September 29, 2021

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VIA EMAIL
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Subject: Habitat Restoration Plan for an Environmentally Sensitive Habitat Area in Support of the Malibu Middle and High School Campus Specific Plan and Local Coastal Plan Amendment Project, Malibu, California

Dear Noemi Avila-Zamudio:

This Habitat Restoration Plan (Plan) has been prepared for the Santa Monica-Malibu Unified School District (District) as a component of the Malibu Middle and High School Campus Specific Plan and Local Coastal Program (LCP) Amendment Project (proposed project). The Plan describes restoration efforts for the Environmentally Sensitive Habitat Area (ESHA), and adjacent buffer located on District property comprised of the former Juan Cabrillo Elementary School and Malibu Middle and High Schools, collectively referred to as the Malibu Campus. This Plan describes the following:

- Project location and a brief project description;
- Regulatory framework;
- Existing conditions for biological and jurisdictional resources;
- Hydrological/hydraulics studies for the ESHA; and
- Restoration program, including site preparation, plant/seed palettes, planting/seeding plan and recommended maintenance and monitoring procedures over a 2-year period.

PROJECT LOCATION

The Malibu Campus is located at 30215 Morning View Drive in the City of Malibu, Los Angeles County, California (**Exhibit 1**, Regional Location). It is located east of Via Cabrillo, north of Morning View Drive, west of Merritt Drive, and south of Heights Road, approximately 0.25-mile northeast of Pacific Coast Highway. The Study Area is depicted on the U.S. Geological Survey's (USGS') Point Dume 7.5-minute topographic quadrangle of the San Bernardino Meridian in Township 02 South, Range 19 West, Section 01 (**Exhibit 2**, USGS 7.5 Minute Digital Quadrangle). The Study Area considered in this Plan consists of the Specific Plan boundary and includes the entire property owned by the District. It is within the Santa Monica Bay Watershed (Hydrologic Unit Code 18070104). The Specific Plan area shares the District's property with the former Cabrillo Elementary School to the west and Malibu Equestrian Park to the east and is set among rolling

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hills with its buildings and athletic fields terraced into the hillside setting. A drainage designated as an ESHA by the California Coastal Commission (CCC), pursuant to California Coastal Act extends for approximately 1,100-feet along the western property boundary (**Exhibit 3**, Location of ESHA).

PROJECT DESCRIPTION

The District seeks to redevelop the Malibu Campus to create a new campus for the Middle and High School with core areas that provide separate learning spaces for the middle and high school students as well as shared amenities. The proposed project would result in the demolition of 18 existing buildings. The recently completed buildings (Buildings A, B, and E), the existing athletic fields, and Malibu Equestrian Park would remain largely unchanged. Implementation of the proposed project would not result in an increase in student enrollment or capacity.

The proposed project site is currently the subject of a Specific Plan that will guide redevelopment of the campus when adopted by the City of Malibu (Malibu) and will serve as the foundation for the phased development of the campus consistent with the regulations, standards, and design guidelines specified therein. The scope of restoration efforts as described in this Plan is consistent with the District's goals and objectives for the proposed project.

Environmental studies both past and present, including those related to biological resources in support of the Malibu Middle and High School Campus Specific Plan and LCP Amendment Project have verified the presence of a drainage along the western boundary of the District's property line. Pursuant to Malibu's Local Coastal Program, this drainage is designated as an ESHA (City of Malibu 2002, GLA 2009, Psomas 2021a).

Consistent with guidelines provided in the Local Coastal Implementation Plan, Psomas delineated the ESHA boundary as the outer edge of the canopy of riparian vegetation and where riparian vegetation was not present, the ESHA boundary was determined by the top of bank. While the LCP ESHA overlay zone specifies a buffer to "ensure continued protection of the habitat areas" and for new development specifically references a 100 foot buffer "from the outer edge of the bank of the subject stream as the area within the top of bank and outer riparian canopy boundaries", it was noted that over 85% of the ESHA's 100 foot buffer had been developed in the years prior to the enactment of the California Coastal Act of 1972.

During the early stages of the specific planning process, among other project objectives, the District recognized that the ESHA offered opportunities to enhance their educational goals of providing for outdoor learning spaces and interpretive opportunities; as well as providing an opportunity to restore the natural environment and improve campus connectivity through the development of the proposed pedestrian pathways. The District recognized that the existing conditions included incompatible development into the edge of the ESHA bank as well as the degraded nature of the ESHA itself. In discussions with the CCC, the District decided that it could restore the degraded drainage comprised of approximately 0.7 acres as well as 1.35 acres of upland areas within the ESHA's 50-foot buffer, and still meet the educational and design goals for the campus. In addition, within the remaining 50 feet beyond the 50-foot ESHA buffer, the proposed project would include land uses compatible with the natural habitat that would not incur in significant disruption of the natural habitat including a looping trail, interpretive stations overlooking the ESHA, and largely native landscaping within the campus itself contributing to the high scenic quality of the area.

The ecological benefits of the restoration will increase the diversity and cover of native riparian and upland plants within the ESHA and its 50-foot buffer by the removing non-native species (including those rated by the California Invasive Plant Council); improve conditions for wildlife species including

pollinator species that rely on wetland, riparian, and adjacent upland habitats for food and shelter; and reduce erosion and sedimentation. The students and local residents that will use the loop trail and the educational nodes will not only be able to enjoy the natural surroundings but they will also be able to learn about the plants that reside in the riparian and upland zones as well as the local and seasonal wildlife that will undoubtedly frequent the site.

REGULATORY FRAMEWORK

U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (Corps) Regulatory Branch regulates activities that discharge dredged or fill materials into waters of the United States (WOTUS) under Section 404 of the Federal Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act. Its authority applies to all WOTUS where the material (1) replaces any portion of a water of the United States with dry land or (2) changes the bottom elevation of any portion of any WOTUS. Activities that result in fill or dredge of WOTUS require a permit from the Corps. Presently, WOTUS are defined to include territorial seas and Traditional Navigable Waters (TNWs)[1]; perennial and intermittent tributaries that contribute surface water flow to such waters; certain lakes, ponds, and impoundments of jurisdictional waters; and wetlands adjacent to other jurisdictional waters (USACE and USEPA 2010).

Regional Water Quality Control Board

The State Water Resources Control Board (SWRCB), in conjunction with the nine Regional Water Quality Control Boards (RWQCBs), is the primary agency responsible for protecting water quality in California through the regulation of discharges to surface waters under the CWA and the California Porter-Cologne Water Quality Control Act (Porter-Cologne Act). The SWRCB's and RWQCB's jurisdictions extend to all WOTUS, but also to waters of the State that are outside federal jurisdiction, including wetlands.

On August 28, 2019, the Office of Administrative Law approved the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to waters of the State. The procedures went into effect on May 28, 2020. Under these new regulations, the SWRCB and its nine RWQCBs assert jurisdiction over all existing WOTUS, and all waters that would have been considered WOTUS under the 2015 Rule. Thus, the WOTUS that would no longer be under Corps jurisdiction would be under SWRCB jurisdiction.

California Department of Fish and Wildlife

The California Department of Fish and Wildlife (CDFW) regulates activities that may affect rivers, streams, and lakes pursuant to the *California Fish and Game Code* (§§1600–1616). According to Section 1602 of the *California Fish and Game Code,* the CDFW has jurisdictional authority over any work that will (1) substantially divert or obstruct the natural flow of any river, stream, or lake; (2) substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or (3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

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[1] Traditional Navigable Waters are "all waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide" (33 *Code of Federal Regulations* § 328.3).

California Coastal Commission

The CCC, in partnership with coastal Cities and Counties, plans and regulates the use of land and water in the Coastal Zone, an area covering a 3-mile-wide band of ocean and extending inland from the mean high tide line to a variable distance based on surrounding land cover. Development in the Coastal Zone requires a Coastal Development Permit issued by either the CCC or a local government with a certified LCP.

Malibu has a certified LCP that provides for protection and preservation of ESHAs. An ESHA is defined as "any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem which could be easily disturbed or degraded by human activities and developments". ESHAs include rare or valuable habitat, habitat that contributes to the viability of plant or animal species that are designated or are candidates for listing under State or Federal law, habitat that contributes to the viability of species that are designated as "fully protected" or "species of special concern" under State law, habitat that contributes to the viability of species for which there is other compelling evidence of rarity (e.g., species with a California Rare Plant Rank of 1 or 2), designated Areas of Special Biological Significance, or Marine Protected Area, and Streams.

EXISTING CONDITIONS

The ESHA consists of an approximately 1,100-foot long drainage along the western edge of the Campus (**Exhibit 3)**. It receives flow from an undeveloped lot north of the property, road runoff, and runoff from an adjacent parking lot. A culvert at the cul-de-sac of Clover Heights Avenue also carries flow underground and into this drainage. At the downstream end, the drainage flows into a corrugated pipe culvert under Morning View Drive. Based on aerial imagery and USGS topographic contours, this drainage continues primarily above ground until it is undergrounded at Pacific Coast Highway and discharges onto Zuma Beach at the Pacific Ocean.

The drainage is unlined along its entire length in the Study Area. The upstream end of the drainage has a broad, concave cross-section with no abrupt break in bank slope. Soils in this area were saturated and surface water was present during multiple site visits. The middle and downstream end of the drainage is more incised, with steep slopes and a narrow channel bed. Some banks are eroded or undercut. Surface water was not present during multiple site visits and the soils were not saturated near the surface along the middle and downstream portions of the drainage.

The ESHA and surrounding areas burned in the 2018 Woolsey fire. Some vegetation experienced mortality as a result of the fire while other vegetation is recovering.

Vegetation Types

Vegetation types within the ESHA and 50-foot buffer consist of riparian herb and arroyo willow thicket in the drainage bottom transitioning to coyote brush – California sagebrush scrub/upland mustards, upland mustards, and ornamental – native planting. Each is type is further detailed below:

Riparian herb vegetation grows along the drainage bed. This area contains a mix of native species typical of a riparian understory and non-native species. The upstream end is heavily dominated by the non-native Saint Augustine grass (*Stenotaphrum secundatum*) extending out from the drainage centerline with the native watercress (*Nasturtium officinale*) growing in the center, wetter portion of the drainage. Other species in this area include flatsedge (*Cyperus* sp.), bristly ox-tongue (*Helminthotheca echoioides*), common plantain (*Plantago major*), and cheeseweed (*Malva parviflora*). Downstream, as the drainage banks become steeper and the substrate becomes drier, herbaceous vegetation becomes sparser in the

drainage. The middle and downstream portions of the drainage have more patchily distributed watercress with species such as California rose (*Rosa californica*), California blackberry (*Rubus ursinus*), castor bean (*Ricinus communis*), tree tobacco (*Nicotiana glauca*), and garden nasturtium (*Tropaeolum majus*) present. No single species is dominant throughout the length of the drainage.

Arroyo willow thicket occurs along the drainage and consists of individuals and patches of arroyo willows (*Salix lasiolepis*) with a small amount of western sycamore (*Platanus racemosa*). Prior to the Woolsey fire, this vegetation was more extensive. Many of the trees burned and some are regrowing while others remain as dead standing snags. Understory vegetation, where present, is similar in composition to the riparian herb vegetation, described above. The downstream end is degraded by the presence of castor bean.

Coyote brush – California sagebrush scrub/upland mustards occurs in upland areas at the downstream end of the drainage. This vegetation type has approximately 15 to 20 percent cover of native species, primarily coyote brush (*Baccharis pilularis* ssp. *consanguinea*) and laurel sumac (*Malosma laurina*). It has been heavily degraded by the presence of non-native, weedy species such as shortpod mustard (*Hirschfeldia incana*), castor bean, tree tobacco, and non-native grasses such as bromes (*Bromus* spp.) or oats (*Avena* spp.).

Upland mustards occur in upland areas in the central and northern portion of the drainage. This vegetation type is dominated by non-native, weedy species—primarily shortpod mustard with fennel and Russian thistle (*Salsola tragus*).

Ornamental – native planting occurs in the central and northern portion of the drainage. This vegetation type is very heterogeneous and consists of a mix of native and non-native planted individuals and naturalized weedy species. The vegetation isn't closely associated with structures and doesn't appear "formally landscaped", even though many of the species appear to have been planted. These areas burned during the Woolsey fire. Species observed include natives such as laurel sumac and Coulter's matilija poppy (*Romneya coulteri*), and non-natives such as petty spurge (*Euphorbia peplus*), shortpod mustard, castor bean, curly dock (*Rumex crispus*), red valerian (*Centranthus ruber*), myoporum (*Myoporum laetum*), ornamental sage (*Salvia microphylla*), pride of Madeira (*Echium candicans*), cape honeysuckle (*Tecoma capensis*), and tree tobacco.

Jurisdictional Resources

A jurisdictional delineation was performed to determine the type and extent of water resources under the regulatory authority of the Corps, the RWQCB, the CDFW, and the CCC for the entire Study Area (Psomas 2021a); however, for the purpose of this Plan, the jurisdictional resources are described are limited to the ESHA and do not include all jurisdictional waters in the Study Area.

WOTUS under regulatory authority of the Corps were determined to be present in the ESHA drainage. Given that the drainage ultimately discharges into the Pacific Ocean, it has connectivity to a TNW. Relatively permanent waters connected to a TNW are considered WOTUS. Since surface water and soil saturation were observed at the upstream end of the drainage on multiple site visits that were not preceded by rainfall events, the drainage is considered to exhibit surface flow more than just ephemerally. Therefore, it is considered a WOTUS under the regulatory authority of the Corps. The extent of WOTUS was based on indicators of Ordinary High-Water Mark and included a change in sediment texture, a change in vegetation species and cover, and a break in bank slope. A total of 0.070 acre of WOTUS are present. Of this, 0.007 acre was determined to be wetland WOTUS based on the presence of hydrophytic vegetation, hydric soils, and wetland hydrology. **Table 1** summarizes the type and extent of Corps and

RWQCB jurisdictional waters for the ESHA (**Exhibit 4,** Jurisdictional Resources: Ordinary High-Water Mark).

TABLE 1
SUMMARY OF ESHA JURISDICTIONAL RESOURCES

Regulatory Authority	Amount in Study Area (acres)
Corps Waters of the United States	
Wetlands	0.007
Non-wetland Waters	0.063
Total Corps Waters of the United States	**0.070**
RWCQB Waters of the State	
Wetlands	0.007
Non-wetland Waters	0.063
Total RWQCB Waters of the State	**0.070**
Total CDFW Jurisdictional Resources	**0.68**
Total CCC Jurisdictional Resources	**0.68**
Corps: U.S. Army Corps of Engineers; RWQCB: Regional Water Quality Control Board; CDFW: California Department of Fish and Wildlife; CCC: California Coastal Commission	

Waters under the regulatory authority of the Corps are also subject to the jurisdictional of the RWQCB and considered waters of the State. Therefore, approximately 0.070 acre of waters of the State are present. Of this, 0.007 acre was determined to be wetland waters of the State.

Streams are under the regulatory authority of the CDFW. The drainage has a defined bed and banks, with a riparian canopy over portions of its length. Therefore, approximately 0.68 acre of waters subject to the regulatory authority of the CDFW are present (**Exhibit 5**, Top of Bank/Riparian Canopy).

Because the CCC uses a one parameter approach to identify the limits of jurisdictional wetlands, the drainage is subject to CCC jurisdiction. Approximately 0.68 acre of wetlands subject to the regulatory authority of the CCC are present (**Exhibit 5**). The drainage is considered an ESHA in Malibu's LCP because it encompasses both wetland and riparian habitat and is consistent with its consideration as a designated ESHA in previous biological assessments (GLA 2009).

HYDROLOGICAL AND HYDROLICS STUDY

A hydrologic analysis was conducted utilizing the Los Angeles County hydrologic methodology to establish flow rates for various storm events up to the 50-year event contributing runoff to the ESHA. A total drainage area of approximately 320 acres contributes stormwater runoff to the ESHA, of which, half is moderate urban development and the other half mountainous area. Hydrologic soil groups found within the drainage area are comprised of Type C and Type D, indicating a high amount of runoff and minimal infiltration into the soil. Additionally, the area is subject to wildfires which increases the total runoff as well as sediment and debris flows.

A hydraulic analysis of the ESHA was performed using HEC-RAS and the peak flow rates established during the hydrologic study. Flow depths and velocity results from the model were used to identify the extents of improvements required to stabilize the channel and prevent future erosion. Potential improvements may include slope reductions, bank protection, drop structures, and revegetation, or a combination thereof. Improvements were designed to be permanent and self-sustaining to the extent

possible, while maintaining a balance between the natural and built environment, encouraging wildlife passage, and reestablishing habitat (Psomas 2021b).

RESPONSIBLE ENTITIES

Responsible entities are those individuals or entities responsible for the successful implementation of the Plan. These entities include but are not limited to, the District as property owner, the Landscape Contractor, the Project Engineer, the Biological Monitor, and the Resource Agencies.

The District, or its designees, are responsible for retaining the following qualified entities:

- Landscape Contractor to install and maintain the habitat restoration areas, including any stabilization features for the ESHA;
- Project Engineer to oversee the stabilization measures that result from the hydrological and hydraulics studies of the ESHA; and
- Biological Monitor to monitor program installation, long-term maintenance, and long-term site performance.

The Landscape Contractor (Contractor) will be responsible for performing all site preparation to address vegetation and soil procedures, ESHA stabilization measures, container species planting, seed mix application, and long-term maintenance tasks. The Landscape Contractor is also responsible for coordinating with the Biological Monitor regarding implementation status.

The Project Engineer will be responsible for overseeing implementation of ESHA stabilization measures in coordination with the Landscape Contractor.

The Biological Monitor will be responsible for monitoring all implementation activities and for facilitating compliance with specifications and resource agency requirements. The Biological Monitor will also coordinate with the District, the Landscape Contractor, the Project Engineer, and the Resource Agencies regarding site status.

Outreach to Resource Agencies including the CCC, Corps, CDFW, and RQWCB took place as part of early coordination efforts to refine and finalize early conceptual features of this Plan and to determine regulatory permits that would be required prior to implementation of the restoration. The final version of this Plan will become a component of the proposed project that will require approval by the District as lead agency pursuant to the California Environmental Quality Act (CEQA) as well as Malibu in coordination with the CCC pursuant to the LCP Amendment.

RESTORATION OPPORTUNITIES

Opportunities for restoration are present at Upstream, Middle and Downstream portions of the ESHA, in undeveloped areas within the 50-foot buffer of the ESHA, as well as in areas that are currently developed and scheduled for demolition during later phases of the proposed project (**Exhibit 6**, ESHA Restoration Areas). The ESHA restoration areas are also depicted in relation to the proposed project in **Exhibit 7**, ESHA Restoration Areas. While restoration efforts will include planting/seeding at Upstream and Downstream ESHA, the efforts for the Middle ESHA will focus on weed abatement and stabilization due to the incised nature of the drainage. Upland restoration of the Middle ESHA will take place once the bus storage facility known as the “bus barns” are demolished during Phase 4 of the proposed project. The restoration will significantly improve the habitat conditions of the drainage and provide educational opportunities to both middle and high school students as well as for local residents that use the trail.

A field study conducted in July 2021 revealed a significant number of native species in varying stages of recovery from the Woolsey fire that swept through the area in November 2018 (**Exhibit 8a–d**, Upstream, Middle and Downstream ESHA Photos). Mature and sapling native riparian trees and shrubs were observed along the entire ESHA intermixed with non-native weedy species as well as species escaped from a landscaped setting (**Exhibit 8a,** Upstream ESHA Photos and **Exhibit 8b,** Middle ESHA Photos). Upland native scrub species dominated more open portions of the drainage particularly in the Downstream ESHA (**Exhibit 8c**, Downstream ESHA Photos). The significant cover of native riparian and upland vegetation served to guide a restoration approach that focusses on enhancing the native species present primarily with seeding and using plantings to a lesser degree to enhance existing native vegetation, especially adjacent to the looping trail and for erosion control (**Table 2**, ESHA Restoration Opportunities and Approach).

