved at least 100 feet from the structure. The dead material shall be removed or scattered when it rots to the point where it becomes friable.
7. **Invasive weeds** in the project areas shall be removed as part of the vegetation management. Noxious weeds such as French broom, yellow star thistle, bull thistle, stink-wort, and poison hemlock should be targeted for removal. The Santa Lucia Conservancy can advise on removal techniques, including use of herbicide (which shall be applied by a qualified licensed applicator.)

C. Fuel Management Zones

The following vegetation treatments are established within the fuel management zones described in this section. Fuel treatments for areas in proximity to all structures include the Non-combustible Zone, the Landscaping Zone, and the Driveway Zone and may include one or more of the other fuel management zones depending on the vegetation surrounding each structure.

Fuel Management Zone:	Zone Area:
Non-combustible Zone	5 feet from structures
Landscaping Zone	entire landscaped area
Driveway Zone	15 feet from pavement
Grassland Zone	30 feet from structures
Oak Woodland Zone	150 feet from structures
Coastal Scrub Zone	200 feet from structures
Chaparral Zone	200 feet from structures

1. Non-Combustible Zone – to a distance of 5 feet

A non-combustible zone should be maintained within in a 5-foot buffer around structures.

Hardscape surfaces (such as patios, gravel, and bare soil), and landscape materials (such as lawn, succulent herbaceous plants, or closely mowed grass) are examples of non-combustible surfaces. Landscape architects are encouraged to make liberal use of hardscaping within 5 feet of structures, and are discouraged from installing shrubs within 5 feet of structures. Care should be taken in the design phase to ensure there is adequate room within the Homeland for such treatments.

2. Landscaping Zone – within entire landscaped area

Approved landscaping shall be designed and maintained to minimize flammability.

Ornamental landscaping often results in large amounts of shrubby vegetation being planted near structures. All plant material that is removed from the landscaping shall be composted within the Homeland or disposed off of the property. In no case can material from the Landscaping Zone be left in the Openland, and shall be processed if it will remain in the Homeland.

Landscape areas should be maintained according to the recommendations in the Oak Woodland Zone (see below). Landscaping may not extend into the Openlands.

3. Driveway Zone – 15 to 30 feet from edge of driveway pavement

Safe ingress and egress shall be maintained along the driveway.

The Driveway Zone is important to allow for safe passage and to provide a location where firefighter resources can be deployed. The treatments required correspond to vegetation type.

- a. Grassland vegetation shall be mowed within 15 feet from the pavement edges.
- b. The grass in all vegetation types shall be mowed within 15 feet from the pavement edges, according to the recommendations in the Grassland Zone. Understory shrubs shall be trimmed according to recommendations in the Oak Savanna and Oak Woodland Zones.
- c. All Chaparral, Coastal Scrub, and Oak/Shrub Woodland vegetation should be treated to 30 feet from the pavement edge, according to their respective recommendations.
- d. All tree branches extending over driveway surfaces should be pruned to ensure at least 13.5 feet of vertical clearance.

4. Grassland Fuel Management Zone, to a distance of 30 feet

Grassland zones shall be mowed at least once annually at the beginning of every summer.

Because grasslands dry and become flammable at the start of every summer, grassland areas will need annual attention, typically by mowing at the beginning of each summer. By mowing in late spring, after seeds have set, native grasses and wildflowers will thrive in a low-hazard condition.

- a. Within 30 feet from structures, all annual grassland areas shall be mowed in early summer to maintain a maximum height of 4 inches during the summer.
- b. Native perennial grasses should be mowed shortly after they have set seed in early summer to maintain their density. Native perennial grasses should not be mowed more than once a year. Consult with the Conservancy staff as needed.
- c. Trees growing within the Grassland Zone shall be treated according to the recommendations made in the Oak Savanna Zone.
- d. Coyote bush, and a number of other shrub species, growing within the grassland zone, may be removed to maintain open herbaceous grasslands. Otherwise, treat shrubs as per the standards set forth in the Coastal Scrub fuel management zone.

5. Oak Savanna Zone – to a distance of 150 feet

Grass under trees shall be mowed annually, and small lower tree branches shall be pruned.

Oak savannas consist of scattered oaks growing within a grassy understory, and both trees and grass should be maintained to provide a vertical separation between the ground and the tree canopy.

According to fire behavior predictions, many areas of oak savanna are expected to produce flame lengths less than 4 feet before treatment. Mowing grass reduces fire intensity and rate of spread of fire, and diminishes the possibility that fire can climb into tree canopy. Pruning the small lower tree branches, as noted below, will reduce the possibility fire can spread into the tree crowns.

