

ES&H DIVISION

SLAC I-750-0A15E-001

Landscape Vegetation and Planting Guidance



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This document, *Landscape Vegetation and Planting Guidance*, SLAC I-750-0A15E-001, has been:

Approved by:

Micki M. DeCamara

02/16/2021

Micki DeCamara, Environmental Compliance Head
ES&H Division
SLAC National Accelerator Laboratory

Date

Prepared by:

Wendy Greene

[Wendy Greene \(Feb 11, 2021 10:59 PST\)](#)

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Wendy Greene, Environmental Protection Department
ES&H Division
SLAC National Accelerator Laboratory

Date

PURPOSE

SLAC National Accelerator Laboratory (SLAC)'s Environmental Safety and Health (ESH) Division has developed this document to assist project managers and contractors during the project design process by providing planting guidance and recommendations. This guidance is designed to protect and enhance the surrounding natural communities and set a standard for sustainable landscaping at SLAC.

ROLES AND RESPONSIBILITIES

The project manager and/or the designated contractor is responsible for developing planting lists and landscaping plans. SLAC's Biological Resources Protection Program Manager should be notified of upcoming projects involving new landscaping or plantings so that the necessary review, if any, can be completed.

PLANTING BEST MANAGEMENT PRACTICES

SLAC recommends implementing the following best management practices to the extent possible:

- Avoid the use of invasive species (a full list of invasive species is available online at the California Invasive Plant Council's website [www.cal-ipg.org])
- Minimize the use of irrigated turf
- Use local species and stock; if San Francisco Bay Area natives are not available or appropriate, species native to the South Coast are next preferred¹
- Use drought-tolerant, Mediterranean-climate plants to conserve water and energy
- Schedule irrigation systems to water at frequencies based on species' water needs to prevent under or over-watering
- Avoid planting ground cover, such as grass, around tree trunks to prevent tree root rot and soil compaction; instead, opt for spreading a wide, even layer of mulch around the perimeter of trunks

RECOMMENDED PLANTS

Plants should protect, enhance, and renew the native vegetative cover while creating a sense of cohesiveness with the surrounding visual resources. Project managers are encouraged to select species from the attached Recommended Plant List at SLAC (Appendix A). All listed species are native to California, and most are drought-tolerant. The list is organized by plant type (e.g., tree, shrub, grass, etc), and the specified characteristics can be used to determine each species' project suitability.

If a project wishes to plant a species not included in the Recommended Plant List, SLAC's Biological Resources Protection Program Manager should be notified.

¹ Baldwin, B.G., Goldman, D.H., Keil, D.J., Patterson, R., Rosatti, T.J., and Wilken, D.H. (Eds.). 2012. *The Jepson Manual: Vascular Plants of California*. (2nd ed.). Berkeley: University of California Press.

For more biological and landscaping information, consult the California Native Plant Society’s Calscape website (<https://calscape.org>).

PLANTS TO AVOID

The following list of plants includes several locally popular and accessible species that are non-native and/or invasive, and therefore not compatible with the native landscape and should not be planted at SLAC. This list is not all-inclusive.

Plants to Avoid at SLAC

Scientific Name	Common Name
<i>Acacia baileyana</i>	Bailey Acacia
<i>Acacia cultriformis</i>	Knife Acacia
<i>Acacia melanoxylon</i>	Blackwood Acacia
<i>Ailanthus altissima</i>	Tree of Heaven
<i>Bamboo (all running types)</i>	Golden Bamboo, etc.
<i>Cortaderia jubata</i>	Purple Pampas Grass
<i>Cortaderia selloana</i>	Uruguayan Pampas Grass
<i>Cytisus (all species)</i>	Scotch Broom
<i>Eucalyptus (all species)</i>	Eucalyptus
<i>Festuca myuros</i>	Zorro Fescue
<i>Foeniculum vulgare</i>	Common Fennel
<i>Genista monspessulana</i>	French Broom
<i>Ligustrum (all species)</i>	Privet
<i>Nerium oleander</i>	Oleander
<i>Populus (all species)</i>	Poplar, Cottonwood
<i>Pyracantha (all species)</i>	Firethorn
<i>Robinia (all species)</i>	Locust
<i>Salix (most species)</i>	Willow
<i>Schinus molle</i>	Peruvian Pepper Tree
<i>Spartium (all species)</i>	Spanish Broom
<i>Trifolium hirtum</i>	Rose Clover
<i>Vinca major</i>	Periwinkle

