

## Recommendations for Wildland Fire Hazard Reduction

### Department-Wide Best Maintenance Practices

Recommendation	Done?	Notes
1. Develop a database of wildfires in the Department, with data on location, cause, time of day, date, vegetation type in origin. This data will help prepare a fire prevention plan.	Partial	311 system is our database. Data needs to be analyzed and interpreted for patterns. Yes: location, cause, date. ( + size, + weather , + burned veg type) No: Time of day, vegetation type in origin.
2. Prepare a fire prevention plan. This can indicate whether a juvenile fire-setter program is warranted to change fire behavior, or whether fuel management is more effective to thwart accidental ignitions. The fire prevention plan would detail the important causes to target, the types of messages likely to be effective, and the kind of avenue of communication that would be effective (school presentations, handouts, community meetings, or fliers at hardware stores).	NO	Should be based on data to the best of our ability to analyze the patterns.  And based on what is feasible. Education may be somewhat helpful, but the fire patrols may turn out to be the most efficient, way of controlling size and number of fires.  Need to include fire departments – improve response time and communicate priorities.
3. Further improvements can be made by adopting the One Less Spark, One Less Wildfire Campaign at <a href="http://www.preventwildfireca.org">www.preventwildfireca.org</a> , which is a public education program, and by increasing patrols near ignition-prone locations during red flag days.	N/A	I do not recommend this campaign. Did not seem relevant to users of Regional Parks.
4. Use signage to convey the need for fire safety and the methods to use to be fire safe.	YES	Posted smoking and barbeque restrictions on signs warning of high fire danger. More needed?
5. Find a vendor who is willing to cut poison oak and let a contract for fuel management where poison oak is abundant. After initial treatment the area can be maintained with Sacramento Regional Conservation Corp (SRCC) crews in subsequent years.	NO	Poison oak areas include portions of Upper Sunrise/Gold River, Sailor Bar, Rollingwood + many small areas within 100 feet of property lines. Might also consider a vendor who is willing to work on very steep slopes (Ancil Hoffman, Sailor Bar, Sacramento Bar all contain areas with slopes too steep for Conservation Corps.

Recommendation	Done?	Notes
<p>6. Collaborate with power companies regarding the mowing of grass under the lines to reduce flashy fuels and possibly create a secondary fuelbreak, particularly at Woodlake and Cal Expo, where three parallel high power transmission lines occur.</p>	NO	Needs to be coordinated.
<p>7. Identify the fire roads, using a system of the Department's choice. The Department, as the landowner, has the authority to name and install signs designating fire access roads and gates. The naming should be consistent throughout the Department.</p>	YES	<p>Implemented. However different system of naming between upper and lower river.</p> <p>Additions to consider: ID and maintain a main road at Rossmoor Bar between end of Rossmoor Drive and San Juan Rapids; Ancil Hoffmann Road between EYNC and lodge site; River Bend Park between day camp parking and horse parking; WB Pond horse trail between bridge and Harrington.</p>
<p>8. Review the fuel management in relation to resource management Department-wide. This would include incorporating fuel management into the update of the 2008 Resource Management Plan. This can alleviate conflicts between fire safety and natural resource management, and leverage work done for fuel management into restoration wherever possible.</p>	Partial	Some of these recommendations are already in the Parkway Plan (see Table of Parkway Plan Recommendations)
<p>9. Support Metro Fire and SCFD efforts to establish and maintain defensible space between homes and park lands. Homeowners would be responsible for the defensible space on their property, but constrained in their actions by a permit from SCRP. The SCRP should formalize a mechanism for allow mowing with 100-ft of the private structure in areas identified by the Department. Continue prohibition of dumping on SCRP land.</p>	Partial	<p>Consider expanding this program: Currently used along McClaren and Ambassador – not sure if used elsewhere?</p> <p>We prohibit dumping – it is fairly common behind certain homes (part of SRCC cleanup) – should consider increased enforcement</p> <p>ARPP Policy 9.19</p>