Prescriptions for grass mowing:

- a. Within 30 feet of structures, all grassland areas shall be mowed in early summer to a height of four inches, according to the recommendations in the Grassland Zone.
- b. Within 100 feet of structures, all grass growing under trees, out to 6 feet beyond the driplines of trees, shall be mowed in early summer to a height of four inches. Mow grasses in this area only once a year

Within 30-100 feet of structures, grass growing in the open, away from trees, does not need to be mowed.

Prescriptions for tree pruning:

- a. All lower tree branches, under 3 inches in diameter, shall be removed up to 8 feet above the ground, or on the lower third of trees, whichever is less (Figure 1). OR,
- b. All lower tree branches, under 3 inches in diameter, shall be removed to provide vertical clearance of 3 times the height of the understory plants, or eight feet above understory plants, whichever is greater.
- c. All dead branches smaller than three inches in diameter shall be removed. All dead limbs greater than three inches in diameter should be retained.
- d. Once initial pruning is accomplished, tree pruning is likely to be needed infrequently, on an interval of about once every 3 to 5 years.
- e. Do not thin or prune the tree canopy, as this will promote more growth in the lower parts of the tree, and will result in increased risk that fire will spread to the tree canopy.
- f. Sometimes small trees may need to be cut to the ground in order to achieve the separation of the ground level from another, larger, tree canopy, or because mowing equipment cannot avoid the small trees. Under these circumstances, removal of seedlings and saplings of black oak, valley oak, or blue oak, or madrone in the Openlands requires prior approval from the Santa Lucia Conservancy.

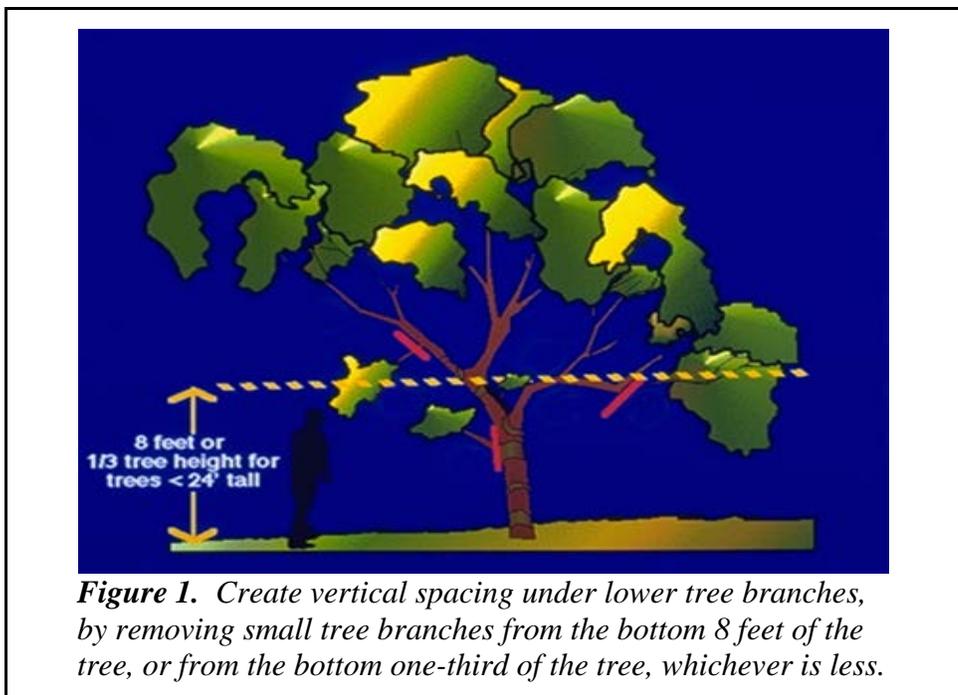


Figure 1. Create vertical spacing under lower tree branches, by removing small tree branches from the bottom 8 feet of the tree, or from the bottom one-third of the tree, whichever is less.

6. Chaparral Zone – to a distance of 200 feet

All shrubs within chaparral shall be thinned or shortened within 200 feet of structures.

Chaparral is an important habitat type on the Santa Lucia Preserve, but it burns with great intensity, and it poses a high fire hazard to adjacent structures. In this vegetation type, fire safety goals are attained by maintaining well-spaced chaparral shrubs that are short-stature, with moist young vegetation, and no dead branches. Shrubs should not be allowed to grow above 2.5 ft height (usually 5 years or less) before being re-treated.