HYDROSEEDING

A hydroseed mix comprised of compatible species from the Recommended Plant List is preferred. It is recommended to spray seeds before covering with slurry, rather than mixing seeds and slurry for one application (mixing may result in seeds being trapped in dried slurry). A mix of local stock is preferred, but if local species are not available, regionally native species are acceptable. Application rates (lbs/acre) should be determined by the project management staff on a project-by-project basis in accordance with

design specifications, manufacturer instructions, and other factors. In general, the higher the seed application rate, the better. An example of a SLAC-approved hydroseed mix is provided below:

Bromus carinatus – 14 lbs/acre
Clarkia purpurea – 1 lbs/acre
Elymus glaucus – 12 lbs/acre
Eschscholzia californica – 2 lbs/acre
Hordeum brachyantherum – 8 lbs/acre
Lupinus albifrons var. *albifrons* – 4 lbs/acre
Nassella pulchra – 6 lbs/acre
Poa secunda – 4 lbs/acre
Festuca microstachys – 6 lbs/acre

NATIVE PLANT AND SEED SOURCING

There are several native plant nurseries in the vicinity of SLAC which carry the plants listed in Appendix A, subject to availability. Some nurseries also propagate plants from locally harvested seed to maintain genetic integrity. These nurseries may also be able to provide further recommendations of plantings beyond those in Appendix A appropriate for the local landscape.

- **California Native Plant Society (CNPS), Santa Clara Valley Chapter Nursery**
26870 Moody Rd, Los Altos Hills, CA 94022, (650) 260-3450
cnps-scv.org/index.php/events/plant-sale

The CNPS Nursery has year-round plant sales for CNPS members, and a sale in the fall for the public. A current inventory is usually available the week of the sale on their website.

- **Grassroots Ecology Native Plant Nursery**
3921 East Bayshore Rd, Palo Alto, CA 94303, (650) 419-9880 grassrootsecology.org/nursery

This is a wholesale nursery and supply plants upon request and can also do contract grows for large restoration and landscaping projects. They offer locally-native species from seeds and cuttings gathered within Santa Clara, San Mateo, and Santa Cruz Counties, then distribute plants for reintroduction within their watershed of origin. Grassroots Ecology also grows rare and threatened native species and participates in native plant research.

- **Yerba Buena Nursery**
12511 San Mateo Rd, Half Moon Bay, CA 94019, (650) 851-1668
<https://www.yerbabuenanursery.com/>

Yerba Buena Nursery offers a wide range of California native plants for sale and is open year-round.

- **San Bruno Mountain Watch Mission Blue Nursery**
44 Visitacion Ave, Ste 206, Brisbane, CA 94005, (415) 467-6631
<https://www.mountainwatch.org/missionbluenursery>

Mission Blue Nursery has quarterly plant sales open to the public and is also open by appointment. They grow plants for large-scale landscaping and restoration projects and can propagate locally-harvested seed.

- **Bay Natives Nursery**
10 Cargo Way, San Francisco, CA 94124, (415) 287-6755
www.baynatives.com/

Bay Natives offers a range of California native plants for sale and is open year-round.

RELATED RESOURCES

Chapter 26 of the ESH Manual, Stormwater, <https://www-group.slac.stanford.edu/esh/environment/stormwater/>

Chapter 11 of the ESH Manual, Excavation Safety, https://www-group.slac.stanford.edu/esh/hazardous_activities/excavations/

SLAC Storm Water Pollution Prevention Plan and Stormwater Best Management Practices, <https://www-group.slac.stanford.edu/esh/groups/ep/water/stormwater/>

Stanford University Facilities Design Guidelines, Tree and Plant Protection (Section 01 56 39), http://web.stanford.edu/group/lbre_apps_forms/maps/fdg/fdg_documents_pdf/01_56_39_Tree_and_Plant_Protection.pdf

SLAC CONTACTS

Planting Policy and Vegetation Compatibility: SLAC Biological Resources Protection Program Manager