TABLE 2
ESHA RESTORATION OPPORTUNITIES AND APPROACH

ESHA Restoration Area	Restoration Approach	Implementation Schedule
Upstream ESHA		
Riparian	Enhance native trees and shrubs present with weed abatement and removal of woody debris; plant native grasses and sedges for erosion control in wetland area at this location. Banks at this location may require an erosion control blanket.	Phase 1
Upland	Enhance native plantings present with weed abatement; seed non-developed areas with coastal sage scrub species to supplement existing native plantings and to attract and support invertebrates and native birds that reside on the property; include flowing species to support butterflies. Combine plantings and seeding to complement landscaped plantings along the trail; restore developed portions of buffer with coastal sage scrub species in Phase 4.	Phase 1 and 4
Middle ESHA		
Riparian	Focus on weed abatement and stabilization (if needed) of incised portion of drainage; consider girdling any non-native tree(s) to remain in place as snag(s) for wildlife use consistent with stabilization measure(s). Stabilization will likely include the placement of an erosion control blanket.	Phase 1
Upland	Plant native coastal sage scrub shrubs to complement landscaped plantings along the trail; an understory of native shrubs will add diversity of canopy structure and provide opportunities for use as outdoor classroom; developed portions of buffer to be restored in Phase 4.	Phase 4
Downstream ESHA		
Riparian	Enhance native trees and shrubs present with weed abatement; plant shrubby willow saplings in openings after removal of non-natives and dead woody debris; seed openings with riparian mix for a diverse understory; include flowering species to attract birds and invertebrates including butterflies. Banks at this location may require an erosion control blanket.	Phase 1
Upland	Plant and seed native coastal sage scrub to complement plantings along the trail to add diversity of color, texture, and canopy structure and provide opportunities for use as outdoor classroom. Slopes at this location will likely require erosion control measures that can be addressed with contouring associated with the removal of pavement prior to planting native coastal sage scrub.	Phase 1

The following restoration activities are scheduled to take place during Phase 1 construction scheduled for summer 2024 (**Table 3**, Phase 1 ESHA Restoration Activities).

TABLE 3
PHASE 1 ESHA RESTORATION ACTIVITIES

Restoration Activity	Riparian Zone	Upland Zone
Upstream ESHA		
Weed abatement; assess snags	x	x
Install erosion control measure as needed	x	x
Plant swamp sedge (*Carex senta*) see **Table 6** and **Exhibit 9**	x	
Plant beard grass (*Leymus triticoides*) see **Table 6** and **Exhibit 9**	x	
Seed upland zone with applicable seed mix		x
Middle ESHA		
Weed abatement; assess snags; girdle myoporum tree	x	x
Install erosion control measure, as needed	x	x
Downstream ESHA		
Remove pavement; contour slope; optimize soils for planting		x
weed abatement; assess snags	x	
Install erosion control measure, as needed	x	x
Plant arroyo willow (*Salix lasiolepis*) see **Table 5** and **Exhibit 9**	x	
Plant coastal sage scrub species see **Table 5** and **Exhibit 9**		x
Seed each zone with applicable seed mix	x	x

The following restoration activities are scheduled to take place during Phase 4 construction scheduled for 2032 **(Table 4,** Phase 4 ESHA Restoration Activities). Seed mixes are specified in **Appendix 2**.

TABLE 4
PHASE 4 ESHA RESTORATION ACTIVITIES

Restoration Activity	Riparian Zone	Upland Zone
Upstream ESHA		
Remove pavement; contour slope; optimize soils for planting		x
Weed abatement; assess snags	x	x
Install erosion control measure, as needed	x	x
Plant coastal sage scrub species as per **Table 6** and **Exhibit 9**		x
Seed each zone with applicable seed mix, as needed	x	x
Middle ESHA		
Remove structures; contour slope; optimize soils for planting		x
Weed abatement; assess snags	x	x
Install erosion control measure, as needed	x	x
Plant coastal sage scrub species as per **Table 6** and **Exhibit 9**		x
Seed each zone with applicable seed mix, as needed	x	x
Downstream ESHA		
weed abatement; assess snags	x	x

IMPLEMENTATION

Site Preparation

Initial preparation will include testing of soils and bank stability, assessment, and selection of suitable bank stabilization/erosion control materials (with emphasis on natural materials such as logs, boulders, etc., if feasible) and temporary irrigation system design (as deemed necessary).

Soils and Bank Stability: A review of the U.S. Department of Agriculture Natural Resources Conservation Service Soil Survey identified the ESHA (defined as the Area of Interest) as containing 98 percent of the Cropley (coastal 40 percent); Xerorthents (landscaped 30 percent); and Urban land (25 percent) with minor components contributing 5 percent to the map unit.

The Cropley coastal soils are found on alluvial fans and basins; the parent material is comprised of alluvium derived from shale. Substrates are comprised of clay in the upper horizons and silty clay loam in the deeper horizons. Xerorthents are dry shallow skeletal soils that at this location are comprised of colluvium and residuum derived from sedimentary rock and other mixed sources. The substrates are loam in the upper layers and weathered bedrock in the deeper layers (greater than 4 feet). The Urban land component of this soil map unit refers to soils in areas of high population density in the largely built environment. These soils can be significantly changed by human-transported materials, human-altered materials, or minimally altered or intact "native" soils. Soils in urban areas exhibit a wide variety of conditions and properties and may have impervious surfaces, such as buildings and pavement. At this location, the ESHA directly abuts developed areas; however, the extant native vegetation intermixed with non-native vegetation suggests that the soils are likely native. This is consistent with the anecdotal observations of the clay substrates observed during field studies and surveys conducted at the ESHA.

Portions of the Upstream, Middle, and Downstream ESHA, however, contain paved areas within the 50-foot buffer that will be demolished in support of the restoration effort consistent with the proposed project phasing:

- **Upstream ESHA:** Of the 0.43 acres of upland restoration at the Upstream ESHA, approximately 0.15 acres contain pavement to be demolished as well as any base material that may be present during Phase 4 construction efforts. The pavement and base material will be broken up, excavated as needed, and removed for proper disposal. The removal site will be back-filled with adjacent parent material from the restoration site and contoured to remediate any existing erosion of the slope such that the grade where pavement was removed transitions gently to match the adjacent natural grade of the restoration area. Subsequent to the removal of the pavement and the base layer, should the exposed native soils show evidence of compaction, the compacted area will be disced and amended as needed to optimize the substrate for planting and seeding (**Exhibit 7)**. Soil testing is recommended to ensure that proper amendments are applied if needed.
- **Middle ESHA:** Of the 0.32 acres of upland restoration at the Middle ESHA, approximately 0.19 acres contain developed areas consisting of the bus depot, pavement, and a storm basin to be demolished during Phase 4 construction efforts. The structures, foundation, and any pavement and base material that may be present will be broken up, excavated as needed, and removed for proper disposal. The removal site will be back-filled with adjacent parent material from the restoration site and contoured to remediate any existing erosion of the slope such that the grade where the structures were removed transition gently to match the adjacent natural grade of the restoration area. Subsequent to the removal of the structures and associated base layers, should the exposed native soils show evidence of compaction, the compacted area will be disced and

amended as needed to optimize the substrate for planting and seeding (**Exhibit 7)**. Soil testing is recommended to ensure that proper amendments are applied if needed.

- **Downstream ESHA:** Of the 0.6 acres of upland restoration at the Downstream ESHA, approximately 0.17 acres contain pavement to be demolished as well as any base material that may be present during Phase 1 construction efforts. The pavement and base material will be broken up, excavated as needed, and removed for proper disposal. The removal site will be back-filled with adjacent parent material from the restoration site and contoured to remediate any existing erosion of the slope such that the grade where pavement was removed transitions gently to match the adjacent natural grade of the restoration area. Subsequent to the removal of the pavement and the base layer, should the exposed native soils show evidence of compaction, the compacted area will be disced and amended as needed to optimize the substrate for planting and seeding (**Exhibit 7)**. Soil testing is recommended to ensure that proper amendments are applied if needed.

Erosion Control Materials: Erosion control measures such as an erosion control blanket will be put into place prior to planting and seeding the ESHA restoration areas for the purpose of limiting soil erosion along the banks of the ESHA, retaining soil moisture to promote seed germination and protect seed/seedlings and planting stock during heavy rainfall or winds enabling better vegetation establishment (Erosion Control Technology Council.org). Due to the presence of native vegetation to be retained on the banks of the EHSA placement of the erosion control measure shall be determined in coordination with the Biological Monitor. The erosion control product shall be weed free, wildlife friendly, and consist only of natural components (i.e. wood fibers, straw, jute, and/or coir), and shall be 100 percent biodegradable.

Temporary Irrigation Design: Irrigation will be provided to the restoration site during the two-year maintenance and monitoring period to ensure the successful establishment of native plant species. Irrigation of the ESHA restoration areas with a temporary irrigation system will require a design by an irrigation specialist who will provide construction drawings for use by the Landscape Contractor for implementation, operation, and maintenance. The Landscape Contractor will be responsible for providing irrigation to the restoration site in order to optimize plant establishment, health, and longevity. The irrigation system design and specified components will be consistent with site conditions (i.e., soils, steep banks, presence of erosions control features, etc.). The water source will come from the school campus.

While it is recommended that a temporary irrigation system be installed, another option for on-site irrigation is the use of a water truck or water buffalo. A water truck (or other vehicle-mounted/tank water source) would be used to apply supplemental water to establish container plant species and seeded areas during installation, the 90-day maintenance period, and during the 2-year maintenance and monitoring period. Such irrigation shall not be broadly sprayed onto the site at high pressure from the truck/tank but shall only be applied via hoses fitted with low-force wands and/or via a temporary drip irrigation system. Watering hoses (and/or a temporary drip irrigation system) shall be operated in a manner that avoids damaging existing native plants and other biological resources.

<u>On-site Preparation</u>

On-site preparation will consist of the designation of staging areas, the staking of restoration site boundaries, assessment of existing standing snags for removal or to be retained in place, protective flagging of native species including snags or other woody debris to be retained in place, placement of salvaged woody debris as deemed feasible, initial weed clearing, staking of temporary irrigation line and head locations and irrigation system installation, placement of bank stabilization and/or erosion control materials, and installation of protective/educational signage, as needed.

Staging and Access: The Contractor shall obtain advance approval from the District for the location(s) of storage/staging areas for trucks, dumpsters, and any other equipment, in addition to appropriate/necessary access roads, parking permits, and other forms of approval. Construction equipment, vehicles, and materials shall not be stored in existing drainages.

Staking of Restoration Site: The Biological Monitor will stake the riparian boundaries and the 50-foot buffer using a navigable Geographic Information System (GIS) map of the Upstream, Middle, and Downstream Restoration Areas prior to the start of installation work in each of these sites. Stakes shall be checked on a regular basis to ensure that the riparian and upland areas are clearly demarcated.

Assessment of Snags: The 2018 Woolsey fire burned significant portions of the ESHA, including the majority of the trees. Dead trees tend to fall at more frequent rates than live trees, creating a potential hazard for persons working in the area or in close proximity to these trees. A tree risk assessment shall be performed by a Certified Arborist to identify any trees (burned or unburned) that present a safety hazard. The Certified Arborist shall determine when a tree can be retained in place or present a fall or limb-drop hazard thus posing unsafe working conditions for field personnel implementing and/or monitoring tasks associated with ESHA restoration efforts. All trees located in the riparian boundary of the ESHA to be retained in place shall be trimmed by a tree service contractor to remove excess deadwood, while leaving the main tree structure in place in consultation with the certified arborist. Trimming excess deadwood removes unstable vegetative debris that can drop unexpectedly and reduces the likelihood of tree failure under normal weather conditions. Due to the dry vegetation in the work area all gas powered equipment used must have spark arresters to minimize the risk of fire. Any snag to be retained in place will provide valuable habitat for numerous ecosystem niches that are otherwise unavailable if removed.

Trimming of riparian trees coupled with weed abatement (see below) also plays an important role in allowing the flow of water to pass through the ESHA unimpeded towards the culvert under Morning View Drive and on to the Pacific Ocean.

Protection of Native Vegetation: Due to the presence of significant stands of native vegetation and native riparian trees and saplings, a Biological Monitor knowledgeable of the riparian and upland vegetation of the ESHA shall place protective flagging on all native plant individuals to be retained in place. Likewise, a Certified Arborist shall place protective flagging on all riparian trees and saplings and also on snags to be retained in place based on the results of the tree risk assessment. Protective flagging of native species will inform the Landscape Contractor the areas where care shall be taken to avoid damage to existing native habitat. Coordination between the certified arborist and Biological Monitor will ensue that protective flagging of plants and trees, saplings, and snags can take place concurrently to ensure that work efforts are as efficient as possible.

Initial Weed Control: The weed control measures described in this section shall be implemented by the Landscape Contractor to ensure weed-free conditions along the entire length of the ESHA drainage prior to initiating planting and seeding activities during Phase 1 and Phase 4 restoration efforts. Weed eradication will include hand-pulling of weeds, use of weed whips, and/or foliar treatments of appropriate herbicides, as determined by the Landscape Contractor coordination with the Contractor's licensed Agricultural Pest Control Advisor. The use of herbicides will be avoided and/or minimized to the extent practicable. The Landscape Contractor shall be responsible for posting of all herbicide applications, including time of safe re-entry. Only herbicides approved by the U.S. Environmental Protection Agency

(USEPA) for wetlands areas shall be used within the ESHA boundaries. The following weed abatement priorities for the ESHA are recommended based on multiple site visits conducted in support of this Plan:

- **Upstream ESHA:** non-native species include St. Augustine grass, shortpod mustard, Russian thistle, saltcedar (*Tamarix* spp.), flatsedge, common plantain, bristly ox-tongue, garden nasturtium, cheeseweed, and common non-native annual grasses. The focus of weed abatement efforts at this location is St. Augustine grass as it dominates the swale area of the upstream ESHA.
- **Middle ESHA:** non-native species include an extensive patch of prickly pears that dominates both banks of the ESHA behind the bus depot, myoporum (*Myoporum laetum*), and Spanish bayonet (*Yucca aloifolia*), shortpod mustard, tree tobacco, castor bean with a focus on removing the above-ground portions of the prickly pear, and Spanish bayonet so that the below-ground portions can continue to provide some bank stabilization. All tree tobacco and castorbean will require removal and the area patrolled for sprouts of these invasive weed species on a regular basis. While weed abatement will benefit the growth and establishment of the exiting riparian trees, it will take a year or more for the native riparian overstory to develop. Therefore, it is recommended that the myoporum tree in the drainage be girdled and left as a snag for wildlife use.
- **Downstream ESHA:** non-native species at this location include many of the ones already listed. Castorbean is dominate here and should be the focus of weed abatement efforts. Also, willows downed as a result of past winter storms and the Woolsey Fire have resulted in piles of large woody debris that should be evaluated by a Certified Arborist.

Vegetation disturbance consisting of weed abatement and tree trimming/removal shall take place outside the nesting bird season (i.e., February 1– August 31). Weed abatement and/or tree trimming performed during the nesting bird season shall be performed once a Biologist has determined that no active nests are present following a nesting bird survey within 72 hours of the disturbance of vegetation. All vegetation removed during weed abatement should be disposed of at a landfill.

Staking of Irrigation Line/Installation: The Landscape Contractor will be responsible for installation of the system as per the construction drawings. The Landscape Contractor will secure all required municipal permits for installation and maintenance of the irrigation system and arrange for any required municipal inspections. Copies of all irrigation system permits and/or inspection documentation will be provided to the District. Container plants and seed mix will be temporarily irrigated to facilitate plant establishment and seed germination. Irrigation techniques and best management practices for restoration of riparian and upland habitats in southern California shall be employed for restoration of the ESHA. Irrigation techniques that encourages deep root growth instead of surface root development will be used (i.e. infrequent deep watering rather than daily light watering). The supplemental irrigation regime will be determined together by the Landscape Contractor and the Biological Monitor and will depend on site and weather conditions, although the typical irrigation regime is to encourage the plants to adapt to a natural water regime by supplementing winter precipitation between October and April.

Bank Stabilization/Erosion Control: The Contractor shall install suitable erosion control measures immediately following the completion of any contouring to take place subsequent to demolition of exiting pavement during Phase 1 and Phase 4 construction in accordance with Best Management Practices. Erosion control measures may include mid-slope straw wattles (fully natural and biodegradable; (i.e., 'photo-degradable' products are unacceptable), or other equivalent measures. Mid-slope straw wattles shall be placed at a suitable vertical spacing to minimize erosion especially on the upland slopes in the Downstream ESHA and may remain in place following project completion (e.g., straw wattles). Erosion

control measures may also include Erosion Control Blankets to be installed on portions along the entire ESHA with unvegetated banks.

The Contractor shall monitor the 5-day weather forecast. If it is forecasted for any precipitation, work activities shall involve the securing of the site so as no materials may enter or be washed into the drainage. The site shall be completely secured one day prior to precipitation events. During periods of precipitation, no construction activities may occur, except for those involving the prevention of materials from entering drainages.

Protective/Educational Signage: Once the Phase 1 and Phase 4 restoration plantings and seedings have been installed, the site will be vulnerable to trampling. Signage will provide educational and interpretive opportunities for the District to inform the students and the public of the restoration as well as of the need to stay on the trail due to the sensitivity of the upland and riparian habitats.

Plant and Seed Palettes

Restoration plantings will consist of container plants and seed appropriate for riparian as well as upland habitats. Container plants and seed mixes are specified in this section; however, prior to implementation, they will be finalized based on availability and subject to substitutions as deemed applicable and in coordination with the Biological Monitor. Materials will be locally sourced from the area and in general from the same watershed in order to preserve regional genetic integrity. There are several options for the use of locally sourced seed. Many reputable nurseries that specialize in native species record the sources of seed they propagate and can be a good source for locally sourced plant material. The California Native Plant Society's (CNPS's) Calscape website lists reputable native plant nurseries for the plant palettes specified in this Plan (CNPS 2021, also see **Appendix 1**). Reputable sources of seed include S&S Seed and the Theodore Payne Foundation. Alternatively, seed can be collected from native patches of vegetation on site or can be contract grown by professional seed collectors and/or students supervised by knowledgeable biologists.

The plant and/or seed palettes for the Upstream, Middle, and Downstream ESHA together with the assigned Phase for installation can be found in Tables 5 through 7. The species used are consistent with recommendations provide by the Los Angeles/Santa Monica Mountains Chapter of the CNPS for landscaping in the Santa Monica Mountains and species names have been updated to reflect the current scientific and common name changes designated by the Jepson Herbarium. Species that have no assigned common name by the Jepson Herbarium, follow the Calflora website.