- a. Shrubs within 200 feet of structures should be mowed, or cut, at ground level. Site topography and vegetation will determine whether the treatments can be “feathered” at the edges, and whether it can be conducted with machinery or by hand crews.
- b. All trees within the 200-foot Chaparral Zone should be retained. As trees increase within the chaparral, they provide a long-term reduction in shrub cover and fire hazard.
- c. Trees growing within chaparral should be encouraged by removing shrubs from within a zone around the tree (Figure 2):
 - When the tree is shorter than 6 feet high, all shrubs should be removed from within a distance of 3 feet from the tree’s drip line.
 - When a tree is taller than 6 feet high, all shrubs should be removed from within a distance of 6 feet from the tree’s drip line.

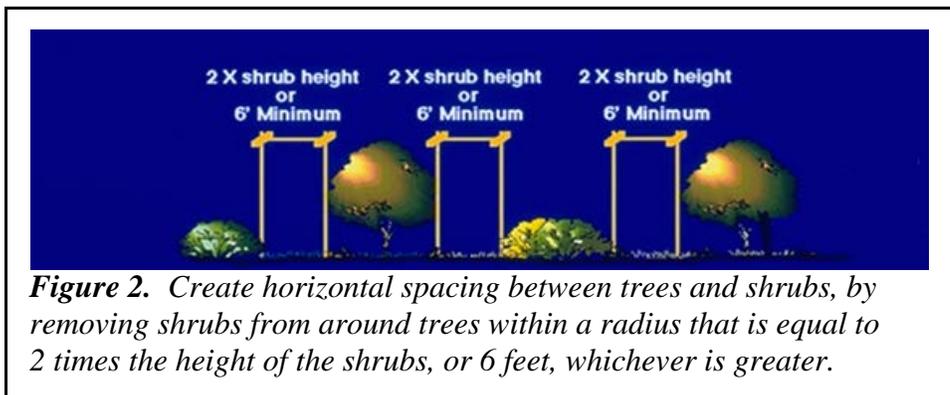


Figure 2. Create horizontal spacing between trees and shrubs, by removing shrubs from around trees within a radius that is equal to 2 times the height of the shrubs, or 6 feet, whichever is greater.

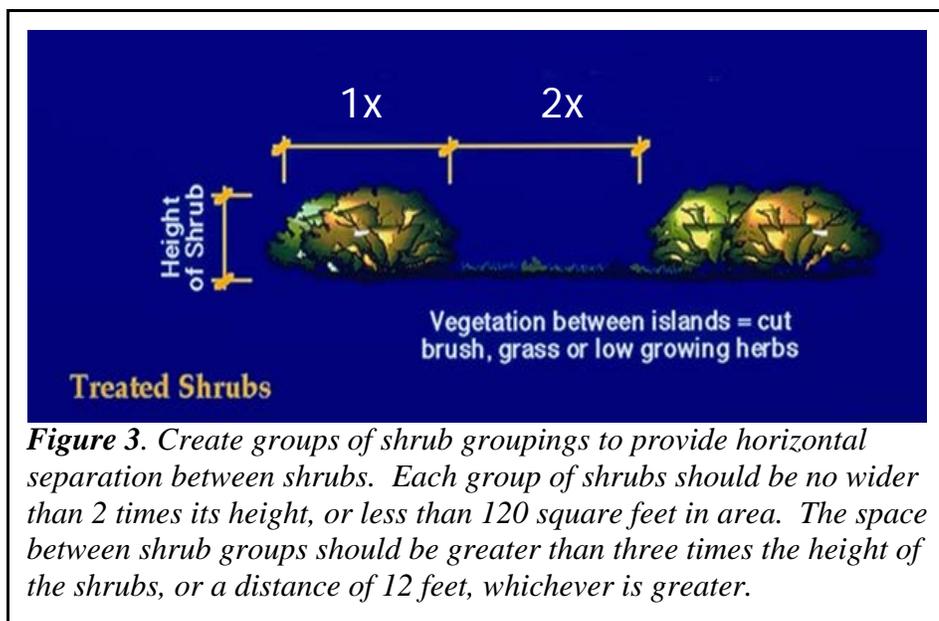
7. Coastal Scrub Zone – to a distance of 200 feet

All shrubs within coastal scrub shall be thinned or shortened within 200 feet of structures.