Grounds, Maintenance, and Tree Removal: SLAC Facilities Support Services Manager

Sustainability: SLAC Energy and Sustainability Program Manager

Storm Water Protection: SLAC Storm Water Program Manager

APPENDIX A

Recommended Plant List at SLAC

Scientific Name ²	Common Name	Characteristics ³
Trees		
<i>Aesculus californica</i>	California Buckeye	<i>Max height:</i> 13.1 – 39.4 ft. (4 – 12 m) <i>Max width:</i> 40 ft. (12.2 m) <i>Water requirement:</i> Very low/Low <i>Growth rate:</i> Moderate <i>Wildlife attracted:</i> Insects (including butterflies)
<i>Arbutus menziesii</i>	Madrone	<i>Max height:</i> 15 – 100 ft. (4.6 – 30.5 m) <i>Max width:</i> 25 ft. (7.6 m) <i>Water requirement:</i> Low or Moderate <i>Growth rate:</i> Slow <i>Wildlife attracted:</i> Birds, Insects (including butterflies)
<i>Prunus ilicifolia</i>	Hollyleaf Cherry	<i>Max height:</i> 30 – 49.2 ft. (9.1 – 15 m) <i>Max width:</i> 20 ft. (6.1 m) <i>Water requirement:</i> Very low <i>Growth rate:</i> Fast/Moderate <i>Wildlife attracted:</i> Birds, small mammals
<i>Quercus agrifolia</i>	Coast Live Oak	<i>Max height:</i> 25 – 82 ft. (7.6 – 25 m) <i>Max width:</i> 15 – 35 ft. (4.6 – 10.7 m) <i>Water requirement:</i> Low <i>Growth rate:</i> Moderate/Slow <i>Wildlife attracted:</i> Various birds, mammals, reptiles, insects (including butterflies)
<i>Quercus douglasii</i>	Blue Oak	<i>Max height:</i> 16 – 82 ft. (4.9 – 25 m) <i>Max width:</i> 30 ft. (9.1 m) <i>Water requirement:</i> Low <i>Growth rate:</i> Slow <i>Wildlife attracted:</i> Various birds, mammals, reptiles, insects (including butterflies)
<i>Quercus lobata</i>	Valley Oak	<i>Max height:</i> 60 – 100 ft. (18.3 – 30.5 m) <i>Max width:</i> 50 ft. (15.2 m) <i>Water requirement:</i> Low <i>Growth rate:</i> Fast/Moderate <i>Wildlife attracted:</i> Various birds, mammals, reptiles, insects (including butterflies)

² Those denoted with an asterisk are those preferred for areas adjacent to waters or wetlands

³ Unless otherwise indicated, species information was obtained from California Native Plant Society's Calscape website (<https://calscape.org>).