TABLE 5
DOWNSTREAM ESHA PLANT PALETTE- PHASE 1

Scientific Name	Common Name	Size (gallon)*	Number of Plants*
Riparian Zone			
Salix lasiolepis	Arroyo willow	1	20
Upland Zone			
Planting Group A: 20 groupings of 3 plants each planted 3 feet OC			
Epilobium canum	California fuchsia	1	20
Eriogonum cinereum	ashyleaf buckwheat	1	20
Salvia leucophylla	purple sage	1	20
Planting Group B: 5 groups of 3 plants each planted 4 feet OC			
Isocoma menziesii	coastal goldenbush	1	5
Baccharis pilularis	Coyote bush	1	5
Peritoma arborea	bladderpod	1	5
Planting Group C: 17 groups of 3 plants 3 feet OC			
Salvia mellifera	black sage	1	17
Artemisia californica	California sagebrush	1	17
Peritoma arborea	bladderpod	1	17
Planting Group D: 16 groups of 3 plants 4 feet OC			
Eriogonum cinereum	ashyleaf buckwheat	1	16
Peritoma arborea	bladderpod	1	16
Muhlenbergia rigens	deergrass	1	16
Planting Group E: 10 groups of 3 plants 4 feet OC			
Salvia mellifera	black sage	1	10
Eriogonum cinereum	ashyleaf buckwheat	1	10
Scrophularia californica	California figwort	1	10
		Total Plants*	**224**

*NOTE: Plant palette substitutions and planting quantities may be revised based on stock availability and in consultation with the Biological Monitor.
OC: On Center

TABLE 6
UPSTREAM ESHA PLANT PALETTE–PHASE 1 AND 4

Scientific Name	Common Name	Size (gallon)*	Number of Plants*
Riparian Zone–Phase 1			
Carex senta	swamp sedge	2" plug	**100**
Leymus triticoides	creeping wild rye	2" plug	**100**
Upland Zone–Phase 4			
Planting Group A: 10 groupings of 3 plants each planted 3 feet OC			
Epilobium canum	California fuchsia	1	10
Eriogonum cinereum	ashyleaf buckwheat	1	10
Salvia leucophylla	purple sage	1	10
Planting Group C: 8 groups of 3 plants 3 feet OC			
Salvia mellifera	black sage	1	8
Artemisia californica	California sagebrush	1	8
Peritoma arborea	bladderpod	1	8
Planting Group D: 8 groups of 3 plants 4 feet OC			
Eriogonum cinereum	ashyleaf buckwheat	1	8
Peritoma arborea	bladderpod	1	8
Muhlenbergia rigens	deergrass	1	8
Planting Group E: 10 groups of 3 plants 4 feet OC			
Salvia mellifera	black sage	1	10
Eriogonum cinereum	ashyleaf buckwheat	1	10
Scrophularia californica	California figwort	1	10
		Total Plants*	**308**

*NOTE: Plant palette substitutions and planting quantities may be revised based on stock availability and in consultation with the Biological Monitor.
OC: On Center

TABLE 7
MIDDLE ESHA PLANT PALETTE-PHASE 4

Scientific Name	Common Name	Size (gallon)*	Number of Plants*
Planting Group A: 10 groupings of 3 plants each planted 3 feet OC			
Epilobium canum	California fuchsia	1	10
Eriogonum cinereum	ashyleaf buckwheat	1	10
Salvia leucophylla	purple sage	1	10
Planting Group C: 10 groups of 3 plants 3 feet OC			
Salvia mellifera	black sage	1	10
Artemisia californica	California sagebrush	1	10
Peritoma arborea	bladderpod	1	10
Planting Group D: 10 groups of 3 plants 4 feet OC			
Eriogonum cinereum	ashyleaf buckwheat	1	10
Peritoma arborea	bladderpod	1	10
Muhlenbergia rigens	deergrass	1	10
Planting Group E: 10 groups of 3 plants 4 feet OC			
Salvia mellifera	black sage	1	10
Eriogonum cinereum	ashyleaf buckwheat	1	10
Scrophularia californica	California figwort	1	10
		Total Plants*	**120**

*NOTE: Plant palette substitutions and planting quantities may be revised based on stock availability and in consultation with the Biological Monitor.
OC: On Center

Recommendations for Planting and Seeding

Plants purchased and/or contract grown from a reputable native plant nursery should be installed generally between October and March during periods when weather and soil conditions are suitable. In this way, seasonal rains can be used to facilitate appropriate establishment and germination. The planting locations at the Upstream and Downstream ESHA locations will be determined by the Biological Monitor in coordination with the Landscape Contractor and will be generally consistent with **Exhibit 9,** Planting Plan for Downstream, Middle, and Upstream ESHA. An overview of the restoration is also provided in relation to the project (**Exhibit 10**, Planting Plan for Downstream, Middle, and Upstream ESHA). Container plants will be distributed throughout the restoration site using colored flagging. Since Phase 4 construction is planned for approximately a decade after Phase 1, planting trees in the riparian zones of the Middle and Downstream ESHA will be considered if needed and will be based on established performance goals as described below.

Contractor staffing and container plants delivery shall be coordinated to facilitate immediate installation (same day) and no materials shall be stored uninstalled onsite overnight.

The Contractor shall follow the specific container plant installation methods described below. Alternate planting methods may be used (e.g., hand digging rather than augering of planting holes in rocky or moist soils) with the prior approval of Biological Monitor. No chemical soil amendments or mulch shall be used in the container planting holes or basins.

- Planting holes shall be machine augered to a suitable width and depth prior to container plant installation. The typical planting hole is approximately twice the width and depth of the rootball.
- Planting holes shall be filled with water immediately prior to plant installation, and the water shall be allowed to percolate fully into the soil prior to planting.
- Plants shall be removed from the containers in a manner that avoids damage to the rootball. Extended tap root development and minor rootbound conditions shall be appropriately treated via pinching and loosening of appropriate portions of the rootball prior to planting.
- Each plant shall be installed so that the "collar" or soil level is slightly higher than the surrounding finished grade, to allow for partial plant settling over time.
- The excavated soil backfill material shall be placed into the planting hole to the existing grade, and gently compacted around the rootball.
- A temporary watering basin approximately two- to three-feet in diameter shall be created around each plant to facilitate the initial watering-in of the plants. The exposed upper sides of the rootball shall be covered with backfill material sloping down into the basin.
- Each plant shall be initially watered-in by hand; the watering basins shall be filled using a hose fitted with a low-force wand. The water spray shall be directed to the outer part of the watering basin to avoid damage to the plant roots or crown.

Native seed mixes will be applied to the site via hand broadcast and generally performed between October and January during periods when weather and soil conditions are suitable. Riparian zones in Upstream, Middle, and Downstream ESHA will be seeded according to phase in openings within existing riparian vegetation (**Appendix 2,** see Riparian Seed Mix). Upland zones in the Upstream and Downstream ESHA will be seeded with care to avoid existing upland vegetation (**Appendix 2,** see Santa Monica Mountains Seed Mix). Seed will be applied to the erosion control blanket according to the directions supplied by the manufacturer where applicable. Since Phase 4 construction is planned for approximately a decade after Phase 1, seeding during Phase 4 will be performed if needed and will be based on established performance goals as described below.

Maintenance Plan

90-Day Site Maintenance: The primary goal of the 90-day maintenance period is to control non-native plant species successfully establish the specified native plant species in each site. Weed species shall not be allowed to mature; set seed; or otherwise inhibit the germination, growth, and establishment of native plant species at any time during the 90-day maintenance period.

The 90-day maintenance period shall begin immediately after the installation site has been accepted as complete and shall extend for 90 days. The 90-day maintenance period shall be performed along the entire ESHA.

- The Contractor shall conduct non-native weed control activities in a manner that avoids damaging planted/seeded native plants, native plant recruits, and onsite/adjacent biological resources. Weed control shall primarily consist of hand-pulling; however, other methods such as weed whipping

seedlings can be used. The use of herbicides shall be avoided or minimized to the extent practicable. All green waste shall be immediately disposed of (same day as removed) in a landfill off site.

- The Contractor shall be responsible for ensuring successful establishment of container plant species and seed mixes and shall reseed/replant using approved species in order to compensate for subsequent plant failure and/or poor health. Plant replacement will occur prior to between October 15 and April 1 during periods when weather and soil conditions are suitable for plant germination and establishment. The Biological Monitor will make regular inspections of the work to assess the condition of all plants and to determine any remedial measures necessary to provide adequate survival and coverage.
- Insects, plant disease, herbivores, and other pests shall be closely monitored during the maintenance period. Diseased or infected plants shall be immediately disposed of offsite at an appropriate landfill to prevent infection of on-site resources. Where possible, biological controls shall be used instead of pesticides or herbicides. Pesticide use will comply with local codes and regulations and shall only occur with the permission of the District.

Long-term Maintenance: Maintenance will be performed on a monthly basis for two years to optimize native habitat establishment and to prevent the growth and dispersal of weed seeds on the restoration site. Avoidance measures will be implemented to protect wildlife (e.g., amphibians, nesting birds) during maintenance tasks. The Biological Monitor will coordinate with the Contractor on appropriate maintenance methods to optimize site performance while avoiding adverse impacts to wildlife species. The use of herbicides or other pest-control measures will be minimized to the extent feasible and performed by professional applicators holding valid certifications and or licenses. Standing snags retained on site for wildlife value will be assessed so as to not create a safety issue. Maintenance tasks include the following:

- **Weed control:** Weeds will be removed on a regular basis, as necessary, before they set seed and/or before they reach approximately 12 inches in height. The existing exotic ruderal vegetation must be removed to prevent further invasion. Use of hand tools, chainsaws, and weed whippers will likely be the preferred methods for weed removal. All weeded material shall be removed from the site.
- **Site repair/erosion control/irrigation system:** The Contractor will be responsible for providing erosion control as appropriate, to prevent damage to the ESHA and immediately adjacent areas. Both the riparian and upland zones will be stabilized with erosion control features prior to planting and seeding to encourage the establishment of stabilizing vegetation. Should significant storm events occur that cause scouring and accumulation of vegetation, the installation of additional erosion control measures may be required and, in extreme cases, may include planting additional riparian and upland vegetation. In consultation with the District and the Contractor, the assigned Biological Monitor will determine the need for and approve any additional or necessary erosion control measures and plantings. The Contractor will also be responsible for the maintenance and upkeep of the temporary irrigation system.
- **Trash removal:** The Contractor will keep the restoration area free of all trash and debris. All trash will be moved off the site and deposited at an appropriate location.
- **Pest and disease control**: It is not anticipated that local wildlife (e.g., rabbits, pocket gophers, and ground squirrels) will cause any serious damage to enhancement plantings within the ESHA restoration areas; however, if the Contractor determines that plantings are being jeopardized by wildlife, corrective measures such as organic, nontoxic deterrents and fencing/plant cages may be used. Likewise, if the Contractor identifies potential diseased vegetation that could jeopardize the

health of any enhancement plantings, an arborist or other expert will be contracted to identify potential issues before any permanent occurs.

- **Site protection:** Site protection of the ESHA will continue to be a priority after the implementation of restoration efforts. The District in coordination with the Contractor will provide adequate protection of the restored zones against herbivores, traffic, vandalism, or other intrusions by erecting signage along the looping trail. Damaged areas will be repaired within two weeks. Maintenance paths through planted areas will be created to minimize damage.

Biological Monitoring: The Biological Monitor will oversee preliminary plant material coordination (e.g., container plant purchases, seed mix purchases, and/or plant/cuttings/seed collection, container plant propagation); restoration site preparation; installation; and long-term performance during all phases of construction. Monitoring will consist of monthly site inspections for two years after installation in each portion of the drainage: Downstream, Middle, and Upstream ESHA. The Biological Monitor will also be responsible for providing site status documentation and for facilitating the protection of natural resources during long-term maintenance activities for the site. Since Phase 4 construction is planned for approximately a decade after Phase 1, the Biological Monitor will determine the need for planting additional trees in the riparian zones of the Middle and Upstream ESHA based on the evaluation of performance goals. Biological monitoring tasks include the following:

Baseline Data Collection and Mapping: Baseline transect data collection will take place prior to project implementation to inform performance goals. The approach for informing performance goals will be to use a combination of quantitative and qualitative data due to the heterogeneity of the habitats at each ESHA location. Mapping of transects will be GIS-based and rectified for loading onto field computers. Thus, two 100-foot transects will be located in each ESHA restoration location: Upstream, Middle, and Downstream. Transect #1 will be located on the pavement to be demolished and revegetated. Transect #2 will located in the upland portion of the ESHA. To evaluate the riparian zone of each ESHA restoration site, permanent photographic documentation stations will be established to record habitat improvement qualitatively. The approach for setting performance goals based on the described preliminary transects and their locations may be modified to accurately inform the subject goals. The following performance goals are proposed:

- For transect #1 (hardscape demo area):
    - The native cover class shall reach 20 percent in Year 1 and 40 percent in Year 2 with the native cover class comprised of both woody and herbaceous native species.
    - The non-native cover class shall be 10 percent or less and 0 percent of species listed by the California Exotic Pest Plant Council in Year 1 and Year 2.
    - The diversity of native species shall be at least 5 in Year 1 and greater than 5 in Year 2.
- For transect #2 (upland restoration):
    - The native cover class shall be at least 40 percent in Year 1 and greater than 40 percent in Year 2 with the native cover class comprised of both woody and herbaceous native species.
    - The non-native cover class shall be 10 percent or less and 0 percent of species listed by the California Exotic Pest Plant Council in Year 1 and Year 2.
    - The diversity of native species shall be at least 5 in Year 1 and greater than 5 in Year 2.

- For the riparian zone: performance will be based on photo-documentation of the riparian zone at each ESHA location. Year 1 qualitative description of the site shall include the number of native woody species/riparian trees, number of individuals of each species, approximate height/canopy diameter/health, and a description of understory species (woody and/or herbaceous). For Year 2, the data collected in Year 1 shall be repeated showing an increase in tree height and canopy diameter, good health, and continued presence of understory species, including woody understory species.

Maintenance Monitoring: The Biological Monitor will monitor the maintenance activities performed by the Contractor to ensure successful site enhancement. The Biological Monitor will meet with the Contractor, as necessary, during regularly scheduled monthly site visits to discuss site conditions and recommended remedial measures. Potential remedial maintenance measures may include the following:

- The Biological Monitor will discuss with the field crews, as deemed necessary, the differences between invasive, problem weed species and desired native species (frequency will be based on field personnel changes and field conditions).
- The Biological Monitor will coordinate with the Contractor on an ongoing basis regarding appropriate weed control measures to facilitate the successful control of weed species and establishment of native plant species.
- In the event of herbivore damage, erosion damage, vandalism, or other types of site damage, the Biological Monitor will make appropriate recommendations to minimize future damage to the site. Possible protection measures may include additional fencing, straw bales, and/or signage.
- The Biological Monitor will coordinate with the Contractor regarding appropriate revegetation measures in the event that large open areas devoid of vegetation are created as a result of weed abatement activities, such as the use of seed collected from on-site plantings.
- The Biological Monitor will coordinate with the Contractor regarding the control of insects, ground squirrels, and other herbivores, along with fungi, rust, and other plant diseases and infestations. Recommended control measures will include, but will not be limited to, biological control methods and herbicides. No chemical or mechanical pest control will be performed without prior coordination with the Biological Monitor.

Performance Monitoring: The Biological Monitor will evaluate the performance of the habitat enhancement effort against the performance goals as described above or modified based on the results of baseline data collection.

Annual Reporting: The Biological Monitor will be responsible for coordinating with the District, its Contractor, and all applicable resource agencies regarding site conditions, vegetation performance, and potential remedial measures. For this, annual monitoring reports will be prepared based on quantitative/qualitative surveys (e.g., vegetation transects) to document improvement of habitat functions and values of the restoration site.

Psomas appreciates the opportunity to assist with this project. If you have any questions, please contact Irena Mendez, PhD at 310.488.5645 or Irena.Mendez@Psomas.com.

Sincerely,

PSOMAS

Ann M. Johnston
Vice President/Principal

Irena Mendez, PhD
Senior Project Manager

Attachments: Exhibits 1 through 10
Appendices 1 and 2

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Project Location

Exhibit 1

Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

850 425 0 850 Feet

PSOMAS

(Rev: 4-29-2021 MMD) R:\Projects\1SAN\082310\Graphics\ESHA_Restoration\Conceptual_Plan\ex_ProjectLocation_LV_RL.pdf

Source: USGS 7.5 Minute Quadrangle
Point Dume
Township: 02S
Range: 19W
Section: 01

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USGS 7.5-Minute Digital Quadrangle

Exhibit 2

Malibu Middle and High School Specific Plan and LCP Amendment Project

N
W E
S

2,000 1,000 0 2,000
Feet

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Aerial Source: Hexagon Geosystems 2018

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Location of ESHA

Exhibit 3

Malibu Middle and High School Specific Plan and LCP Amendment Project

N
W E
S

500 250 0 500

Feet

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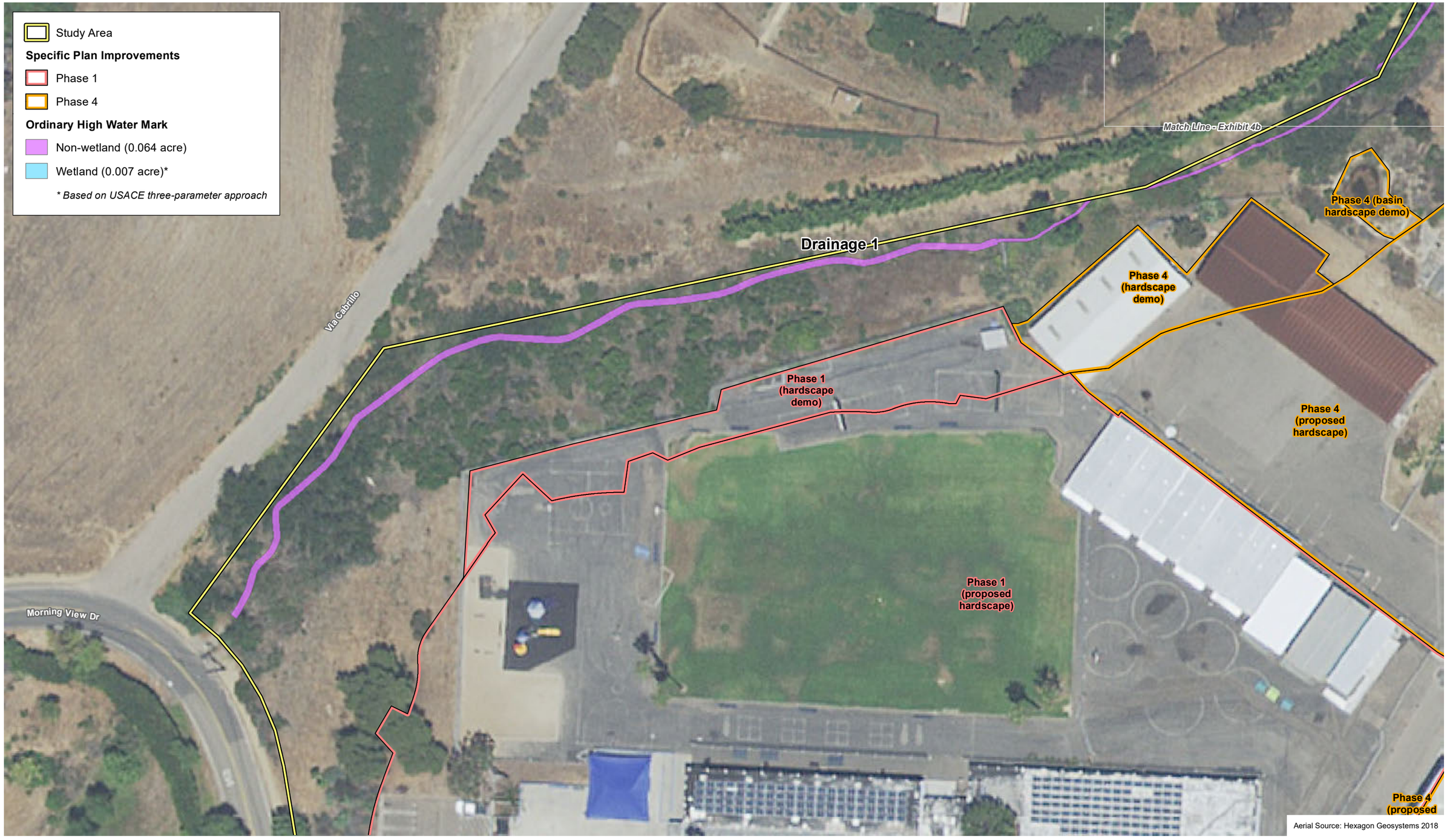