Recommendation	Done?	Notes
<p>10. Establish a set a fuel management standards for contracts with the Sacramento Regional Conservation Corp and private vendors for work adjacent to bike trails, roadways, parking lots and defensible space. Suggested standards are attached as Appendix A.</p>	<p>Partial</p>	<p>Right now the standard is limb up 8 feet, remove vines, and dead wood less than 4" in diameter. Within 100 feet of property line. To do: Add suggestion from Appendix A.</p>
<p>11. Determine a set of weather conditions and procedures for operation of equipment that can start fires. Include this set of conditions and procedures in all contracts and agreements for fuel management work. For example, when winds exceed 15 mph at ground level, mowing might be prohibited. But when winds are 10-15 mph, mowing may be performed if a spotter and extinguishing capabilities are present. Any contractor or hand crew that is using power saws needs to check for fire weather at <a href="http://inws.wrh.noaa.gov/">http://inws.wrh.noaa.gov/</a> to check for red flag warnings.</p>	<p>Partial</p>	<p>Staff uses red flag days as indicators – need to make sure that they are included as policy and included in safety meetings.</p> <p>These details are not included in the Encroachment Permits, which is more general: <i>“Hazards/Liability: Permittee shall take all reasonable actions to insure that Permittee’s activities on the encroached areas do not present a safety hazard or attractive nuisance to park users. .... Equipment or fuel shall be safely operated and stored to prevent fire from occurring. ....”</i></p> <p>Need to be sure that these restrictions are included in Contracts.</p>

## Rossmoor Bar and Lower Sunrise

Recommendation	Done?	Notes
<p><b>Short-term Actions to Bolster Fire Safety</b></p> <p>In order to provide a substrate that would allow mowing, the SCRPP could deposit a deep layer of chips (8-10 inches) on the rocky soil surface, and compact the chips with the use of heavy equipment. In this way the chips would buffer the rocks from metal blade contact. Chips may last for 5-7 years, depending on the depth. The chips perform better as a buffer against blade contact and last longer if compacted. The chips could be distributed on the area currently disked. This would not function as an official firebreak because it would not be fuel-free, but would allow for easier maintenance via a mower.</p>	NO	Consider for implementation. Would need to arrange large loads of wood chips.
<p><b>Best Maintenance Practices</b></p> <p>SCRPP should continue to limb-up the lower branches of trees, remove shrubs under trees and mow grass along the dirt portion that connects the paved roads. This is the section of maintenance road between the public roadways at northwest border of the Gold Country subdivision and at the Hazel parking lot.</p>	Partial	In progress.  ARPP Policy 9.3
<p>Limb all pine trees to a height of 8 – 10 ft. in height along the vehicular path, and especially near places with a high ignition potential (around roads, parking lots, structures, concentrated human activity). Conifers, and especially grey pines, have a high oil content in the leaves/needles, making the crowns more prone to torching, and then creation of embers. These firebrands are subsequently distributed long distances because of the tree tall height. Firebrands are likely to land on highly ignitable (flashy fuels, and create multiple new fires which will confound fire containment efforts.</p>	Partial	Process has started and is ongoing.  ARPP Policy 9.18

<b>Rossmoor Bar and Lower Sunrise- continued Recommendation</b>	<b>Done?</b>	<b>Notes</b>
<p>In a change in practice, hand crews should remove shrubs that occur below trees as part of the fire hazard reduction work done behind homes.</p>	<p>NO</p>	<p>Parks crew is planning blackberry removal along fenceline at Lower Sunrise.</p> <p>Removing the shrubs farther out may need a public education campaign first (like we did with first fuels management program)</p>
<p>The connector by Gold River burned last year. The substrate is too rocky to mow, but the shrubs can be removed and lower limbs of trees can be pruned when they reach over the roadbed.</p>	<p>Yes</p>	<p>In progress. ARPP Policies 9.2 and 9.3</p>