<i>Quercus wislizeni</i>	Interior Live Oak	<p><i>Max height:</i> 15 – 50 ft. (4.6 – 15.2 m) <i>Max width:</i> 10 – 50 ft. (3 – 15.2 m) <i>Water requirement:</i> Very low/Low <i>Growth rate:</i> Moderate <i>Wildlife attracted:</i> Various birds, mammals, reptiles, insects (including butterflies)</p>
<i>Salix exigua</i> *	Sandbar Willow	<p><i>Max height:</i> 10 – 23 ft. (3 – 7 m) <i>Max width:</i> 20 ft. (6 m) <i>Water requirement:</i> High (good in moist areas) <i>Growth rate:</i> Fast <i>Wildlife attracted:</i> Various birds, mammals, amphibians, insects</p>
<i>Salix lasiolepis</i> *	Arroyo willow	<p><i>Max height:</i> 7 – 35 ft. (2.1 – 10.6 m) <i>Max width:</i> 15 ft. (4.6 m) <i>Water requirement:</i> High (good in moist areas) <i>Growth rate:</i> Fast <i>Wildlife attracted:</i> Various birds, mammals, amphibians, insects</p>
<i>Sequoia sempervirens</i>	Coast Redwood	<p><i>Max height:</i> 60 – 380 ft. (18.3 – 115.8 m) <i>Max width:</i> 45 ft. (13.7 m) <i>Water requirement:</i> Low <i>Growth rate:</i> Fast</p>
Shrubs, Flowers, and Perennial Plants		
<i>Achillea millefolium</i>	Common Yarrow	<p><i>Plant type:</i> Perennial herb/wildflower <i>Max height:</i> 3 ft. (1 m) <i>Water requirement:</i> Low <i>Wildlife attracted:</i> Birds, butterflies, Insects</p>
<i>Adenostoma fasciculatum</i>	Chamise	<p><i>Plant type:</i> Shrub <i>Max height:</i> 3 – 13 ft. (0.9 – 4 m) <i>Water requirement:</i> Low <i>Growth rate:</i> Slow <i>Wildlife attracted:</i> Birds, butterflies, bees</p>
<i>Anaphalis margaritacea</i>	Pearly Everlasting	<p><i>Plant type:</i> Perennial herb/wildflower <i>Max height:</i> 3 - 4 ft. (0.9 – 1.2 m) <i>Water requirement:</i> Low <i>Growth rate:</i> Fast <i>Wildlife attracted:</i> Butterflies, Insects</p>
<i>Arctostaphylos spp.</i>	Manzanita (genus)	<p>Only some species approved including <i>Arctostaphylos hookeri</i> <i>Plant type:</i> Shrub <i>Max height:</i> 1 – 6 ft. (0.3 – 1.8 m) <i>Water requirement:</i> Moderate <i>Growth rate:</i> Fast <i>Wildlife attracted:</i> Birds, butterflies, bees</p>
<i>Artemisia californica</i>	California Sagebrush	<p><i>Plant type:</i> Shrub <i>Max height:</i> 6 – 8 ft. (1.8 – 2.4 m) <i>Water requirement:</i> Low</p>

		Growth rate: Fast Wildlife attracted: Birds, butterflies
<i>Artemisia douglasiana</i>	Douglas' Sagewort (Mugwort)	Plant type: Perennial herb Max height: 8 ft. (2.4 m) Water requirement: Medium to High (damp areas) Growth rate: Fast Wildlife attracted: Birds, butterflies
<i>Baccharis pilularis consanguinea</i>	Coyote Bush	Plant type: Shrub Max height: 3.5 – 8 ft. (1 – 2.4 m) Water requirement: Low Growth rate: Fast Wildlife attracted: Bees, butterflies, birds, reptiles
<i>Ceanothus spp.</i>	California Lilac (genus)	Only some species approved, including <i>Ceanothus thyrsiflorus</i> , Plant type: Shrub Max height: 10 – 20 ft. (3 – 6.1 m) Water requirement: Low Growth rate: Moderate Wildlife attracted: Birds, bees, butterflies
<i>Cercis occidentalis</i>	Western Redbud	Plant type: Shrub Max height: 10 – 20 ft. (3 – 6.1 m) Water requirement: Low Growth rate: Moderate Wildlife attracted: Birds
<i>Clarkia purpurea</i>	Purple Clarkia	Plant type: Annual herb/wildflower Max height: 3.3 ft. (1 m) Water requirement: Low Wildlife attracted: Insects
<i>Corylus cornuta ssp. californica</i>	California Hazel	Plant type: Shrub Max height: 10 – 18 ft. (3 – 5.5 m) Water requirement: Low/Moderate Growth rate: Slow Wildlife attracted: Insects
<i>Dirca occidentalis</i>	Western Leatherwood	Plant type: Shrub Max height: 6 ft. (1.8 m) Water requirement: Moderate (prefers moist shaded slopes) Growth rate: Slow Wildlife attracted: Butterflies
<i>Dryopteris arguta</i>	Coastal Wood Fern	Plant type: Fern Max height: 2 ft. (0.6 m) Water requirement: Very low
<i>Eriogonum spp.</i>	Wild Buckwheat (genus)	Only some species approved including <i>Eriogonum fasciculatum</i> and <i>Eriogonum latifolium</i> Plant type: Shrub Max height: 1.6 – 3.3 ft. (0.5 – 1.0 m) Water requirement: Low Growth rate: Moderate Wildlife attracted: Butterflies, bees