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Jurisdictional Resources – Ordinary High Water Mark

Malibu Middle and High School Specific Plan and LCP Amendment Project

Exhibit 4a

N W E S

50 25 0 50 Feet

PSOMAS

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Jurisdictional Resources – Ordinary High Water Mark

Exhibit 4b

Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

50 25 0 50 Feet

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Aerial Source: Hexagon Geosystems 2018

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Jurisdictional Resources – Top of Bank/Riparian Canopy

Exhibit 5a

Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

50 25 0 50 Feet

PSOMAS

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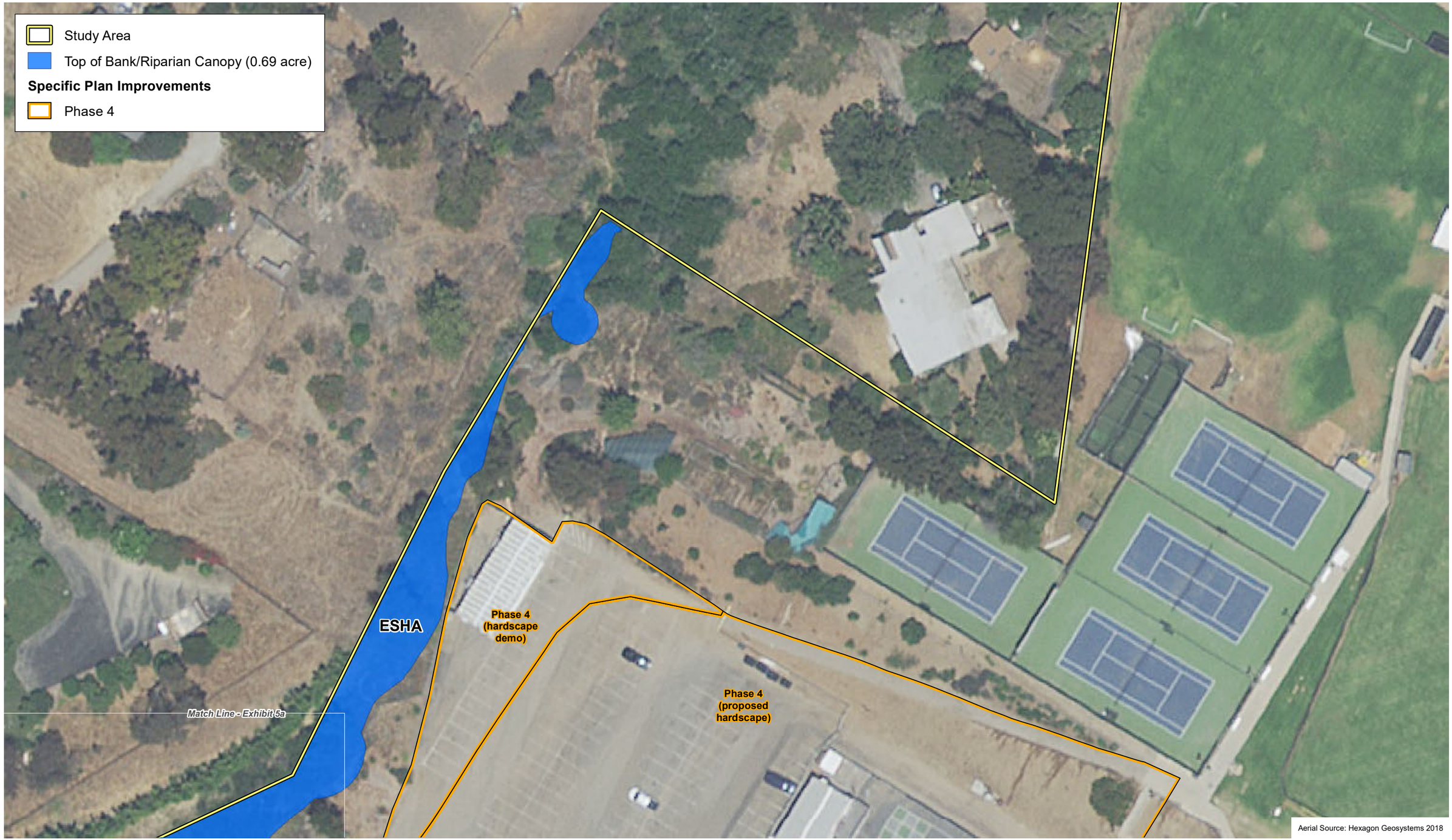

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Jurisdictional Resources – Top of Bank/Riparian Canopy

Exhibit 5b

Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

50 25 0 50 Feet

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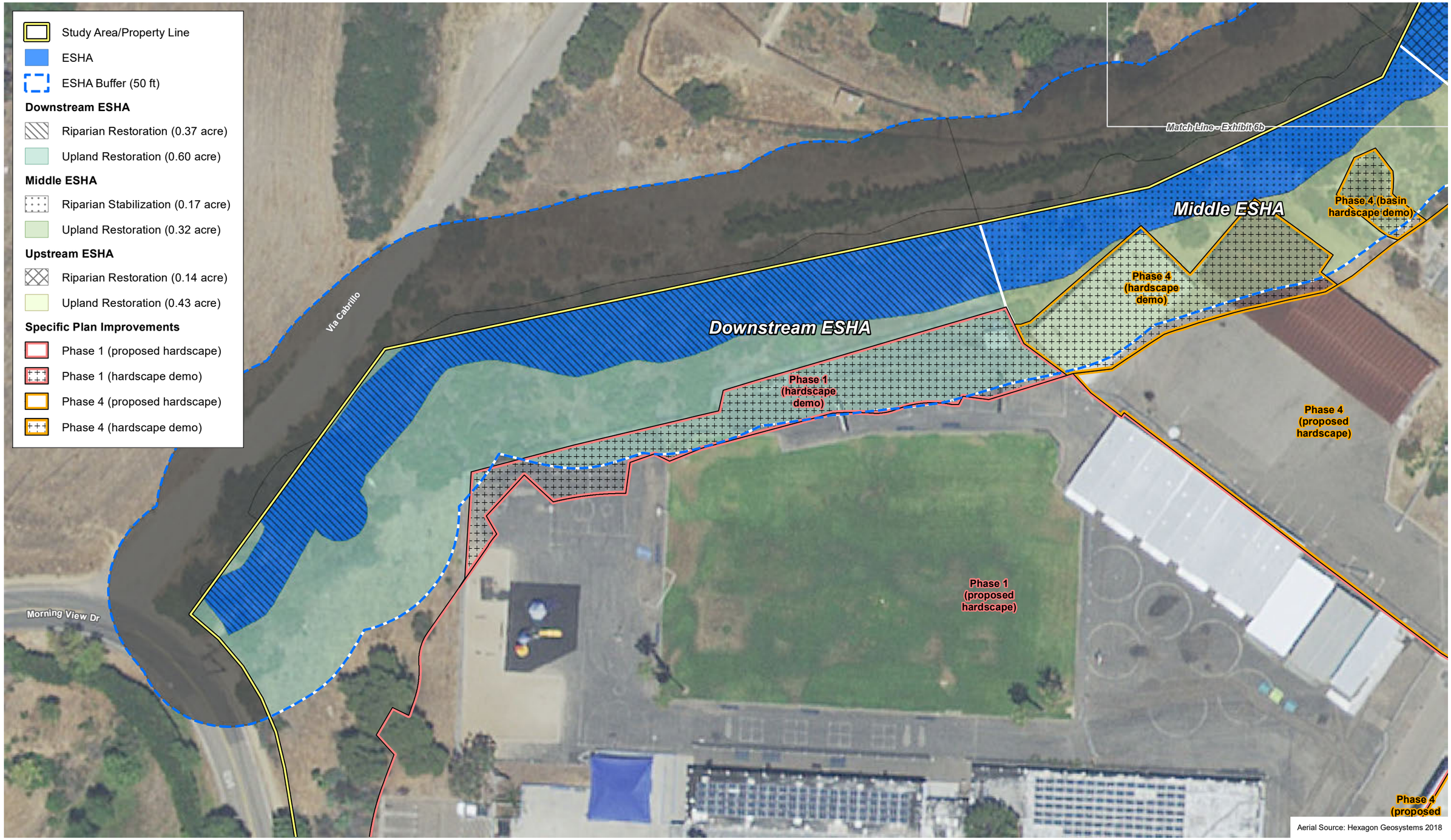

Aerial Source: Hexagon Geosystems 2018

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ESHA Restoration Areas

Exhibit 6a

Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

50 25 0 50

Feet

PSOMAS

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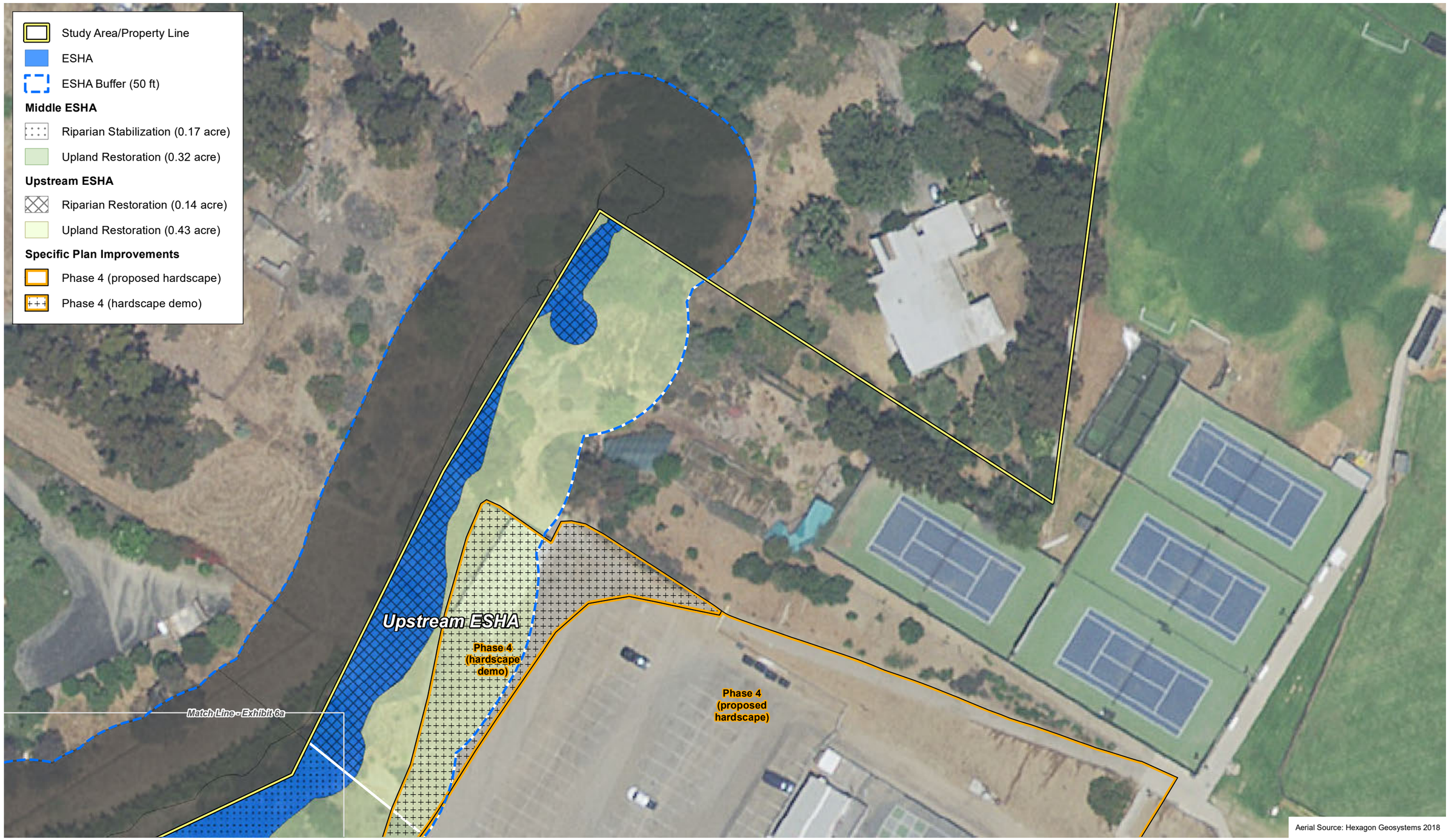

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ESHA Restoration Areas

Malibu Middle and High School Specific Plan and LCP Amendment Project

Exhibit 6b

N W E S

50 25 0 50

Feet

PSOMAS

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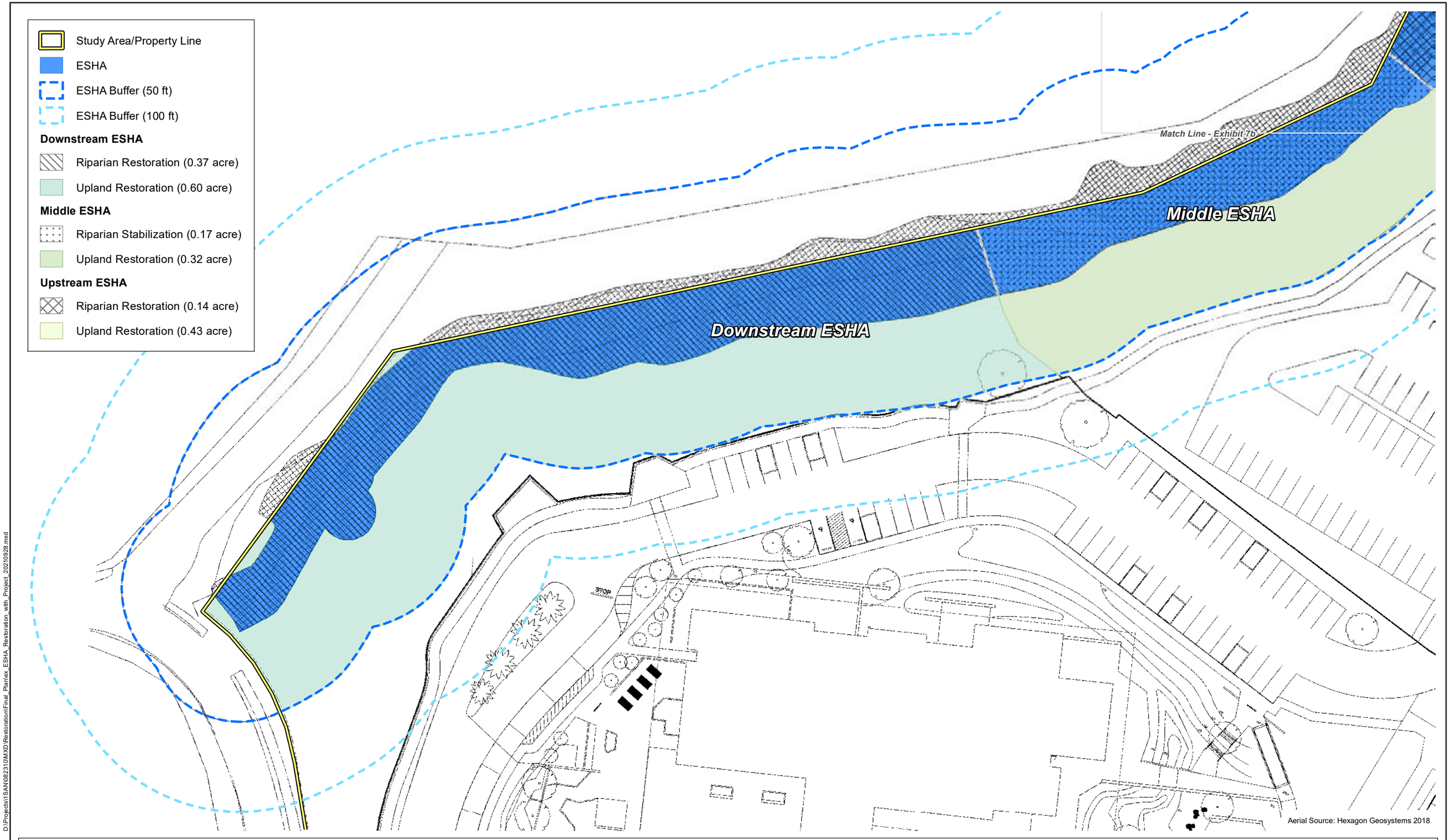

Aerial Source: Hexagon Geosystems 2018

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ESHA Restoration Areas

Exhibit 7a

Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

50 25 0 50 Feet

PSOMAS

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ESHA Restoration Areas

Exhibit 7b

Malibu Middle and High School Specific Plan and LCP Amendment Project

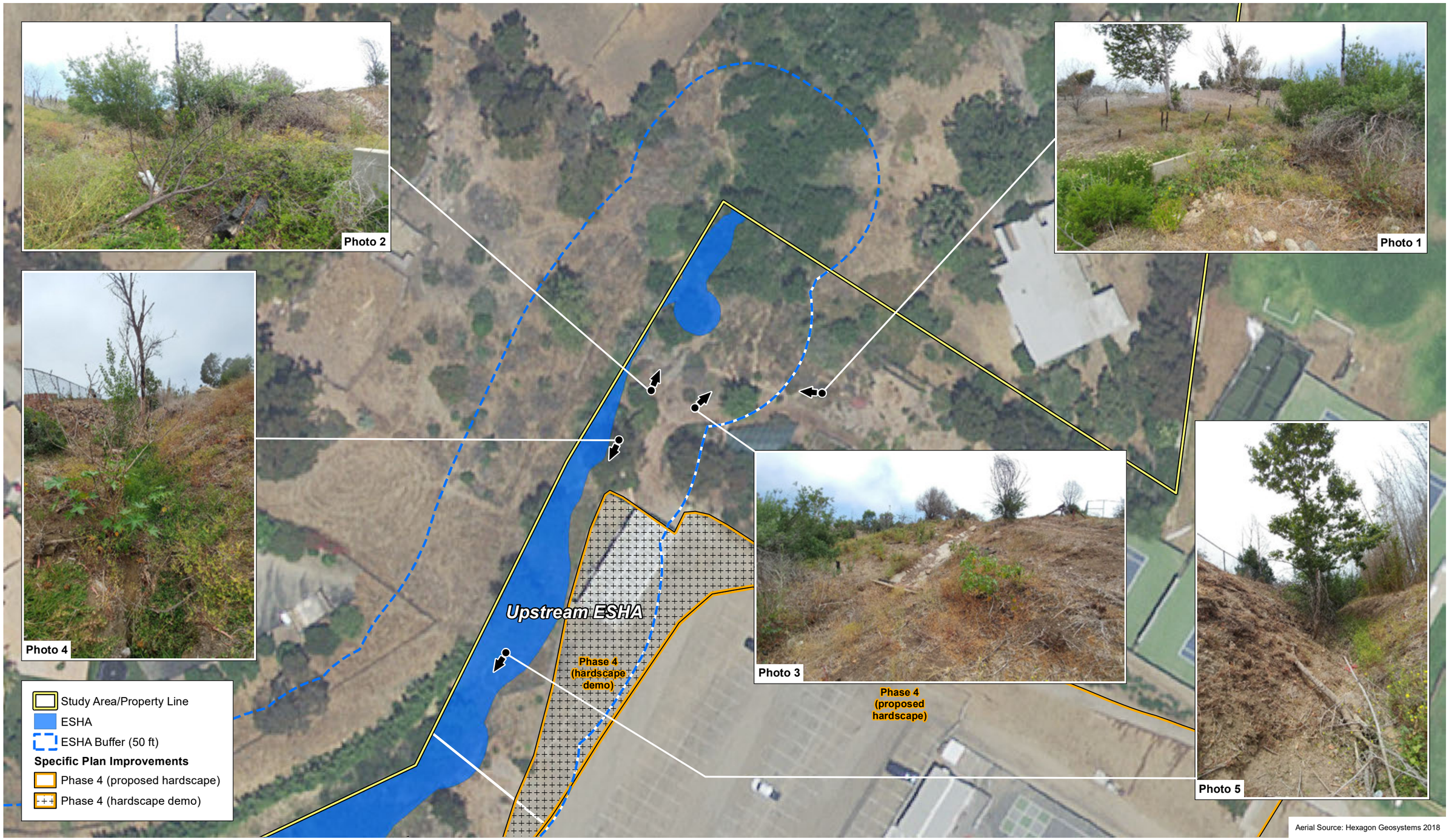
N W E S

50 25 0 50

Feet

PSOMAS

(Rev: 09/28/2021 MMD) R:\Projects\1SAN\082310\Graphics\ESHA_Restoration\Final_Plan\ex_ESHA_Restoration_with_Project.pdf