## Sacramento Bar Area

Recommendation	Done?	Notes
<p>Horse trail in Fair Oaks between Bannister Park and Sacramento Bar. Recommended Options for 2014. Remove the dead material in the oak woodlands, remove the lower limbs of the trees on within 15 ft of the equestrian trail and mow the area north of the equestrian trail. Start to convert more of the area to creeping wildrye. This is a combination of Options 1, 2, 4 and 5</p>	NO	<p>Note: Carol Rice listed several options that can achieve the goal of calming fire behavior. However, she noted that SCRP should not disk the area because past practice of disking has produced root sprouts from surrounding trees.</p>
<p>Once the accumulated volume of dead material is treated and lower limbs of trees pruned maintenance can consist of Option 1, mowing the area between the equestrian trail and private property, and converting more areas to native perennial grass through targeted, timed mowing.</p>	NO	<p>Might be a good partnership (planting and maintaining native grasses) with Waldorf school.</p>
<p>Roadbed behind Waldorf School: Short-term Actions to Bolster Fire Safety and Best Maintenance Practices Consult with Sacramento County Public Works regarding the potential for moving dirt enough to constitute a roadbed. The route looks like it could be fixed without major work or disturbing the historical mining district site.</p>	NO	<p>Road work is currenlnly being scheduled. There are two another roadways at Sac Bar that could be considered for fixing. (SacB 1 and SacB 4). (The road behind the Waldorf School is un-named because it hasn't been drivable for a long time.)</p> <p>Also need to maintain Sailor Bar Fire roads (limbing, grading). Including the one we recently opened up in 2011. New road is between SB 8 and SB 11. Consider fire risk and fire safety, as well as other factors, before re-opening interior Sailor Bar Roads, currently closed to public driving due to budget cuts.</p>

## River Bend Area

Recommendation	Done?	Notes
<p><b>Short-term Actions to Bolster Fire Safety</b></p> <p>The fuels surrounding each campfire ring should be reduced and maintained for 30-ft around each campfire ring as defensible space (and would entail limbing the lower branches of trees), plus one more requirement, which is to create bare dirt for a width of 10-ft from each ring. This would also entail moving chips placed by the Rotary Club.</p> <p>Additionally, it is important to remove all dead wood within 100-ft of the campfire rings, especially in the area of the recent fire. The vegetation around the campfire rings will need to be refreshed each year, including creating the firebreak within 10-ft of each campfire ring.</p> <p>This essential action may produce consequences for habitat, aesthetics, and privacy of users.</p>	<p>N/A – see below</p>	<p>Currently considering an alternative, including removal of most fire rings.</p> <p>Note that the Camp Fire Camp property was private property when the 2008 ARPP was adopted.</p>
<p>In subsequent years, campfire rings should be replaced with those with higher walls. (The standard for campfire rings should be the same as other agencies with campgrounds, such as the East Bay Regional Park District, USDA Forest Service or USDI National Park Service. )</p>	<p>N/A – see below</p>	
<p>Consider removing some of the 20 campfire rings that are in close proximity to each other. Consider retaining 5-10 campfire rings</p> <ul style="list-style-type: none"> <li>• Select for retention those nearest the road (for fire department access), but farther from the large amphitheater and fire pit.</li> </ul> <p>Select for retention ones where the creation and maintenance of defensible space would have the least impact on habitat, and/or privacy.</p>	<p>Partial</p>	<p>Some removals have occurred.</p> <p>We will work with the ARP Foundation to remove additional fire rings, while maintaining the Camp Fire amphitheater fire ring.</p>

<b>River Bend Park- continued Recommendation</b>	<b>Done?</b>	<b>Notes</b>
Limb up the only pine tree in the campground.	NO	Consider making this job a component Part of a volunteer work day.
<p>Each "camper" should see the video on <a href="http://www.preventwildfireca.org/Campfires/">http://www.preventwildfireca.org/Campfires/</a> and go through the process of obtaining a campfire permit. Campers should have a shovel and water with them any time a fire is burning. They also need to check for fire weather the day of camping, at <a href="http://inws.wrh.noaa.gov/">http://inws.wrh.noaa.gov/</a>. Campers would look for red flag warnings. Each camper should also have means of communication, and know where the call boxes are in case other means of communication are not available.</p>	N/A	<p>I did not think this video was helpful, as it shows building a fire outside of a designated ring. We should check on details of fire permit.</p>