<i>Erysimum franciscanum</i>	San Francisco Wallflower	Plant type: Perennial herb Max height: 1.5 ft. (5 m) Water requirement: Low Growth rate: Fast Wildlife attracted: Insects, butterflies
<i>Eschscholzia californica</i>	California Poppy	Plant type: Annual herb/Perennial herb Max height: 0.16 – 2 ft. (0.05 – 0.6 m) Water requirement: Very low/Low Growth rate: Fast/Moderate Wildlife attracted: Birds, small mammals, butterflies, bees, and other pollinators
<i>Garrya elliptica</i>	Wavyleaf Silktassel	Plant type: Shrub Max height: 6 – 16.4 ft. (1.8 – 5 m) Water requirement: Very low Growth rate: Fast/Moderate
<i>Heteromeles arbutifolia</i>	Toyon	Plant type: Shrub Max height: 6 – 30 ft. (1.8 – 9.1 m) Water requirement: Low Growth rate: Moderate Wildlife attracted: Birds, bees
<i>Iris douglasiana</i>	Douglas Iris	Plant type: Perennial herb Max height: 0.6 – 2.6 ft. (0.18 – 0.8 m) Water requirement: Low Growth rate: Fast/Moderate Wildlife attracted: Insects
<i>Lupinus albifrons var. albifrons</i>	Silver Lupine	Plant type: Shrub Max height: 3 – 5 ft. (0.9 – 1.5 m) Water requirement: Low Growth rate: Moderate Wildlife attracted: Butterflies, bees
<i>Lupinus nanus</i>	Sky Lupine	Plant type: Annual herb Max height: 0.33 – 2 ft. (0.1 – 0.6 m) Water requirement: Very low/Low Growth rate: Fast Wildlife attracted: Bees, butterflies, hummingbirds
<i>Diplacus aurantiacus</i>	Bush Monkey Flower	Plant type: Shrub Max height: 3.9 – 5 ft. (1.2 – 1.5 m) Water requirement: Very low Growth rate: Moderate Wildlife attracted: Insects, hummingbirds
<i>Monardella villosa</i>	Coyote Mint	Plant type: Perennial herb Max height: 2 – 3 ft. (0.6 – 0.9 m) Water requirement: Low Growth rate: Moderate Wildlife attracted: Bees, hummingbirds

<i>Myrica californica</i>	Pacific Wax Myrtle	<i>Plant type:</i> Shrub <i>Max height:</i> 6 – 33 ft. (1.8 – 10.1 m) <i>Water requirement:</i> Low/Moderate-High <i>Growth rate:</i> Fast/Moderate
<i>Penstemon heterophyllus</i>	Foothill Penstemon	<i>Plant type:</i> Perennial herb <i>Max height:</i> 3.3 – 5 ft. (1 – 1.5 m) <i>Water requirement:</i> Very low <i>Growth rate:</i> Fast <i>Wildlife attracted:</i> Bees, hummingbirds
<i>Polystichum munitum</i>	Western Sword Fern	<i>Plant type:</i> Fern <i>Max height:</i> 1.6 – 5.9 ft. (0.49 – 1.8 m) <i>Water requirement:</i> Low <i>Growth rate:</i> Moderate
<i>Rhamnus californica</i>	Coffeeberry	<i>Plant type:</i> Shrub <i>Max height:</i> 6 – 15 ft. (1.8 – 4.6 m) <i>Water requirement:</i> Very low/Low <i>Growth rate:</i> Moderate <i>Wildlife attracted:</i> Birds <i>Other:</i> Fire-resistant
<i>Ribes sanguineum</i>	Red Flowering Currant	<i>Plant type:</i> Shrub <i>Max height:</i> 6.5 – 13 ft. (2 – 4 m) <i>Water requirement:</i> Low <i>Growth rate:</i> Fast/Moderate <i>Wildlife attracted:</i> Hummingbirds, insects (including butterflies)
<i>Rosa californica</i>	California Wildrose	<i>Plant type:</i> Shrub <i>Max Height:</i> 8 - 10 ft. (2.4 – 3 m) <i>Water requirement:</i> Very low <i>Growth rate:</i> Fast/Moderate <i>Wildlife attracted:</i> Birds, butterflies, bees
<i>Salvia mellifera</i>	Black Sage	<i>Plant type:</i> Shrub <i>Max height:</i> 3 – 6 ft. (0.9 – 1.8 m) <i>Water requirement:</i> Low <i>Growth rate:</i> Fast/Moderate <i>Wildlife attracted:</i> Birds, insects (including butterflies)
<i>Viola pedunculata</i>	Johnny Jump Up	<i>Plant type:</i> Perennial herb/Wildflower <i>Max height:</i> 0.25 – 1.3 ft. (0.08 – 0.4 m) <i>Water requirement:</i> Low <i>Growth rate:</i> Moderate <i>Wildlife attracted:</i> Butterflies
<i>Epilobium canum</i>	California Fuchsia	<i>Plant type:</i> Perennial herb <i>Max height:</i> 0.25 – 1.5 ft. (0.08 – 0.46 m) <i>Water requirement:</i> Very low/Low <i>Wildlife attracted:</i> Hummingbirds