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Upstream ESHA

Exhibit 8a

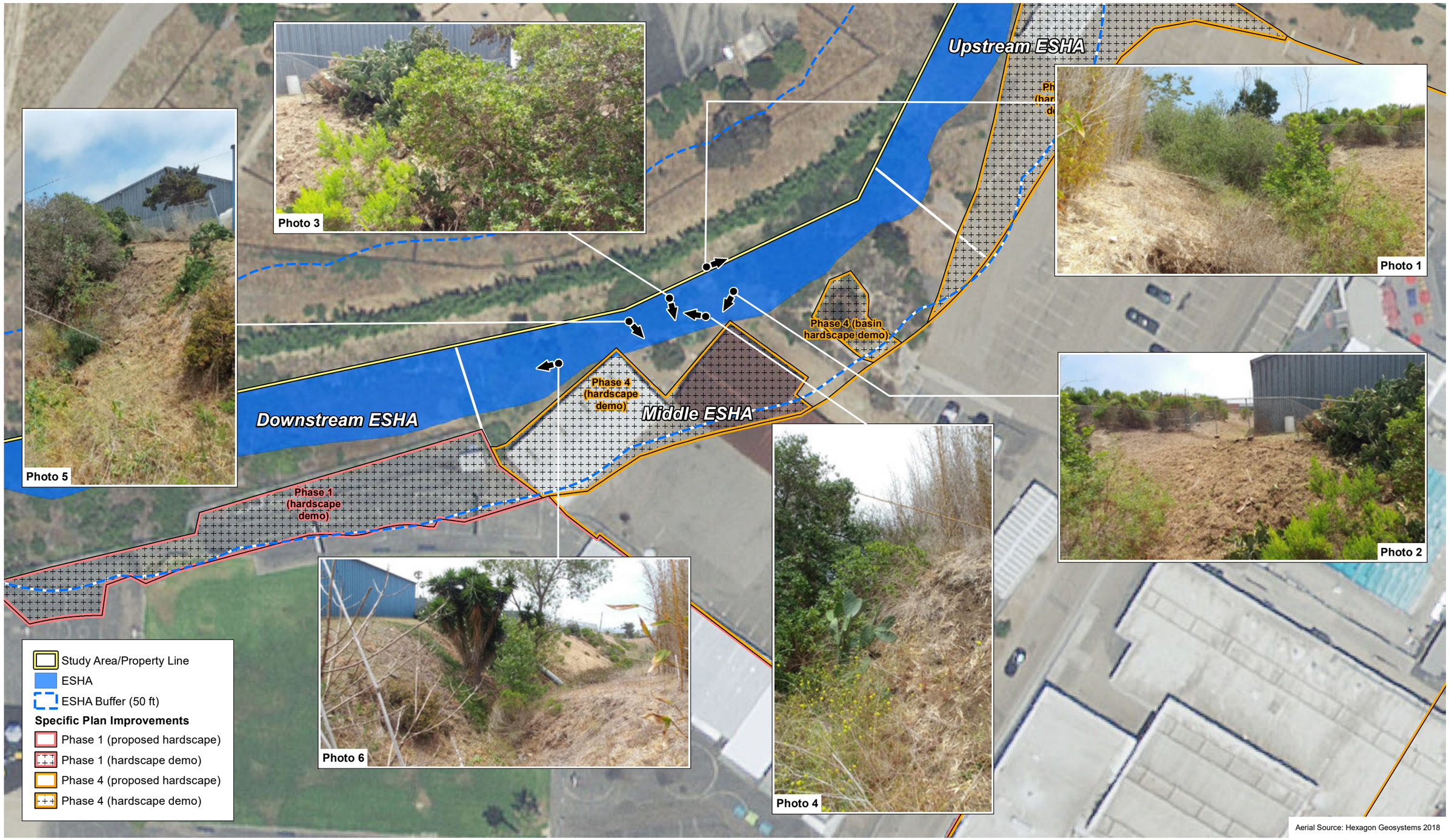
Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

50 25 0 50 Feet

PSOMAS

(Rev: 09/28/2021 MMD) R:\Projects\1SAN\082310\Graphics\ESHA_Restoration\Final_Plan\ex_ESHA_Photos.pdf



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Middle ESHA

Malibu Middle and High School Specific Plan and LCP Amendment Project

Exhibit 8b

N W E S

50 25 0 50 Feet

PSOMAS

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Downstream ESHA

Exhibit 8c

Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

50 25 0 50 Feet

PSOMAS

(Rev: 09/28/2021 MMD) R:\Projects\1SAN\082310\Graphics\ESHA_Restoration\Final_Plan\ex_ESHA_Photos.pdf

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Downstream ESHA

Exhibit 8d

Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

50 25 0 50 Feet

PSOMAS

(Rev: 09/28/2021 MMD) R:\Projects\1SAN\082310\Graphics\ESHA_Restoration\Final_Plan\ex_ESHA_Photos.pdf

Study Area/Property Line

ESHA

ESHA Buffer (50 ft)

ESHA Buffer (100 ft)

Downstream ESHA

Riparian Restoration (0.37 acre)

Upland Restoration (0.60 acre)

Middle ESHA

Riparian Stabilization (0.17 acre)

Upland Restoration (0.32 acre)

Specific Plan Improvements

Phase 1

Phase 4

Planting Types

A California fuchsia *(Epilobium canum)*; ashyleaf buckwheat *(Eriogonum cinereum)*, purple sage *(Salvia leucophylla)*

B coastal goldenbush *(Isocoma menziesii)*, Coyote bush *(Baccharis pilularis)*, bladderpod *(Peritoma arborea)*

C black sage *(Salvia mellifera)*, California sagebrush *(Artemisia californica)*, bladderpod *(Peritoma arborea)*

D ashyleaf buckwheat *(Eriogonum cinereum)*, bladderpod *(Peritoma arborea)*, deergrass *(Muhlenbergia rigens)*

E black sage *(Salvia mellifera)*, ashyleaf buckwheat *(Eriogonum cinereum)*, California figwort *(Scrophularia californica)*

F Arroyo willow *(Salix lasiolepis)*

Table 1
Downstream ESHA Plant Palette- Phase 1

Scientific Name	Common Name	Size (gallon)*	Number of Plants*
Riparian Zone			
Salix lasiolepis	Arroyo willow	1	15-20
Upland Zone			
Planting Group A: 20 groupings of 3 plants each planted 3 feet OC			
Epilobium canum	California fuchsia	1	20
Eriogonum cinerum	ashyleaf buckwheat	1	20
Salvia leucophylla	purple sage	1	20
Planting Group B: 5 groups of 3 plants each planted 4 feet OC			
Isocoma menziesii	coastal goldenbush	1	5
Baccharis pilularis	Coyote bush	1	5
Peritoma arborea	bladderpod	1	5
Planting Group C: 17 groups of 3 plants 3 feet OC			
Salvia mellifera	black sage	1	17
Artemisia californica	California sagebrush	1	17
Peritoma arborea	bladderpod	1	17
Planting Group D: 16 groups of 3 plants 4 feet OC			
Eriogonum cinerum	ashyleaf buckwheat	1	16
Peritoma arborea	bladderpod	1	16
Muhlenbergia rigens	deergrass	1	16
Planting Group E: 10 groups of 3 plants 4 feet OC			
Salvia mellifera	black sage	1	10
Eriogonum cinerum	ashyleaf buckwheat	1	10
Scrophularia californica	California figwort	1	10
		Total Plants*	**224**

*NOTE: Plant palette substitutions and planting quantities may be revised based on stock availability and in consultation with the Biological Monitor.

This area will be seeded with the riparian seed mix

This area will be seeded with the upland seed mix

Downstream ESHA

Phase 4

Phase 1

Aerial Source: Hexagon Geosystems 2018

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Planting Plan for Downstream ESHA

Exhibit 9a

Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

50 25 0 50 Feet

PSOMAS

(Rev: 09/28/2021 MMD) R:\Projects\1SAN\082310\Graphics\ESHA_Restoration\Final_Plan\ex_Planting_Plan_Downstream.pdf

Study Area/Property Line
ESHA
ESHA Buffer (50 ft)
ESHA Buffer (100 ft)

Downstream ESHA

Riparian Restoration (0.37 acre)
Upland Restoration (0.60 acre)

Middle ESHA

Riparian Stabilization (0.17 acre)
Upland Restoration (0.32 acre)

Upstream ESHA

Riparian Restoration (0.14 acre)
Upland Restoration (0.43 acre)

Specific Plan Improvements

Phase 1
Phase 4

Planting Types

A California fuchsia *(Epilobium canum)*; ashyleaf buckwheat *(Eriogonum cinereum)*, purple sage *(Salvia leucophylla)*

C black sage *(Salvia mellifera)*, California sagebrush *(Artemisia californica)*, bladderpod *(Peritoma arborea)*

D ashyleaf buckwheat *(Eriogonum cinereum)*, bladderpod *(Peritoma arborea)*, deergrass *(Muhlenbergia rigens)*

E black sage *(Salvia mellifera)*, ashyleaf buckwheat *(Eriogonum cinereum)*, California figwort *(Scrophularia californica)*

Table 2
Middle ESHA Plant Palette-Phase 4

Scientific Name	Common Name	Size (gallon)*	Number of Plants*
Planting Group A: 10 groupings of 3 plants each planted 3 feet OC			
Epilobium canum	California fuchsia	1	10
Eriogonum cinereum	ashyleaf buckwheat	1	10
Salvia leucophylla	purple sage	1	10
Planting Group C: 10 groups of 3 plants 3 feet OC			
Salvia mellifera	black sage	1	10
Artemisia californica	California sagebrush	1	10
Peritoma arborea	bladderpod	1	10
Planting Group D: 10 groups of 3 plants 4 feet OC			
Eriogonum cinereum	ashyleaf buckwheat	1	10
Peritoma arborea	bladderpod	1	10
Muhlenbergia rigens	deergrass	1	10
Planting Group E: 10 groups of 3 plants 4 feet OC			
Salvia mellifera	black sage	1	10
Eriogonum cinereum	ashyleaf buckwheat	1	10
Scrophularia californica	California figwort	1	10
		Total Plants*	**120**

*NOTE: Plant palette substitutions and planting quantities may be revised based on stock availability and in consultation with the Biological Monitor.

Upstream ESHA
Middle ESHA
Downstream ESHA
Phase 1
Phase 4

Aerial Source: Hexagon Geosystems 2018

Planting Plan for Middle ESHA

Exhibit 9b

Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

50 25 0 50 Feet

PSOMAS

(Rev: 09/28/2021 MMD) R:\Projects\1SAN\082310\Graphics\ESHA_Restoration\Final_Plan\ex_Planting_Plan_Middle.pdf

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Study Area/Property Line

ESHA

ESHA Buffer (50 ft)

ESHA Buffer (100 ft)

Downstream ESHA

Riparian Restoration (0.37 acre)

Middle ESHA

Riparian Stabilization (0.17 acre)

Upland Restoration (0.32 acre)

Upstream ESHA

Riparian Restoration (0.14 acre)

Upland Restoration (0.43 acre)

Specific Plan Improvements

Phase 4

Planting Types

A California fuchsia *(Epilobium canum)*; ashyleaf buckwheat *(Eriogonum cinereum)*, purple sage *(Salvia leucophylla)*

C black sage *(Salvia mellifera)*, California sagebrush *(Artemisia californica)*, bladderpod *(Peritoma arborea)*

D ashyleaf buckwheat *(Eriogonum cinereum)*, bladderpod *(Peritoma arborea)*, deergrass *(Muhlenbergia rigens)*

E black sage *(Salvia mellifera)*, ashyleaf buckwheat *(Eriogonum cinereum)*, California figwort *(Scrophularia californica)*

The wetland area will be planted with *Carex senta* and *Leymus triticoides*

This area will be seeded with the upland seed mix

Upstream ESHA

Middle ESHA

Phase 4

Phase 4

Phase 4

Table 3
Upstream ESHA Plant Palette-Phase 1 and 4

Scientific Name	Common Name	Size (gallon)*	Number of Plants*
Riparian Zone-Phase 1			
Carex senta	swamp sedge	2" plug	**100**
Leymus triticoides	beardless wild rye	2" plug	**100**
Upland Zone-Phase 4			
Planting Group A: 10 groupings of 3 plants each planted 3 feet OC			
Epilobium canum	California fuschia	1	10
Eriogonum cinereum	ashyleaf buckwheat	1	10
Salvia leucophylla	purple sage	1	10
Planting Group C: 8 groups of 3 plants 3 feet OC			
Salvia mellifera	black sage	1	8
Artemisia californica	California sagebrush	1	8
Peritoma arborea	bladderpod	1	8
Planting Group D: 8 groups of 3 plants 4 feet OC			
Eriogonum cinereum	ashyleaf buckwheat	1	8
Peritoma arborea	bladderpod	1	8
Muhlenbergia rigens	deergrass	1	8
Planting Group E: 10 groups of 3 plants 4 feet OC			
Salvia mellifera	black sage	1	10
Eriogonum cinereum	ashyleaf buckwheat	1	10
Scrophularia californica	California figwort	1	10
		Total Plants*	**308**

*NOTE: Plant palette substitutions and planting quantities may be revised based on stock availability and in consultation with the Biological Monitor.

Aerial Source: Hexagon Geosystems 2018

Planting Plan for Upstream ESHA

Exhibit 9c

Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

50 25 0 50 Feet

PSOMAS

(Rev: 09/28/2021 MMD) R:\Projects\1SAN\082310\Graphics\ESHA_Restoration\Final_Plan\ex_Planting_Plan_Upstream.pdf

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Study Area/Property Line
ESHA
ESHA Buffer (50 ft)
ESHA Buffer (100 ft)

Downstream ESHA

Riparian Restoration (0.37 acre)
Upland Restoration (0.60 acre)

Middle ESHA

Riparian Stabilization (0.17 acre)
Upland Restoration (0.32 acre)

Specific Plan Improvements

Phase 1
Phase 4

Planting Types

A California fuchsia *(Epilobium canum)*; ashyleaf buckwheat *(Eriogonum cinereum)*, purple sage *(Salvia leucophylla)*

B coastal goldenbush *(Isocoma menziesii)*, Coyote bush *(Baccharis pilularis)*, bladderpod *(Peritoma arborea)*

C black sage *(Salvia mellifera)*, California sagebrush *(Artemisia californica)*, bladderpod *(Peritoma arborea)*

D ashyleaf buckwheat *(Eriogonum cinereum)*, bladderpod *(Peritoma arborea)*, deergrass *(Muhlenbergia rigens)*

E black sage *(Salvia mellifera)*, ashyleaf buckwheat *(Eriogonum cinereum)*, California figwort *(Scrophularia californica)*

F Arroyo willow *(Salix lasiolepis)*

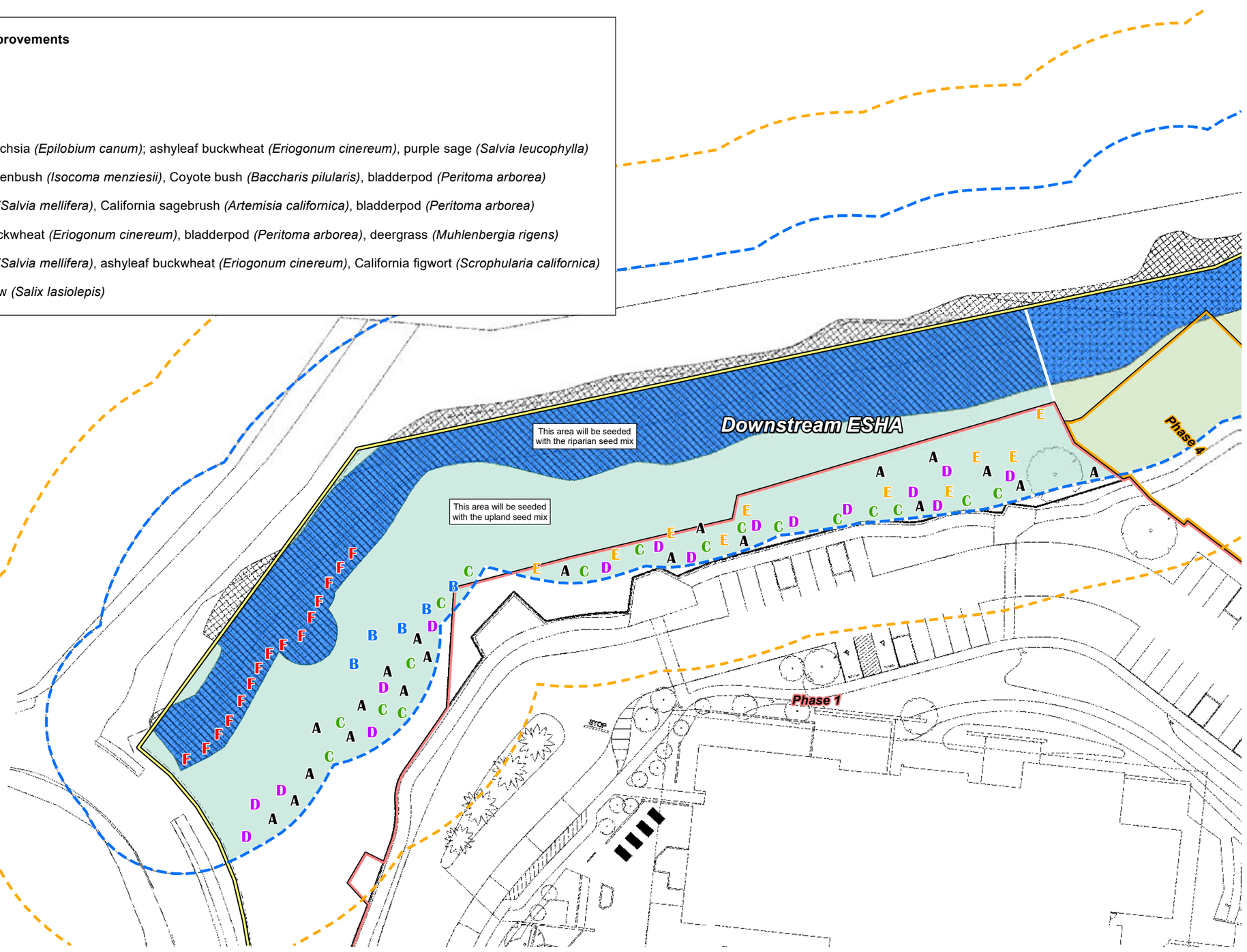

Table 1
Downstream ESHA Plant Palette- Phase 1

Scientific Name	Common Name	Size (gallon)*	Number of Plants*
Riparian Zone			
Salix lasiolepis	Arroyo willow	1	15-20
Upland Zone			
Planting Group A: 20 groupings of 3 plants each planted 3 feet OC			
Epilobium canum	California fuchsia	1	20
Eriogonum cinereum	ashyleaf buckwheat	1	20
Salvia leucophylla	purple sage	1	20
Planting Group B: 5 groups of 3 plants each planted 4 feet OC			
Isocoma menziesii	coastal goldenbush	1	5
Baccharis pilularis	Coyote bush	1	5
Peritoma arborea	bladderpod	1	5
Planting Group C: 17 groups of 3 plants 3 feet OC			
Salvia mellifera	black sage	1	17
Artemisia californica	California sagebrush	1	17
Peritoma arborea	bladderpod	1	17
Planting Group D: 16 groups of 3 plants 4 feet OC			
Eriogonum cinereum	ashyleaf buckwheat	1	16
Peritoma arborea	bladderpod	1	16
Muhlenbergia rigens	deergrass	1	16
Planting Group E: 10 groups of 3 plants 4 feet OC			
Salvia mellifera	black sage	1	10
Eriogonum cinereum	ashyleaf buckwheat	1	10
Scrophularia californica	California figwort	1	10
		Total Plants*	**224**

*NOTE: Plant palette substitutions and planting quantities may be revised based on stock availability and in consultation with the Biological Monitor.