Like chaparral, coastal scrub is an important habitat type on the Santa Lucia Preserve, comprised of a diverse mixture of native shrub species. Like most chaparral shrubs on the Santa Lucia Preserve, shrub species growing within coastal scrub habitat will stump-sprout vigorously when mowed or burned, so coastal scrub zones will need to be retreated on a regular basis to maintain fire safety goals.

- a. Do not to eliminate coastal scrub within the fuel management zone. Instead, change the pattern into discontinuous groups of shorter, younger, more succulent shrubs.
- b. In open areas away from trees, within 200 feet of structures, distance between groups of shrubs should be at least 2 times the height of the shrub patch (see Figure 3).

- c. Retain less-flammable desirable shrubs, such as ceanothus, currant, coffee berry, current, native rose, and sticky monkey flower. If other shrub species are present with coyote brush, retain them at the expense of coyote brush. Remove all dead branches from the plants that are retained.
- d. All trees within the 200-foot Coastal Scrub Zone should be retained. As trees increase within the coastal scrub, they provide a long-term reduction in shrub cover and fire hazard.
- e. Trees growing within chaparral should be encouraged by removing shrubs from within a zone around the tree (Figure 2):
 - When the tree is shorter than 6 feet high, all shrubs should be removed from within a distance of 3 feet from the tree's drip line.
 - When a tree is taller than 6 feet high, all shrubs should be removed from within a distance of 6 feet from tree crown edge when the tree is taller than 6 feet height.



8. Oak Woodland Zone – to a distance of 150 feet

Understory plants shall be kept short, and small lower tree branches shall be removed.

The goal of this treatment recommendation is to maintain an existing oak woodland with a short-statured understory of herbaceous plants, and a tree canopy at least 8 feet above the ground. An initial treatment will be required to prune the trees up to 8 feet above the ground and to reduce density and stature of understory shrubs. After the initial treatment, periodic maintenance will be needed to cut back shrub sprouts. Otherwise, the shrubs should be left to grow to 2.5 ft in height.

Prescriptions for understory maintenance:

- a. Within 30 feet from structures, at the beginning of each summer, ensure that the grass and herbaceous understory is maintained at a maximum height of 4 inches.

- b. Understory shrubs should not be completely removed. Instead, selectively remove flammable species like coyote bush, and prune-back and remove dead branches from less-flammable desirable species such as coffee berry, currant and wild rose.

Prescriptions for tree pruning:

- a. All lower tree branches, under 3 inches in diameter, should be removed up to 8 feet above the ground, or on the lower third of trees, whichever is less (Figure 1). OR
- b. All lower tree branches, under 3 inches in diameter, should be removed to provide vertical clearance of 3 times the height of the understory plants, or eight feet above understory plants, whichever is greater.
- c. All dead branches smaller than three inches in diameter should be removed. Dead limbs greater than three inches in diameter should be retained.

Once initial pruning is accomplished, tree pruning is likely to be needed infrequently, on an interval of about once every 3 to 5 years.

Do not thin or prune the tree canopy, as this will promote more growth in the lower parts of the tree, and will result in increased risk that fire will spread to the tree canopy.

9. Oak-Shrub Woodland Zone – to a distance of 150 feet

Understory plants shall be kept short, and small lower tree branches shall be removed.

The goal of the following treatment is to facilitate the conversion from a transitional woodland / shrubland vegetation type, into a more fire-safe oak woodland with an understory consisting of grass, herb or other low-growing plants. Understory shrubs are acceptable, if maintained to a maximum height of 2.5 feet, and if kept free of dead branches. Once the conversion has been made to a stable oak woodland, little vegetation treatment will be necessary other than the normal recommendations for the Oak Woodland Zone.

Prescriptions for understory maintenance:

- a. Within 30 feet from structures, at the beginning of each summer, ensure that no shrub under a tree exceeds 2.5 feet in height.
- b. Understory vegetation should not be completely removed. Instead, selectively remove flammable species like coyote bush, and prune-back and remove dead branches from less-flammable desirable species such as coffee berry and wild rose. Shrubs should be allowed to grow to a height of 18 inches before being cut.
- c. Remove all chamise under tree canopies. Where chamise is found outside of tree canopies, cut chamise to a height of 2 feet, retaining all side branches, or create shrub groupings, according the recommendations in the per the Coastal Scrub Zone. If other shrub species are present with the chamise, retain them at the expense of the chamise.
- d. In open areas away from trees, create an maintain shrub groupings as per the Coastal Scrub Fuel Management Zone. If other shrub species are present with the chamise, retain them at the expense of the chamise.