Native Grasses and Groundcovers		
<i>Carex tumulicola</i> *	Foothill Sedge	<i>Plant type:</i> Grass <i>Max height:</i> 0.5 – 1 ft. (0.15 – 0.3 m) <i>Water requirement:</i> Moderate
<i>Juncus patens</i> *	Common Rush	<i>Plant type:</i> Grass <i>Max height:</i> 1 – 3 ft. (0.3 – 0.9 m) <i>Water requirement:</i> Moderate-High <i>Other:</i> Popular for restoration projects
<i>Bromus carinatus</i>	California Brome Grass	<i>Plant type:</i> Grass <i>Max height:</i> 1 – 5 ft. (0.3 – 1.5 m) <i>Water requirement:</i> Low <i>Growth rate:</i> Fast <i>Wildlife attracted:</i> Various birds, insects (including butterflies)
<i>Elymus glaucus</i>	Blue Wildrye	<i>Plant type:</i> Grass <i>Max height:</i> 1 – 5 ft. (0.3 – 1.5 m) <i>Water requirement:</i> Low <i>Growth rate:</i> Fast <i>Wildlife attracted:</i> Insects, especially bees and butterflies
<i>Festuca microstachys</i>	Pacific Fescue	<i>Plant type:</i> Grass <i>Max height:</i> 2.5 ft. (0.8 m) <i>Water requirement:</i> Very low
<i>Hordeum brachyantherum</i>	Meadow Barley	<i>Plant type:</i> Grass <i>Max height:</i> 2 – 3.3 ft. (0.6 – 1 m) <i>Water requirement:</i> Low/Moderate-High <i>Growth rate:</i> Moderate <i>Wildlife attracted:</i> Insects
<i>Nassella pulchra</i>	Purple Needlegrass	<i>Plant type:</i> Grass <i>Max height:</i> 3.3 ft. (1 m) <i>Water requirement:</i> Very low/Low <i>Wildlife attracted:</i> Insects, birds, small mammals <i>Other:</i> Suppresses invasive plant species
<i>Poa secunda</i>	One Sided Blue Grass	<i>Plant type:</i> Grass <i>Max height:</i> 1.4 – 3.3 ft. (0.43 – 1 m) <i>Water requirement:</i> Low <i>Growth rate:</i> Fast
<i>Carex barbarae</i> *	Valley Sedge	<i>Plant type:</i> Grass <i>Max height:</i> 1.6 – 3.3 ft. (0.49 – 1 m) <i>Water requirement:</i> Low/Moderate-High <i>Other:</i> Spreads aggressively if uncontained; useful on margin of ponds or in bioswales
<i>Carex nudata</i> *	Dudley's Sedge	<i>Plant type:</i> Grass <i>Max height:</i> 1 – 2.5 ft. (0.3 – 0.8 m) <i>Water requirement:</i> Moderate-High

<i>Juncus effuses</i> *	Soft Rush	<i>Plant type:</i> Grass <i>Max height:</i> 4.9 – 6.6 ft. (4.5 – 2 m) <i>Water requirement:</i> Moderate-High
<i>Juncus patens</i> *	Common Rush	<i>Plant type:</i> Grass <i>Max height:</i> 1 – 3 ft. (0.3 – 0.9 m) <i>Water requirement:</i> Moderate-High
<i>Juncus patens</i> 'Elk Blue' [*]	Elk Blue Spreading Rush	<i>Plant type:</i> Grass <i>Max height:</i> 2 – 3 ft. (0.6 – 0.9 m) <i>Water requirement:</i> Low