Planting Plan for Downstream ESHA

Exhibit 10a

Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

50 25 0 50 Feet

PSOMAS

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Study Area/Property Line
ESHA
ESHA Buffer (50 ft)
ESHA Buffer (100 ft)

Downstream ESHA
Riparian Restoration (0.37 acre)
Upland Restoration (0.60 acre)

Middle ESHA
Riparian Stabilization (0.17 acre)
Upland Restoration (0.32 acre)

Upstream ESHA
Riparian Restoration (0.14 acre)
Upland Restoration (0.43 acre)

Specific Plan Improvements
Phase 1
Phase 4

Planting Types

A California fuchsia *(Epilobium canum)*; ashyleaf buckwheat *(Eriogonum cinereum)*, purple sage *(Salvia leucophylla)*

C black sage *(Salvia mellifera)*, California sagebrush *(Artemisia californica)*, bladderpod *(Peritoma arborea)*

D ashyleaf buckwheat *(Eriogonum cinereum)*, bladderpod *(Peritoma arborea)*, deergrass *(Muhlenbergia rigens)*

E black sage *(Salvia mellifera)*, ashyleaf buckwheat *(Eriogonum cinereum)*, California figwort *(Scrophularia californica)*

Upstream ESHA
Middle ESHA
Downstream ESHA
Phase 1
Phase 4

Table 2
Middle ESHA Plant Palette-Phase 4

Scientific Name	Common Name	Size (gallon)*	Number of Plants*
Planting Group A: 10 groupings of 3 plants each planted 3 feet OC			
Epilobium canum	California fuchsia	1	10
Eriogonum cinereum	ashyleaf buckwheat	1	10
Salvia leucophylla	purple sage	1	10
Planting Group C: 10 groups of 3 plants 3 feet OC			
Salvia mellifera	black sage	1	10
Artemisia californica	California sagebrush	1	10
Peritoma arborea	bladderpod	1	10
Planting Group D: 10 groups of 3 plants 4 feet OC			
Eriogonum cinereum	ashyleaf buckwheat	1	10
Peritoma arborea	bladderpod	1	10
Muhlenbergia rigens	deergrass	1	10
Planting Group E: 10 groups of 3 plants 4 feet OC			
Salvia mellifera	black sage	1	10
Eriogonum cinereum	ashyleaf buckwheat	1	10
Scrophularia californica	California figwort	1	10
		Total Plants*	**120**

*NOTE: Plant palette substitutions and planting quantities may be revised based on stock availability and in consultation with the Biological Monitor.

Planting Plan for Middle ESHA

Exhibit 10b

Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

50 25 0 50 Feet

PSOMAS

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Study Area/Property Line

ESHA

ESHA Buffer (50 ft)

ESHA Buffer (100 ft)

Downstream ESHA

Riparian Restoration (0.37 acre)

Middle ESHA

Riparian Stabilization (0.17 acre)

Upland Restoration (0.32 acre)

Upstream ESHA

Riparian Restoration (0.14 acre)

Upland Restoration (0.43 acre)

Specific Plan Improvements

Phase 4

Planting Types

A California fuchsia *(Epilobium canum)*; ashyleaf buckwheat *(Eriogonum cinereum)*, purple sage *(Salvia leucophylla)*

C black sage *(Salvia mellifera)*, California sagebrush *(Artemisia californica)*, bladderpod *(Peritoma arborea)*

D ashyleaf buckwheat *(Eriogonum cinereum)*, bladderpod *(Peritoma arborea)*, deergrass *(Muhlenbergia rigens)*

E black sage *(Salvia mellifera)*, ashyleaf buckwheat *(Eriogonum cinereum)*, California figwort *(Scrophularia californica)*

The wetland area will be planted with *Carex senta* and *Leymus triticoides*

This area will be seeded with the upland seed mix

Upstream ESHA

Middle ESHA

Phase 4

Phase 4

Phase 4

Table 3
Upstream ESHA Plant Palette-Phase 1 and 4

Scientific Name	Common Name	Size (gallon)*	Number of Plants*
Riparian Zone-Phase 1			
Carex senta	swamp sedge	2" plug	**100**
Leymus triticoides	beardless wild rye	2" plug	**100**
Upland Zone-Phase 4			
Planting Group A: 10 groupings of 3 plants each planted 3 feet OC			
Epilobium canum	California fuschia	1	10
Eriogonum cinereum	ashyleaf buckwheat	1	10
Salvia leucophylla	purple sage	1	10
Planting Group C: 8 groups of 3 plants 3 feet OC			
Salvia mellifera	black sage	1	8
Artemisia californica	California sagebrush	1	8
Peritoma arborea	bladderpod	1	8
Planting Group D: 8 groups of 3 plants 4 feet OC			
Eriogonum cinereum	ashyleaf buckwheat	1	8
Peritoma arborea	bladderpod	1	8
Muhlenbergia rigens	deergrass	1	8
Planting Group E: 10 groups of 3 plants 4 feet OC			
Salvia mellifera	black sage	1	10
Eriogonum cinereum	ashyleaf buckwheat	1	10
Scrophularia californica	California figwort	1	10
		Total Plants*	**308**

*NOTE: Plant palette substitutions and planting quantities may be revised based on stock availability and in consultation with the Biological Monitor.

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Planting Plan for Upstream ESHA

Exhibit 10c

Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

50 25 0 50 Feet

PSOMAS

(Rev: 09/28/2021 MMD) R:\Projects\1SAN\082310\Graphics\ESHA_Restoration\Final_Plan\ex_Planting_Plan_Upstream.pdf

APPENDIX 1

PLANT PALETTES

About Calscape

Our goal at Calscape is to help Californians restore nature and save water one garden at a time. We do this by showing people which plants are really native to any location in the state, helping them figure out which ones they want, and where to buy them and how to grow them.

California is an extremely environmentally diverse state. Different California native plants evolved to grow in areas of the state with very different temperatures, rainfall levels, summer drought periods, air moisture levels, and marine influences, among other factors. Because of this, it's always best to grow California native plants in the areas in which they evolved. They are easier to grow, healthier and require little or no artificial irrigation when they are planted in an area in which they evolved and naturally belong. Native California plants that aren't really native to that location will often struggle or die no matter how much you water them.

True native plants are the foundation for nature restoration. They attract butterflies, birds, reptiles, amphibians, small mammals, bees and other pollinators that evolved with those plants, and over time create a working natural ecosystem, without pesticides, and without artificial fertilizers. The butterfly and bird life in particular in a true natural garden is often spectacular. With the right plants, it's not hard for homeowners to create small patches of nature throughout even the developed part of the state.

Thanks to U.C. Berkeley and in particular the Jepson Flora Project for their support to make Calscape possible.

Our estimates for which plants naturally grow in any given location in California are based on almost 2 million field occurrences of native California plant species collected over the last 150 years by the participants of the California Consortia of Herbaria (CCH). For a given location to be included in a given plant's geographic range, a natural specimen of that plant needs to have been observed by a CCH botanist within 10 miles of that location, and the location must be within the elevation, annual precipitation, summer precipitation, coldest month average temperature, hottest month average temperature, and humidity ranges in which that plant grows in the Jepson geographic subdivision in which the location falls. Special thanks to the Jepson Flora Project at U.C. Berkeley for their help in analyzing this data and creating the Calscape plant range maps. Note that for successful native plant landscaping and nature restoration, it's important to grow plants that are native to your location AND placed in spots with the right soil, sun and water conditions. Before you finalize which native plants to grow and exactly where to place them, please review the Calscape plant descriptions to make you place them in spots with the conditions they require.

Our estimates for the natural geographic range of butterfly and moth species in California are based on approximately 200,000 geo-referenced field observations provided through GBIF (GBIF.org (27 August 2019) GBIF Occurrence Download https://doi.org/10.15468/dl.rywrmh), iDigBio, the Symbiota Collections of Arthropods Network and Butterflies and Moths of North America, aggregating digitized collections of 40 universities, entomological museums and other institutions, and research grade observations from iNaturalist. For a given square mile to be included in the estimated geographic range of a particular butterfly or moth species, that species must have been observed within 50 miles of that square mile, and that square mile must fall within annual precipitation, summer precipitation, coldest month average temperature, hottest month average temperature, and humidity ranges in which that species has been observed in the state.

Climate data used in creation of plant and butterfly/moth range maps is from PRISM Climate Group, Oregon State University, using 30 year (1981-2010) annual normals at an 800 meter spatial resolution.

Sources for genus level butterfly and moth host plant information include; The National Wildlife Federation's Native Plant Finder, with thanks to Doug Tallamy and Kimberley Shropshire for researching and sharing this information, the National History Museum's Database of the World's Lepidopteran Hostplants, and Butterflies and Moths of North America. Special thanks to Calscape volunteer

Bridget Kelley for her tireless work aggregating host plant data from all these sources. Plants shown as hosts for a particular butterfly or moth species must meet two requirements: 1. the genus of that plant species must be a known host for that species of butterfly or moth, AND 2. the natural geographic range of that plant species must overlap with the natural geographic range of that butterfly or moth species.

All geographic data is structured using the Google Maps API, with special thanks to Google Non-Profits for their generous grant support.

Sources of plant and butterfly and moth photos include Calphotos, GBIF (GBIF.org (27 August 2019), iDigBio, the Symbiota Collections of Arthropods Network and dozens of amazing plant photographers who have agreed to share their photos with Calscape. Special thanks for Calphotos for their invaluable help in acquiring these images. Authorship and copyright information is shown under each plant photo.

Other sources include Wikipedia, which is an important source for the "About" sections in the Calscape plant pages. In many cases the sections have been edited and built on by Calscape volunteer editors. Please note that all text shown in the "About" section is available for reuse under the Creative Commons Attribution-ShareAlike License. Wikipedia is also a source for a number of plant photos available through Wikimedia Commons. All photographs on Calscape that were originally from Wikimedia Commons are available for reuse under conditions set by the authors and described in each photo.

Sunset information was provided was provided by The Jepson Flora Project. Propagation from seed information was provided by the Santa Barbara Botanical Garden from "Seed Propagation of Native California Plants" by Dara E. Emery. Other general sources of information include Calflora, CNPS Manual of Vegetation Online, Jepson eFlora, Las Pilitas, Theodore Payne, Tree of Life, The Xerces Society, and information provided by CNPS volunteer editors, with special thanks to Don Rideout.

California Native Plant Society
Calscape
Restore Nature One Garden at a Time

California Fuchsia
Epilobium canum

Show All Photos

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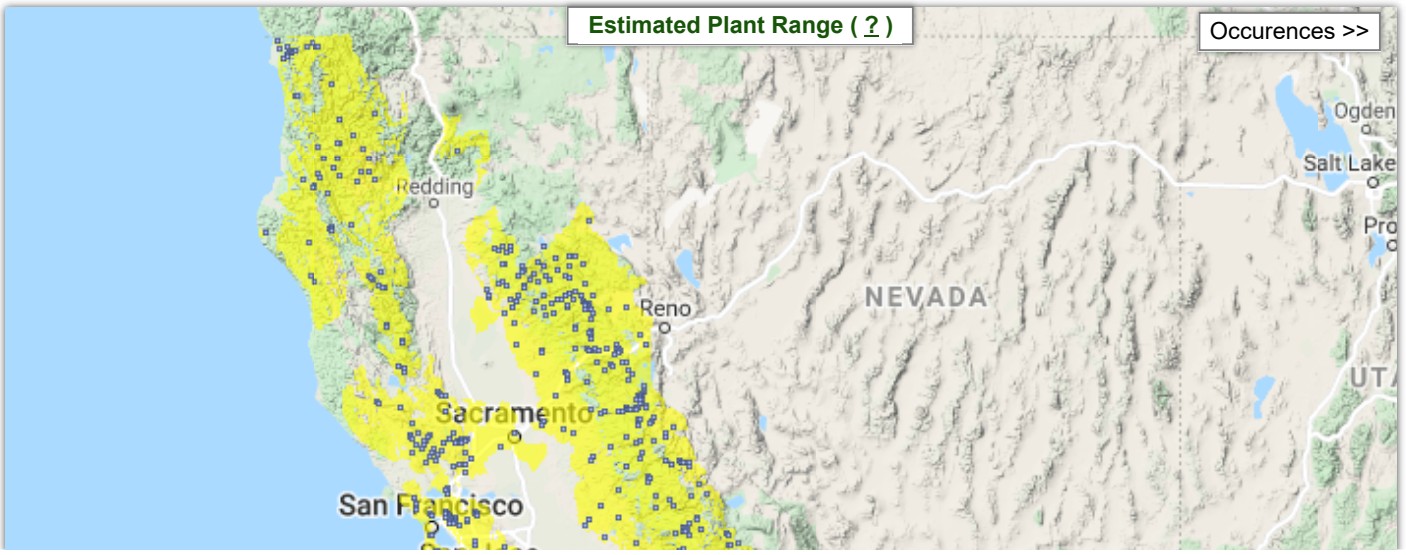
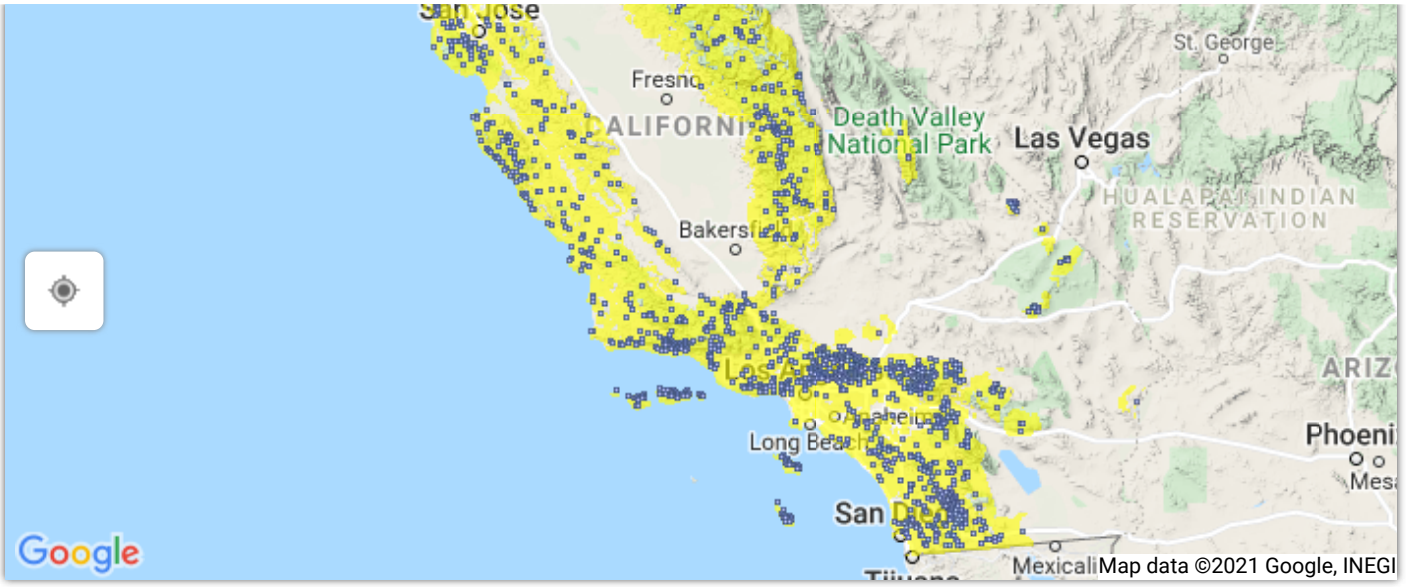




64 Nurseries Carry This Plant

About California Fuchsia (Epilobium canum)

Epilobium canum is beautiful species of willowherb, native to the California foothills and coastal areas. It is a perennial plant, notable for the profusion of bright scarlet flowers in summer and autumn - it's usually the only native California plant in an area flowering at the height of summer. They tend to die back and go dormant in the winter. Other common names include California-fuchsia (from the resemblance of the flowers to those of Fuchsias), Hummingbird Flower, and Hummingbird Trumpet (the flowers are very attractive to hummingbirds). Epilobium canum is often found by seasonal creeks, seeps and spring, particularly in the drier southern part of it's range.

California Fuchsia is easy to grow. It does best and will flower most profusely in full sun. In the wetter, northern part of it's range or near the coast, this plant will typically require no supplemental water after established. In the drier, hotter, inland southern areas, it will often die without summer water unless planted close to an irrigated or other wet area. You can water it 1x/month without much danger. Plants tend to get straggly after flowering by late fall or early winter. Best to cut them back to the ground as soon as the flowers are spent, and they'll come back back lush and healthy in the spring. Otherwise, they'll look straggly and unhealthy the next year, and are more likely to die. This plant will readily self-seed, so once you get this species established, it will usually start springing up around your garden. It also spreads by rhizomes. There's probably no better California native plant for attracting hummingbirds.

This plant is on several fire resistant plant lists, including FireSafe Marin and County of San Diego.

Plant Description

Plant Type
Perennial herb

Size
0.25 - 1.5 ft tall
2-3 ft wide

Form
Spreading

Growth Rate
Fast

Dormancy
Winter Semi-Deciduous

Fragrance
None

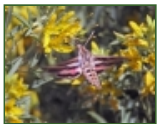
Flower Color
Red

Flowering Season
Summer, Fall

Wildlife Supported

Hummingbirds

Butterflies & moths hosted (15 likely *) SHOW ALL



* **White-lined Sphinx**
Hyles lineata

* **Black-Banded Carpet**
Antepirrhoe semiatrata

* **Elegant Aristotelia Moth**
Aristotelia elegantella

* **Yellow-Banded Day Sphinx**
Proserpinus flavofasciata

Landscaping Information

Sun
Full Sun

Moisture
Very Low, Low

Summer Irrigation
Max 1x / month once established

Nurseries
Carried by 64

Ease of Care
Very Easy, Moderately Easy

Cold Tolerance
Tolerates cold to 0° F

Soil Drainage
Fast, Medium, Slow

Soil Description
Tolerates clay and sand. Tolerates Serpentine Soil. Soil PH: 6.0 - 8.0

Common uses
Groundcovers, Deer Resistant, Bird Gardens, Hummingbird Gardens, Butterfly Gardens

Companion Plants
Milkweed (Asclepias species), Giant Wild Rye (Elymus condensatus), Sand Aster (Corethrogyne filaginifolia), Sagebrush (Artemisia californica), Monkeyflower (Mimulus species), Encelia californica, Buckwheat (Eriogonum species), Heartleaf Keckiella (Keckiella cordifolia), Penstemon species, Salvia species, Blue-eyed Grass (Sisyrinchium bellum)

Maintenance
Cut or mow to base in fall or early winter to stimulate for new growth. Unwanted rhizomes can be pulled at any time.

Propagation?
Self-seeds readily. Rhizomes can be transplanted in winter or spring.