<b>Cal Expo and Woodlake Recommendation</b>	<b>Done?</b>	<b>Notes</b>
<p><b>Short-term Actions to Bolster Fire Safety</b>  The area mowed for the 2014 season is adequate in width and height, both as judged by on-site observations as part of this analysis and by concurrence between SCRPD and Sacramento City Fire Department staff. A few “finesses” of the mowing and adjacent fuel treatment would make this management more effective.</p>	YES	ARPP Policy 9.19
<ul style="list-style-type: none"> <li>The SCRPD should establish and maintain safety zones in the hemlock and yellow star thistle along the firebreak. There should be ~4-5 safety zones in this unit.</li> </ul>		One safety zone would be the overflow parking. Another could be the radio tower area. A third or fourth Under the power lines.
<ul style="list-style-type: none"> <li>Monitor the mowed area for potential for mis-use of the area by mountain bikers .</li> </ul>	YES	Ranger patrol.
<ul style="list-style-type: none"> <li>Bike trails are wide enough, however, trees should be limed to 6-8 ft from the ground within 10-ft of the bike path so that the trees crowns will not be scorched or consumed in a wildfire, and embers produced and spread.</li> </ul>	YES	Part of current practice for bike trail maintenance.  ARPP Policy 9.18
<ul style="list-style-type: none"> <li>Limbing of trees is especially important at the intersection of NC1 and NC2. All pines should have lower branches pruned to a height of 8-10 ft.</li> </ul>	YES	ARPP Policy 9.18
<ul style="list-style-type: none"> <li>Within 10-ft of the road near the overcrossing of I80 do not cut top branches, but remove dead wood in addition to limbing the lower branches of trees.</li> </ul>	NO	ARPP Policy 9.18

<b>Cal Expo and Woodlake - continued Recommendation</b>	<b>Done?</b>	<b>Notes</b>
<p>The Sacramento County Regional Parks (SCRP) staff should be trained in Incident Command System so that they be a Resource Advisor, which is part of the Planning Section of the incident, providing information to the Incident Commander regarding the natural resources at risk as well as potential access, water supply, and hazards.</p>	NO	<p>Park Rangers are currently trained in the Incident Command System, but not as Resource Advisors. The Resource Advisor particular role would require someone on call 24-7, which the Department currently does not have the resources to provide. Need to investigate other methods to ensure better protection of sensitive resources during a fire.</p>
<p>The SCRP staff could work with the local fire departments to develop a powerpoint presentation regarding resource protection and Minimum Impact Suppression Techniques, with guidance such as 1) why the riparian areas are important, 2) best practice is to apply Class A foam to cottonwoods during a wildfire.</p>	NO	<p>Need to implement  ARPP Policy 9.22</p>
<p>The area should have a wildfire pre-plan that is confirmed and known, and/or collaboratively assembled with the local Battalion Chief. The pre-plan should have sensitive areas designated, with proposed types of suppression detailed (i.e., use of foam in cottonwood stands, lesser importance of fire spread in grasslands, preferred containment locations).</p>	NO	<p>Need to implement with Park Rangers taking the lead.  ARPP Policy 9.22</p>