Natural Setting

Site Type
This species is found in a number of natural settings over a large part of the state. Near the coast it is found on slopes, bluffs or canyons as part of chaparral or coastal sage scrub. In more inland areas including the Sierras it is found in slightly damper slopes and flats, often near seasonal creeks, often as part of pine or fir forest.

Climate
Annual Precipitation: 2.7" - 124.0", Summer Precipitation: 0.14" - 4.46", Coldest Month: 19.7" - 59.6", Hottest Month: 41.1" - 88.1", Humidity: 0.28" - 40.93", Elevation: -714" - 12228"

Alternative Names

Botanical Names: Zauschneria californica,Zauschneria canum
Common Names: Hummingbird Trumpet

Links: Jepson eFlora Taxon Page CalPhotos Wikipedia Calflora

California Native Plant Society Calscape
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Purple Sage
Salvia leucophylla

Show All Photos

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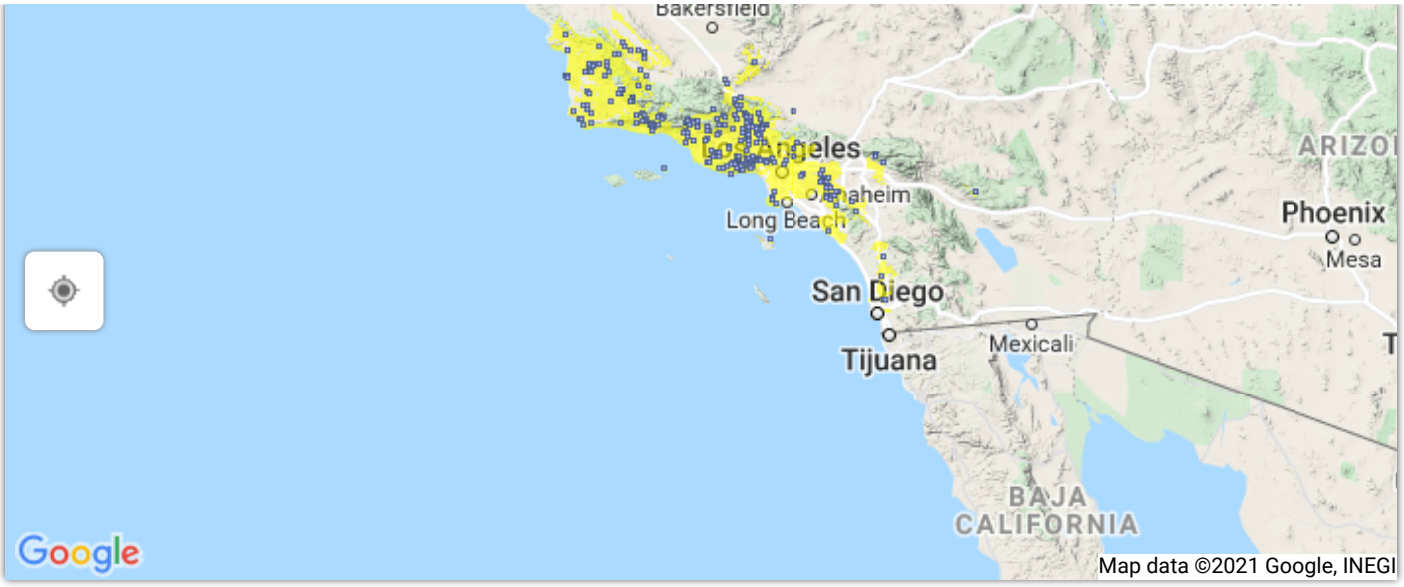


58 Nurseries Carry This Plant

About Purple Sage (Salvia leucophylla)

Purple Sage is an aromatic sage native to the southern coast of California and Baja California, with a range stretching from Santa Maria southward, at 50-800 meters altitude. It is a shrub growing up to 1.5 meters tall on dry, open hillsides. The leaves are grayish, 2-8 centimeters long, with a puckered surface. The large spikes bear whorls of purple flowers, 6-13 millimeters long. The flowers are highly aromatic and attract a variety of birds and insects. One variety of Purple Sage, Salvia leucophylla Point Sal, makes a great groundcover, usually growing over 10 feet wide and only 2-4 feet high.

This plant is tough, easy to grow and beautiful. It is amazingly drought tolerant, though it can also tolerate light water up to twice per month in the summer to keep it looking a little greener. Beautiful purple flowers and grey green folliage.

Plant Description

Plant Type
Shrub

Size
2 - 5 ft tall
3 - 10 ft wide

Form
Mounding, Rounded, Spreading

Growth Rate
Fast

Dormancy
Evergreen, Summer Semi-Deciduous

Fragrance
Fragrant - Pleasant

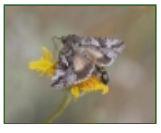
Flower Color
Purple, Lavender, Pink

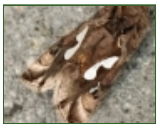
Flowering Season
Spring, Summer

Wildlife Supported

Bees, hummingbirds, other pollinators

Butterflies & moths hosted (1 confirmed ✓, 8 likely *) SHOW ALL

✓ 
Alfalfa Looper Moth
Autographa californica

* 
Bilobed Looper Moth
Megalographa biloba

* 
Virginian Tiger Moth
Spilosoma virginica

* 
Wavy-Lined Emerald
Synchlora aerata

Landscaping Information

Sun
Full Sun

Moisture
Extremely Low, Very Low

Summer Irrigation
Max 2x / month once established

Nurseries
Carried by 58

Ease of Care

Cold Tolerance

Soil Drainage

Ease of Care
Very Easy

Cold Tolerance
Tolerates cold to 0 - 10° F

Soil Drainage
Fast, Medium

Soil Description
Variable. Soil PH: 5 - 8

Common uses
Bank Stabilization, Groundcovers, Hedges, Deer Resistant, Bird Gardens, Butterfly Gardens, Bee Gardens

Companion Plants
Cleveland Sage, California Buckwheat, Lemonade Berry

Propagation?
For propagating by seed: No treatment.

Sunset Zones?
8, 9, 14*, 15*, 16*, 17*, 19*, 20*, 21*, 22*, 23*, 24*

Natural Setting

Site Type
Dry open slopes

Climate
Annual Precipitation: 7.4" - 37.3", Summer Precipitation: 0.14" - 1.43", Coldest Month: 40.5" - 56.1", Hottest Month: 62.3" - 80.3", Humidity: 0.72" - 27.58", Elevation: 11" - 5843"

Alternative Names

Common Names: San Luis Purple Sage

Links: Jepson eFlora Taxon Page CalPhotos Wikipedia Calflora

California Native Plant Society
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Ashyleaf Buckwheat
Eriogonum cinereum

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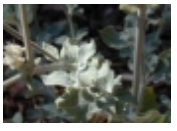
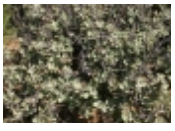
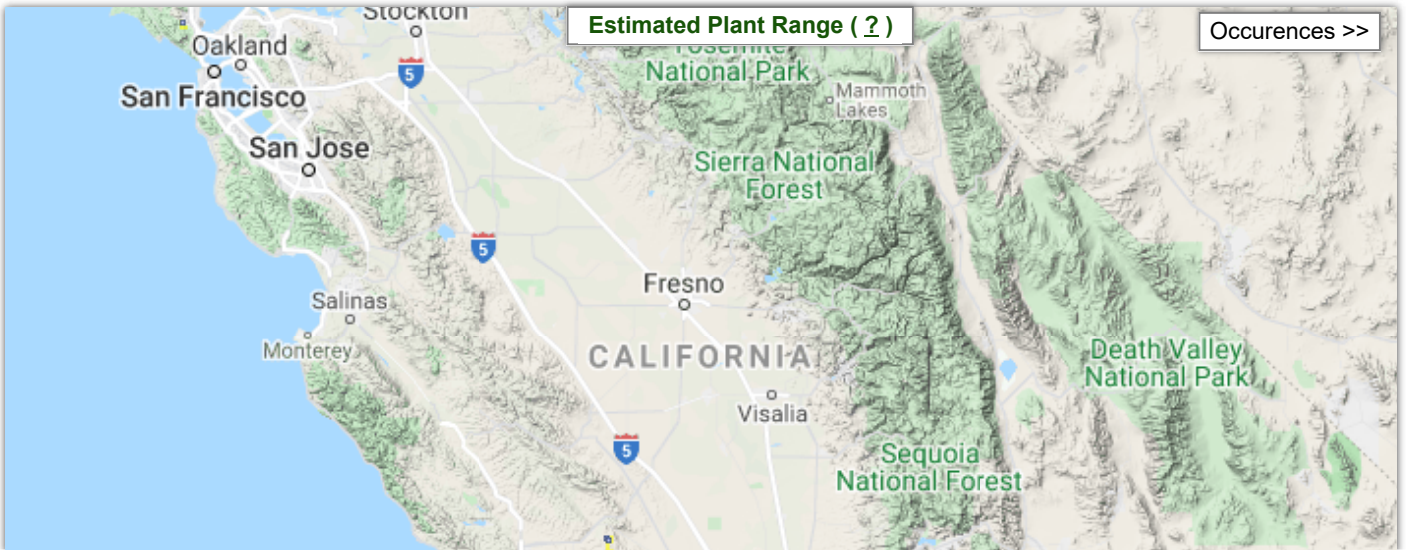





28 Nurseries Carry This Plant

About Ashyleaf Buckwheat (Eriogonum cinereum)

Eriogonum cinereum is a species of wild buckwheat known by the common names coastal buckwheat and ashyleaf buckwheat. This shrub is endemic to the coastline of California, where it grows on beaches and bluffs and in coastal scrub and chaparral. This plant may reach up over a meter in height and width and is light silvery gray in color due to the woolly hairs on its stems and foliage. The leaves are wavy-edged ovals one to three centimeters long. The flower clusters stick out from the plant, each with one to several heads of tiny tightly-packed frilly flowers which are usually light brownish-pink in color and quite hairy. This is the foodplant for Euphilotes bernardino, the Bernardino dotted blue butterfly.

Plant Description

Plant Type
Shrub

Size
2 - 4 ft tall
3 - 5 ft wide

Form
Rounded

Growth Rate
Fast

Dormancy
Evergreen

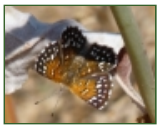
Flower Color
Brown, Yellow

Flowering Season
Winter, Spring, Summer, Fall

Wildlife Supported

Many butterfly species (including Euphilotes bernardino, the Bernardino dotted blue butterfly) and other pollinators including wasps which prey on harmful garden pests! They may attract small mammals and birds who eat the seeds.

Butterflies & moths hosted (3 confirmed ✓, 41 likely *) SHOW ALL

✓ 
Mormon Metalmark
Apodemia mormo

✓ 
Square-spotted Blue
Euphilotes battoides

✓ 
Bernardino Blue
Euphilotes bernardino

* 
Gray Hairstreak
Strymon melinus

Landscaping Information

Sun
Full Sun

Moisture
Extremely Low, Very Low

Summer Irrigation
Max 1x / month once established

Nurseries
Carried by 28

Ease of Care
Moderately Easy

Cold Tolerance
Tolerates cold to 15 - 25° F

Soil Drainage
Fast, Medium, Slow

Soil Description
Adaptable. Soil PH: 6 - 8

Common uses
Bird Gardens, Butterfly Gardens, Bee Gardens

Companion Plants
Plant alongside other natives of the California coastal scrub region, such as California Larkspur (Delphinium californicum), Common Tidy Tips (Layia platyglossa), Maritime Brome (Bromus maritimus), and Monterey Indian Paintbrush (Castilleja latifolia).

Maintenance
Remove dead seed heads in late fall and dead branches during the growing season. Older untidy plants can be pruned back to 8 inches in the fall to reestablish shape.

Propagation?
For propagating by seed: No treatment.

Sunset Zones?
5, 14*, 15*, 16*, 17*, 19, 20, 21, 22*, 23*, 24*

Natural Setting

Site Type
Beaches, bluffs

Climate
Annual Precipitation: 11.4" - 39.3", Summer Precipitation: 0.14" - 1.97", Coldest Month: 35.4" - 56.6", Hottest Month: 61.1" - 77.0", Humidity: 0.93" - 23.07", Elevation: -25" - 8222"

Alternative Names

Common Names: Coastal Buckwheat

Links: Jepson eFlora Taxon Page CalPhotos Wikipedia Calflora

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Coyote Bush
Baccharis pilularis

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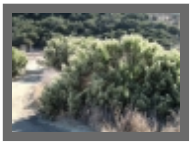




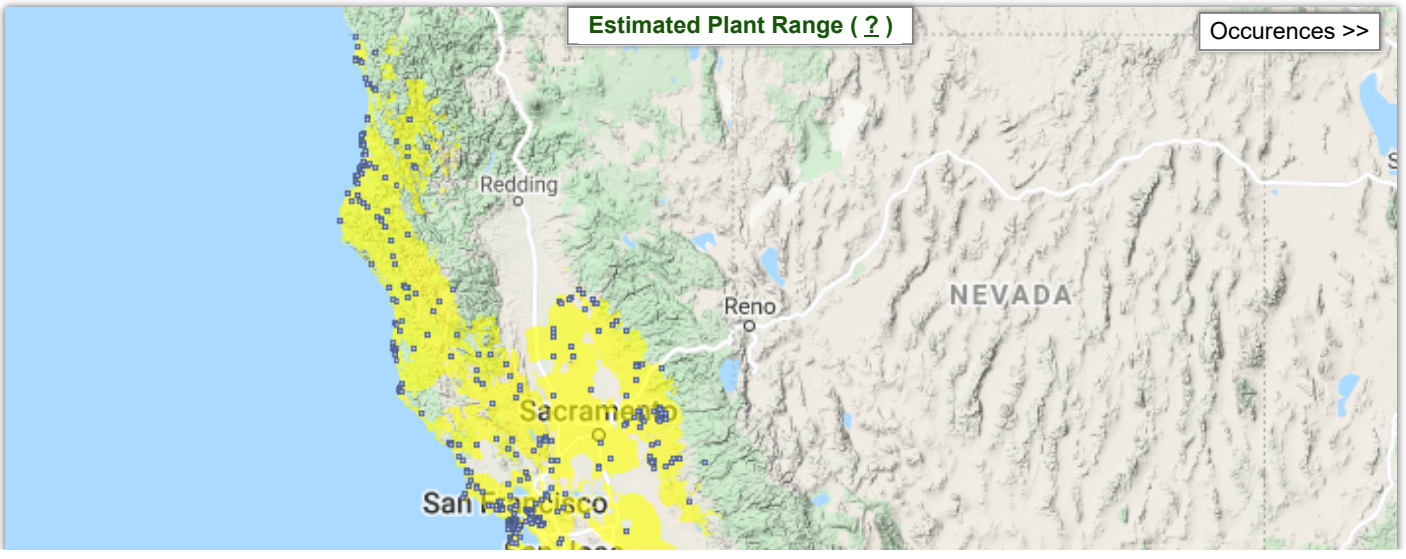

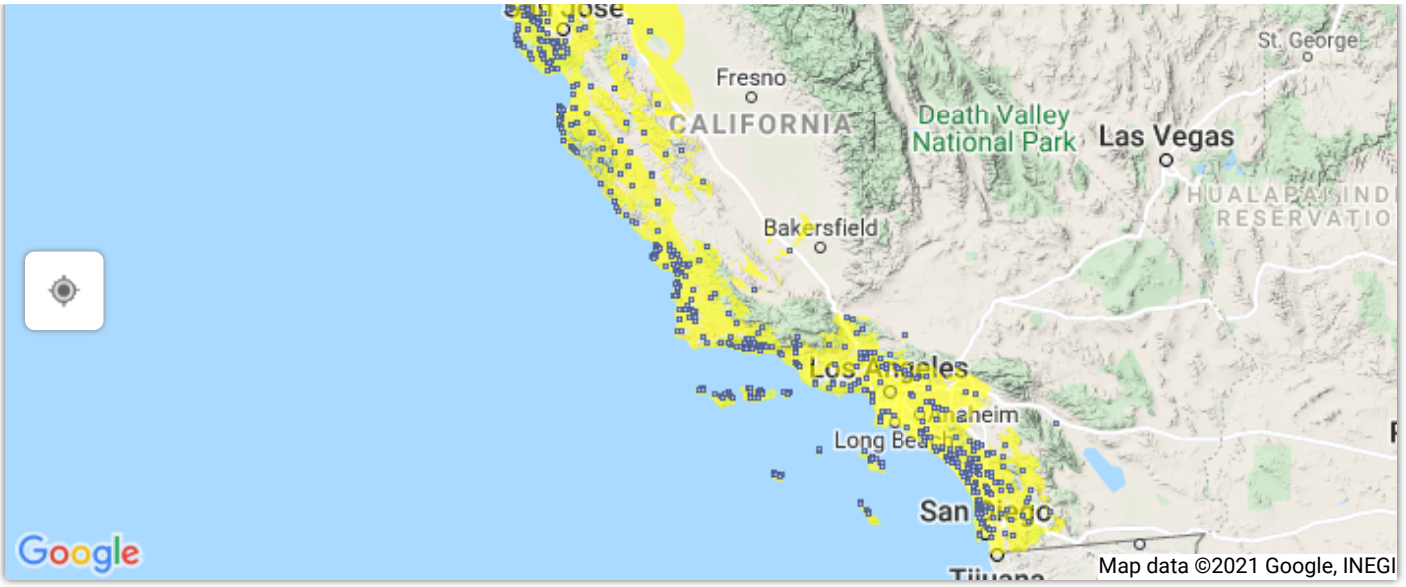

67 Nurseries Carry This Plant

About Coyote Bush (Baccharis pilularis)

Names include Coyote Brush (or Bush), Chaparral Broom, and Bush Baccharis. It is a common shrub in the Asteraceae that grows in California, Oregon, and Baja California. There are two subspecies. Ssp. pilularis is more common along the central coast. Ssp. consanguinea is found all along the coast and inland to the Coast Ranges and the foothills of the Sierras. All forms of this shrub are generally 1-3 meters in height. It is smooth and generally sticky. The stems are prostrate to erect which branches spreading or ascending. The leaves are 8-55 millimeters long with three principal veins and have profuse, white or yellow, rayless flowers that bloom in early winter. They are found in a variety of habitats, from coastal bluffs to oak woodlands.

Coyote Brush is extremely easy to grow in landscape applications. It tolerates summer water up to weekly, but naturalizes easily also. It is said to be fire resistant. The form is highly variable, ranging from upright to mounding to prostrate. Several forms available in native plant nurseries make an excellent groundcover. Named varieties include 'Twin Peaks', 'Santa Ana' and 'Pigeon Point'.Tolerant of recycled water.
To learn more, visit the Jepson Herbarium's YouTube channel and watch a short video about this species.
https://www.youtube.com/watch?v=NFE8DNjGUnE&t=11s

Plant Description

Plant Type
Shrub

Size
1.5 - 10 ft tall
12 ft wide

Form
Mounding, Spreading

Growth Rate
Fast, Moderate

Dormancy
Evergreen

Fragrance
None

Flower Color
Yellow, Cream, White

Flowering Season
Spring, Winter, Summer, Fall

Wildlife Supported

Very attractive to insects, especially when in flower. It is common to find wasp galls on leaves.