<b>Dry Creek Parkway</b>		
<b>Recommendation</b>	<b>Done?</b>	<b>Notes</b>
<p><b>Short-term Actions to Bolster Fire Safety</b></p> <p>The combined width of mowed grass, gravel, roadbed ranges from 30- to 48 ft wide break for control. This seems adequate for locations where fire engines would take a stand for control.</p>		
<p>Mow around trees that are located within the mow zone. This is because unmowed grass can cause the lower branches of the trees to scorch, and create embers that can be distributed fairly long distance into unburned areas, causing new fires.</p>	Yes	
<p>Mow a firebreak on both sides and limb trees to allow mowing by vehicle. In addition, limb lower branches of trees to provide 14 ft vertical height for access for fire vehicles.</p>	Partial	Completed at Dry Creek Parkway
<p><b>Best Maintenance Practices</b></p>		
<p>In order to augment protection for valley oaks, fire department crews should apply Class A foam to valley oaks inside the burn. This will provide training on ways to minimize fire-sensitive trees (including cottonwoods) elsewhere and within other parks.</p>	No	2014 Dry Creek, we string-trimmed around small oaks. Metro Fire Disks around groves and significant trees.
<p>Trees that are shorter than 18-24 ft should be limbed of only the lower third of the canopy.</p>	Yes	This is current practice – used for SRCC crew. No “lollipop” trees.
<p>A few firefighter safety zones should be established along the southern perimeter of the prescribed burn. These zones would consist of mowed areas of dimensions 100-ft by 100-ft.</p>	?	Not sure if this has been a practice of Metro Fire.

<b>ARPP Policy</b>
<b>9.0 Public Safety</b> Emergency Vehicle Access
<b>9.1</b> Emergency vehicle access shall be accommodated at all public vehicle access points. Emergency vehicle access to the Parkway may be provided at other locations approved by the County Recreation and Parks Commission and the Fire District having jurisdiction over the site.
<b>9.2</b> Emergency vehicle access within the Parkway may be provided via parking areas, service roads, levee crowns, equestrian/hiking trails, pedestrian trails, bicycle trails, and fire breaks. Service roads shall be interconnected where possible to permit through travel by emergency vehicles only. Levee roads shall have access to lower levels at regular intervals.
<b>9.3</b> Emergency vehicle access routes shall be capable of supporting the imposed load of emergency vehicles. The routes shall have an unencumbered clear width of 20 feet, have turnarounds at intervals to the satisfaction of the local fire agency, and shall have a vertical clearance of 13 feet, 6 inches.
<b>9.4</b> Public parking shall be restricted by signs, painted curbs, or physical means so as not to obstruct emergency access or barricades. Illegally parked cars which obstruct emergency access shall be subject to citation or towing.
<b>9.5</b> Barricades shall be placed to prevent non-emergency vehicles from using trails, service roads, and emergency vehicle access routes. These barricades shall be of post-and-cable type, gate type, or drop-post types, shall have adequate width for emergency apparatus and shall take into account the need to make sharp turns near the gates. Barricades shall be vandal resistant, with locking devices to be used in locations requiring emergency access. Standard locks shall be consistent with County ordinances for security access.
<b>9.6</b> Certain non-vehicular water access trails shall be maintained with a minimum of four feet clear width to accommodate hose line extensions in a rapid manner. These designated trails shall be mapped and distributed to fire service agencies as part of an emergency access plan of those agencies.
<b>9.7</b> Should new motor vehicle bridges be needed within the Parkway for interior use, these bridges should be constructed to meet the imposed load of emergency fire apparatus.
<b>9.8</b> Barbecue facilities, fire rings and permanent camp sites shall only be located where an adequate water supply is available or can be transported to, as determined by the responsible fire agency.

## **Fire Breaks**

**9.17** Firebreaks shall be combined with emergency vehicle roads and trails, where practical, to eliminate unnecessary removal of vegetation.

**9.18** Hanging branches or accumulation of dry materials that pose fire hazards may be trimmed or removed only as necessary as determined by the appropriate fire agency and/or by qualified staff designated by the County Department of Regional Parks, to maintain effective fire breaks or remove an immediate hazard. Careful consideration should be given to any pruning of vegetation to prevent fires from spreading from ground level into a crown type fire.

**9.19** The responsible fire agency shall determine the width of all fire breaks.

**9.20** The need for additional north/south oriented firebreaks shall be considered when designing new trails or maintenance roads. The appropriate fire agency should be consulted for both the need and the location.

**9.21** The visual impact of firebreaks shall be minimized by combining them with other facilities such as roads, trails, parking lots, and turfed areas where feasible.

**9.22** Parkway resource managers, designated by the County Department of Regional Parks, shall yearly provide fire department personnel with updated maps that designate high priority natural resources.

### **ARPP Woodlake: 10.15 and ARPP Cal Expo 10.24**

Redesign and renovate the unsurfaced maintenance and emergency roadways in the Woodlake Area to reduce habitat fragmentation and degradation, and create an interconnected system of roads providing improved access and adequate width for fire suppression and utility, recreation, and flood control facility maintenance. This system should also include several narrow maintenance trails that could provide more limited access for fire suppression and maintenance activities in more sensitive habitat areas and serve as firebreaks.

## Appendix A. Fuel Management Standards

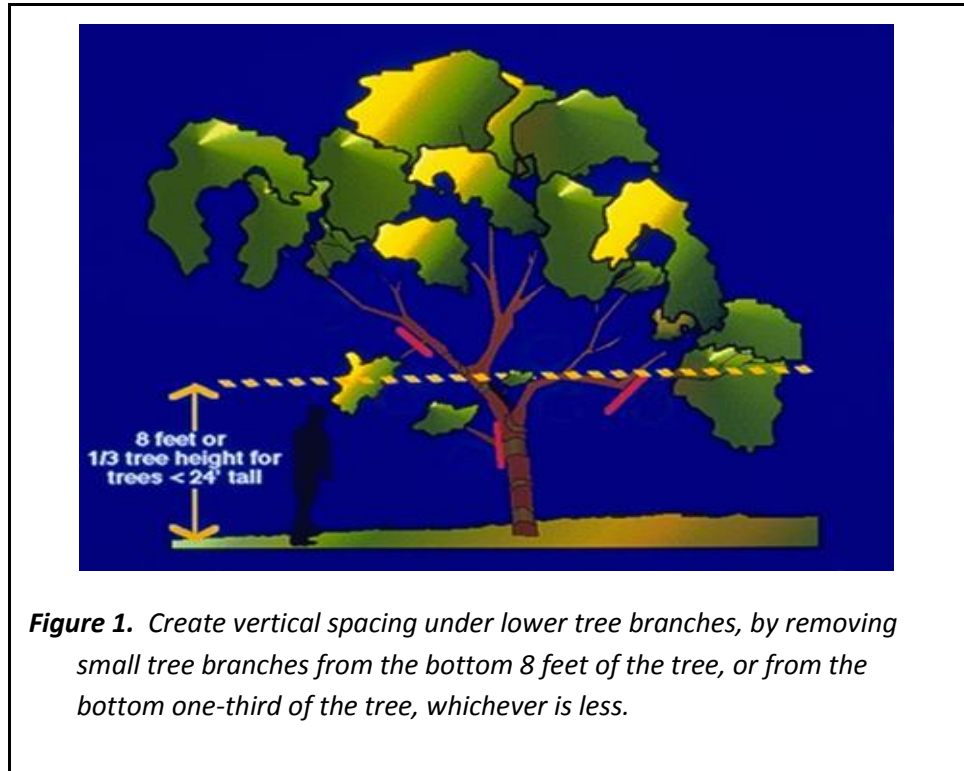
This set of prescriptions incorporates a number of standards that are intended to minimize the environmental impacts of fuel management treatments potentially associated with attaining fire safety goals.

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 Sacramento Metropolitan Fire District or the City of Sacramento Fire Department.
  - 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 occur in Sept through January to avoid bird nesting season (typically February to August).
  - Treatments shall not occur during extreme fire danger conditions, as defined the Sacramento Metropolitan Fire District or the City of Sacramento Fire Department. Contractors should check weather conditions each day of work.
  - 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. Retain specimens of plants that are unusual or uncommon on the site. Conversion of existing native habitat types to new habitat types (such as the conversion of scrub habitats to annual grassland) is not recommended.
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.
4. **Brush piles** may be appropriate for disposal of cut branches and brush for use as wildlife habitat in open fields away from trees. Piles should be at least 100 feet from structures or private property, and at least 15 feet from tree canopy edge.

5. **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, 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).
6. **Haul routes**, if used for removal of vegetation debris, 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.
7. **Large dead material**, such old logs larger than 6 inches in diameter should remain on the site if isolated from kindling-sized dead branches (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 (where it crumbles when kicked).
8. Some wildlife are enhanced by removal of invasive exotic species. Cutting old shrubs provides new forage due to two factors: the shrubs sprout, offering new, more lush foliage to serve as browse, and the shrubs are available to wildlife since they are within reach. Previously, much of the forage may be too tall for browsers such as deer and rabbit.
9. **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.

### **Prescription for Tree Pruning, Treatments**

- 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 interior live oak, black oak, valley oak, or blue oak, or madrone requires prior approval from the SCRP.



**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.

### **Shrubs Underneath Oaks**

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.

- a. No shrub under a tree should exceed 2.5 feet in height. Either cut the shrub to the ground or shorten the shrub to ~18 inches in height (to allow for growth before re-treatment).

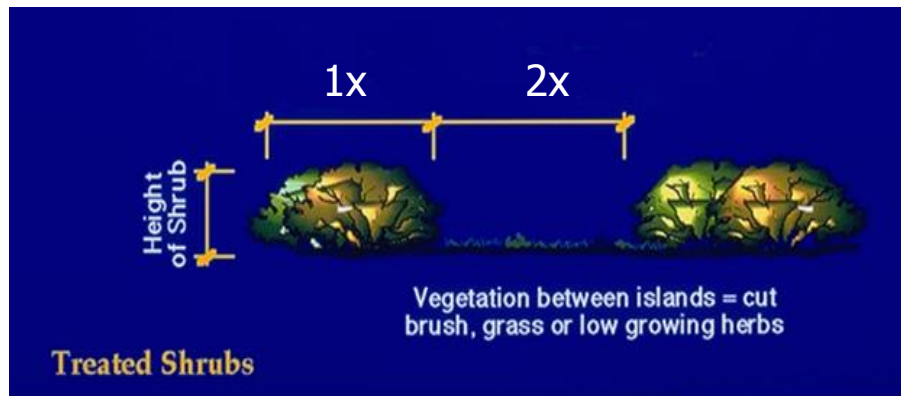


- b. Understory vegetation should not be completely removed. Instead, selectively remove flammable species like coyote bush, and prune-back and remove dead branches from less-flammable desirable species such as coffee berry and wild rose. Shrubs should be allowed to grow to a height of 18 inches before being cut.

## Shrub Treatments

Shrubs can burn with great intensity, and often pose a high fire hazard to adjacent structures. In shrubby vegetation types, fire safety goals are attained by maintaining well-spaced shrubs that are short-stature, with moist young vegetation, and no dead branches. Riparian scrub and willow scrub are important habitat types, comprised of a diverse mixture of native shrub species. Shrub species growing will stump-sprout vigorously when mowed or burned, so 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, distance between groups of shrubs should be at least 2 times the height of the shrub patch (see Figure 2).



**Figure 2.** Create groups of shrub groupings to provide horizontal separation between shrubs. Each group of shrubs should be no wider than 2 times its height, or less than 120 square feet in area. The space between shrub groups should be greater than three times the height of the shrubs, or a distance of 12 feet, whichever is greater.

- 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. Shrubs within 100 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. Shrubs should not be allowed to grow above 2.5 ft height (usually 5 years or less) before being re-treated.
- e. All trees within shrub patches should be retained. As trees grow, they provide a long-term reduction in shrub cover and fire hazard.
- f. Trees growing within shrubs should be encouraged by removing shrubs from within a zone around the tree (Figure 3):
  - 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 3.** 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.

### Roadside, Bike Trail Treatments

Treatments of the vegetation types would be followed.

In addition, all tree branches extending over driveway surfaces should be pruned to ensure at least 13.5 feet of vertical clearance.