Butterflies & moths hosted (11 confirmed ✓, 18 likely *) SHOW ALL

✓ **Coyote Brush Gall Moth**
Gnorimoschema baccharisella

✓ **Orange Tortrix Moth**
Argyrotaenia franciscana

✓ Bucculatrix variabilis

✓ **Tamarack Looper**
Eupithecia misturata

Landscaping Information

Sun Moisture Summer Irrigation Nurseries

Sun
Full Sun, Part Shade

Moisture
Very Low, Low

Summer Irrigation
Max 1x / week once established

Nurseries
Carried by 67

Ease of Care
Very Easy

Soil Drainage
Fast, Medium, Slow

Soil Description
Tolerant of a variety of soils including sand, clay and alkaline. Soil PH: 5.0 - 8.0

Common uses
Bank Stabilization, Groundcovers, Hedges, Butterfly Gardens, Deer Resistant, Bird Gardens, Bee Gardens

Companion Plants
Good with oaks, Toyon, Coffeeberry species, Manzanita species, Ceanothus species, sages, and most other chaparral species

Maintenance
The upright form can be pruned to be tree-like if desired. The ground cover forms should be pruned annually if a neat appearance is desired. Some may even be mowed.

Propagation?
Nursery plants are usually male clones to avoid the fluffy plumes which some people may be allergic to. If you have both male and female plants in close proximity, you will get seedlings. For propagating by seed: No treatment.

Sunset Zones?
5*, 7, 8, 9, 14*, 15*, 16*, 17*, 18, 19*, 20*, 21*, 22*, 23*, 24*

Natural Setting

Site Type
Bluffs, hills, foothills and flats as a component of chaparral or coastal sage scrub

Climate
Annual Precipitation: 3.6" - 123.6", Summer Precipitation: 0.15" - 3.72", Coldest Month: 39.7" - 59.0", Hottest Month: 56.7" - 87.9", Humidity: 0.01" - 38.93", Elevation: -152" - 6046"

Alternative Names

Common Names: Coyote Brush, Coyotebrush, Dwarf Chaparral Broom

Links: Jepson eFlora Taxon Page CalPhotos Wikipedia Calflora

California Native Plant Society
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Menzies' Goldenbush
Isocoma menziesii

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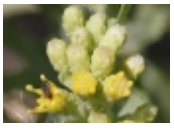



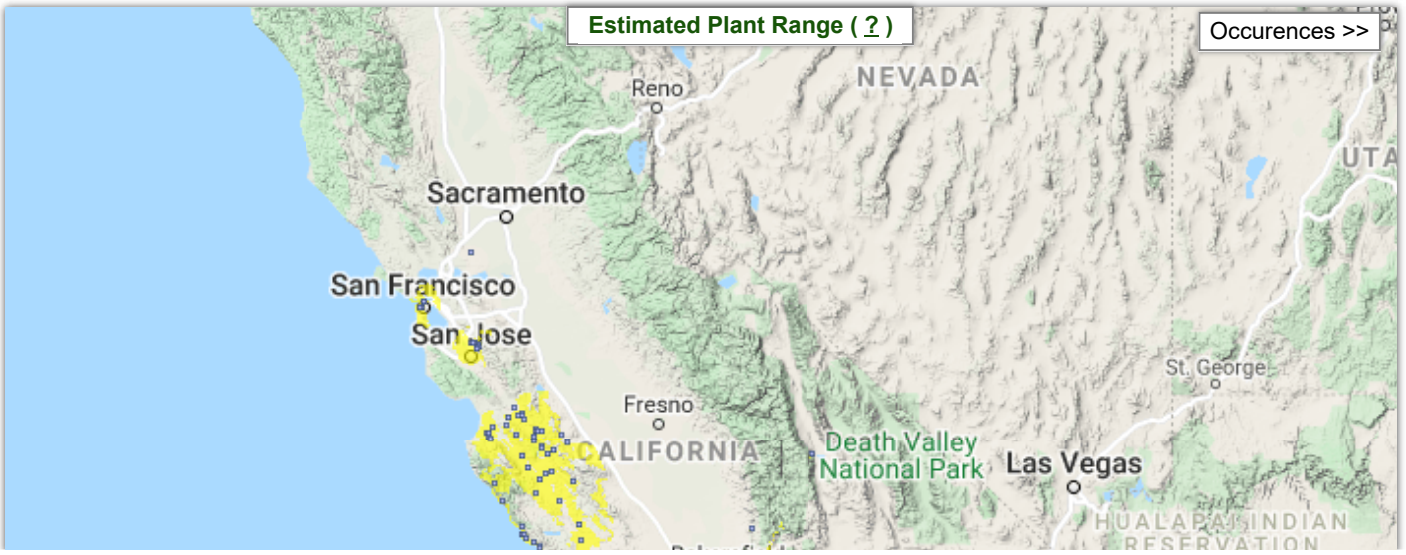

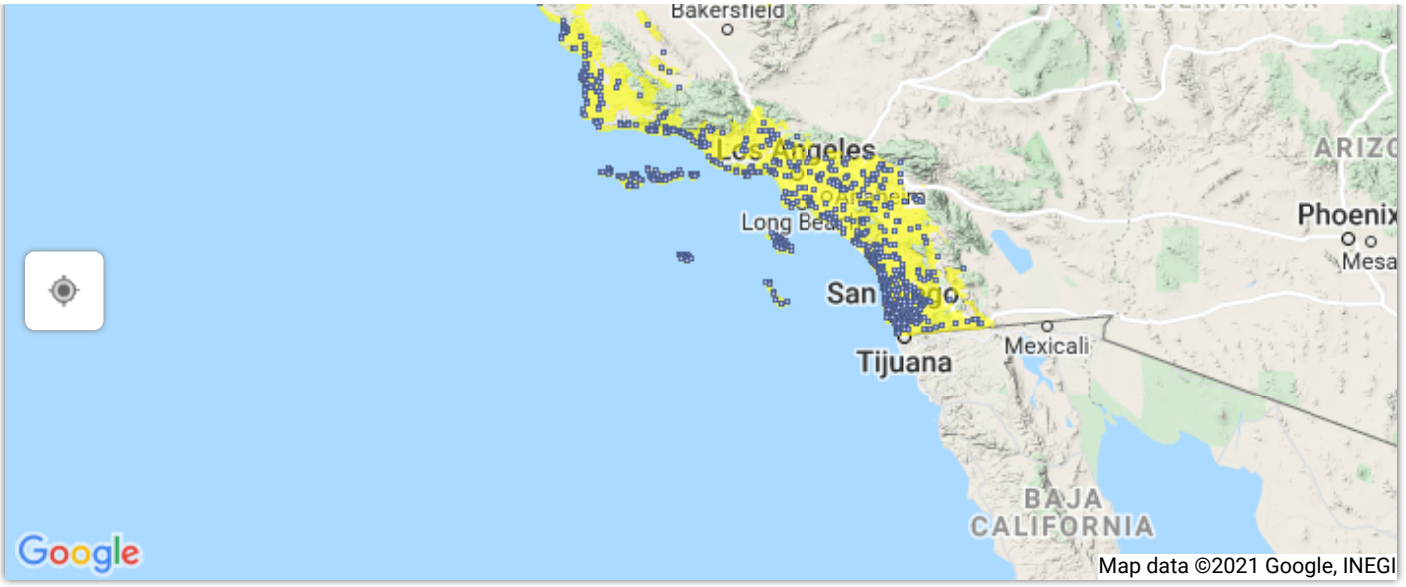

18 Nurseries Carry This Plant

About Menzies' Goldenbush (Isocoma menziesii)

Isocoma menziesii is a species of flowering plant in the Asteraceae (Sunflower) family known by the common name Menzies' goldenbush. It is native to central and southern California and Baja, where it grows in coastal and inland habitat such as coastal strand and coastal sage scrub, particularly in sandy soils. This is a subshrub forming a matted bush reaching up to one meter tall. The erect branching stems may be hairless to woolly, are generally hairy, and vary in color from gray-green to reddish-brown. The leaves are oval-shaped to somewhat rectangular, gray-green and sometimes hairy, and 1 to 5 centimeters long with stumpy teeth along the edges. The abundant flowers are held in clusters of thick flower heads. Each head is a capsule with layers of thick, pointed, greenish phyllaries. The head is filled with large, protruding, cylindrical yellow disc florets with long stigmas. It is useful in restoration projects. Because of it very long bloom time it is a good choice for coastal gardens in the southern part of the state.

Plant Description

Plant Type
Shrub

Size
1.6 - 3.3 ft tall
5 ft wide

Form
Spreading

Dormancy
Summer Semi-Deciduous

Flower Color
Yellow

Flowering Season
Spring, Summer, Fall

Wildlife Supported

Numerous insects including butterflies

Butterflies & moths hosted (7 likely *) SHOW ALL


* **Sunflower Moth**
Homoeosoma electella


* **Orange Tortrix Moth**
Argyrotaenia franciscana


* Schinia erosa


* Sonia vovana

Landscaping Information

Sun
Part Shade, Full Sun

Moisture
Low

Summer Irrigation
Max 2x / month once established

Nurseries
Carried by 18

Ease of Care
Very Easy

Cold Tolerance
Tolerates cold to 0°

Soil Drainage
Fast, Medium

F

Soil Description
Typically sandy. Soil PH: 6.0 - 7.5

Common uses
Groundcovers, Butterfly Gardens, Bee Gardens

Companion Plants
Use with low growing coastal species such as Verbena (Abronia sp.), Sagebrush (Artemisia californica or pycnocephala), Morningglory (Calystegia macrostegia or soldanella), PrimRose (Camissoniopsis sp.), Cobweb Thistle (Cirsium occidentale), Clarkia sp., Seacliff Buckwheat (Eriogonum parvifolium), Western Wallflower (Erysimum capitatum), Lupine (Lupinus sp.), and Cardinal Catchfly (Silene laciniata)

Natural Setting

Site Type
Coastal bluffs and other sandy places near the coast and extending to some inland canyons and slopes

Climate
Annual Precipitation: 7.2" - 46.5", Summer Precipitation: 0.14" - 1.65", Coldest Month: 37.7" - 57.3", Hottest Month: 60.0" - 83.4", Humidity: 0.68" - 34.96", Elevation: -30" - 5181"

Alternative Names

Botanical Names: Haplopappus venetus
Common Names: White-flowered Goldenbush

Sources include: Wikipedia. All text shown in the "About" section of these pages is available under the Creative Commons Attribution-ShareAlike License. Plant observation data provided by the participants of the California Consortia of Herbaria, Sunset information provided by Jepson Flora Project. Propogation from seed information provided by the Santa Barbara Botanical Garden from "Seed Propagation of Native California Plants" by Dara E. Emery. Sources of plant photos include CalPhotos, Wikimedia Commons, and independent plant photographers who have agreed to share their images with Calscape. Other general sources of information include Calflora, CNPS Manual of Vegetation Online, Jepson Flora Project, Las Pilitas, Theodore Payne, Tree of Life, The Xerces Society, and information provided by CNPS volunteer editors, with special thanks to Don Rideout. Climate data used in creation of plant range maps is from PRISM Climate Group, Oregon State University, using 30 year (1981-2010) annual "normals" at an 800 meter spatial resolution.

Links: Jepson eFlora Taxon Page CalPhotos Wikipedia Calflora

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Restore Nature One Garden at a Time

Bladderpod
Peritoma arborea

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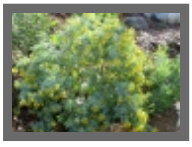
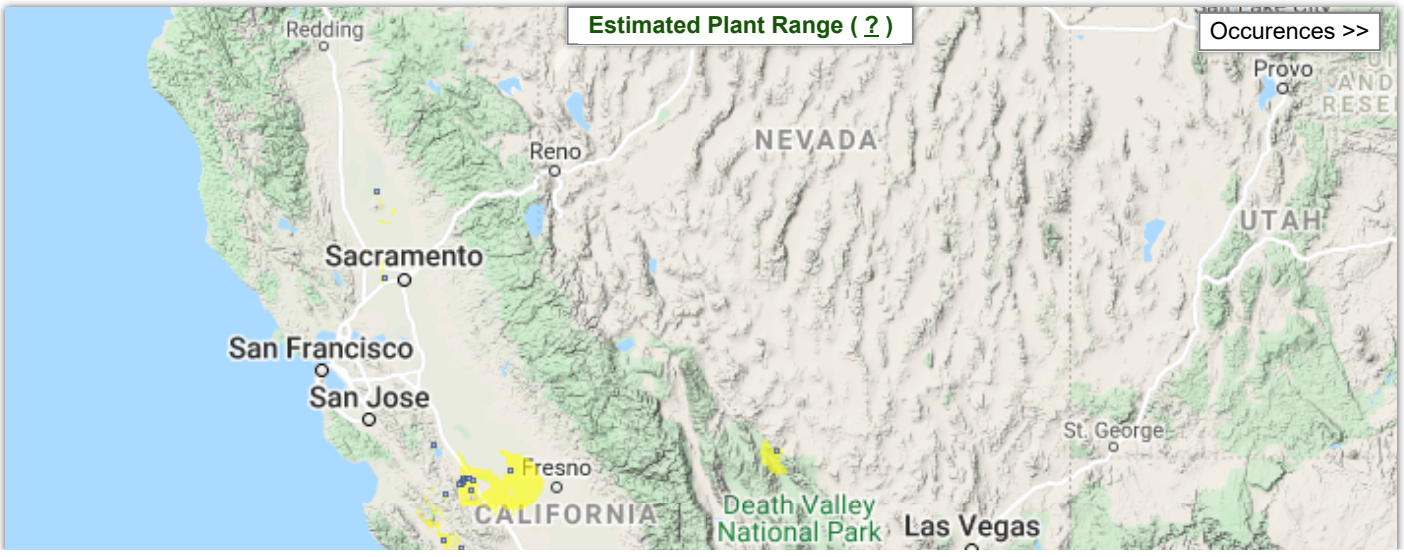
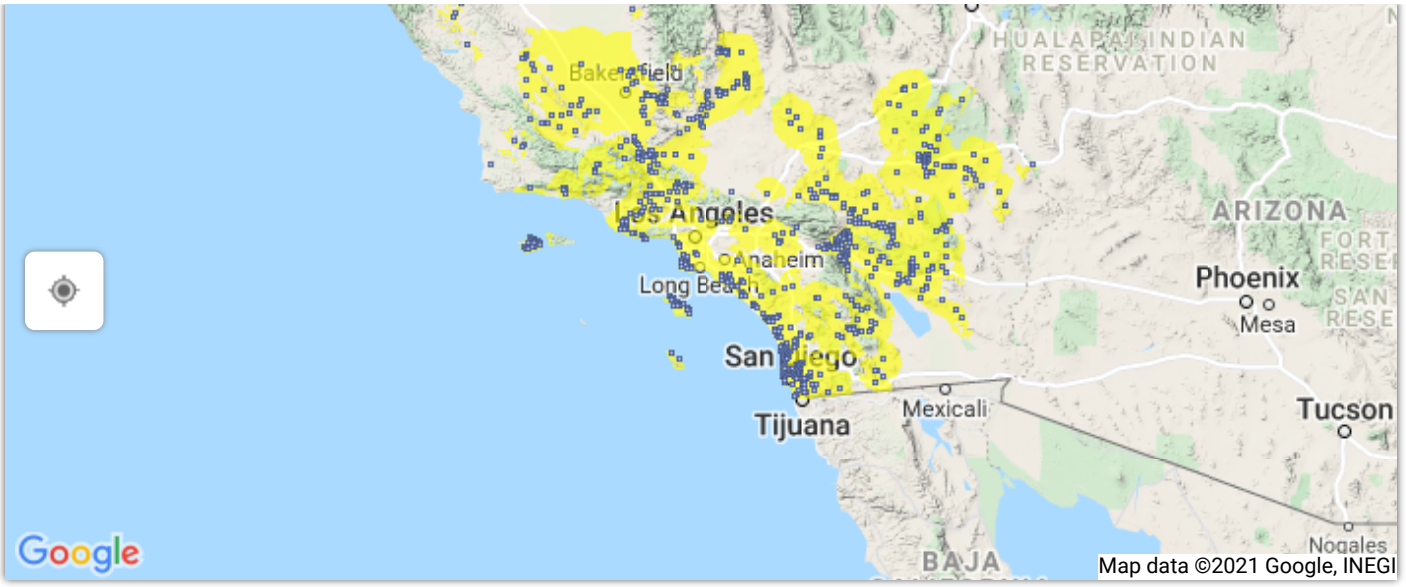






40 Nurseries Carry This Plant

About Bladderpod (Peritoma arborea)

Bladder Pod is a species of the Caper family also known by the common names burrofat, and California Cleome. It is native to California (primarily southern) and Baja California where it grows in a variety of habitats from coastal bluffs to desert arroyos. It is a densely branching shrub reaching one half to two meters in height. Its leaves are made up of three equal leaf-like leaflets, each a long, pointed oval one to four centimeters long. The plant produces abundant flower clusters at the ends of the stem branches, each a cluster of bright yellow flowers. Each flower has usually four petals and six whiskery protruding stamens with curling tips holding the anthers. At the middle is a long, protruding style which holds the developing fruit at its tip. The fruit is an inflated capsule about 4 centimeters long. It is edible. It is smooth and green when new, aging to light brown. A typical flower cluster bears a number of unopened flower buds at its tip, open flowers proximal to the buds, and maturing fruits which have shed their flowers below these.

Bladderpod is one of the easiest California natives to grow in landscape applications. It tolerates weekly summer water but can also get by with only natural rainfall. They are easy to grow from seeds, usually growing in a year to 3 feet tall. The readily self seed, and once you have a few mature plants in your garden, expect new seedlings to pop up each winter. This tough plant grows well even on south-facing slopes, alkaline soils and salty conditions. The flowers are beautiful, bright yellow, and stay on the plant most of the year, and attract bees, butterflies and hummingbirds. It is highly fragrant, though the public is divided on whether it is pleasant or unpleasant.

Plant Description

Plant Type
Shrub

Size
1.6 - 6.6 ft tall
6 ft wide

Form
Mounding

Growth Rate
Fast

Dormancy
Evergreen

Fragrance
Fragrant - Pleasant, Fragrant - Unpleasant

Flower Color
Yellow

Flowering Season
Spring, Summer, Fall, Winter

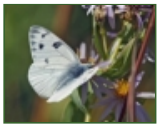
Wildlife Supported

It particularly attracts harlequin beetles which eat the leaves

Butterflies & moths hosted (4 likely *) SHOW ALL

* 
Checkered White
Pontia protodice

* 
Becker's White
Pontia beckerii

* 
Western White
Pontia occidentalis

* 
Eidophasia dammersi

Landscaping Information

Sun
Full Sun

Moisture
Very Low, Low

Summer Irrigation
Max 1x / month
once established

Nurseries
Carried by 40

Ease of Care
Very Easy

Soil Drainage
Fast

Soil Description
Prefers well drained soils such as sand or decomposed granite. Tolerates Saline Soil. Soil PH: 7.0 - 9.0

Common uses
Bank Stabilization, Deer Resistant, Bird Gardens, Hummingbird Gardens, Butterfly Gardens

Companion Plants
A huge range of potential companions including Sand Verbena (Abronia species), California Sea Lavender (Limonium californicum), California Sagebrush (Artemisia californica), Chamise (Adenostema fasciculatum), Brittlebush (Encelia species), Joshua Tree (Yucca brevifolia), Indian Mallow (Abutilon palmeri), Rush Milkweed (Asclepias subulata), Buckwheat (Eriogonum species), Ocotillo (Fouquieria splendens), Chuparosa (Justicia californica), Apricot Mallow (Sphaeralcea ambigua), Yucca species, numerous cactus species

Maintenance
If harlequin beetles become a problem they can be removed by hand or sprayed off with a garden hose. It is usually not possible to eliminate them entirely.

Propagation?
By seed.

Sunset Zones?
8, 9, 12, 13, 14*, 15, 16, 17, 19*, 20*, 21*, 22*, 23*, 24*

Natural Setting

Site Type
This plant is unique in occurring in the immediate vicinity of the seashore, inland valleys and foothills, as well as in high desert and low desert. Near the coast it is typically found on dry slopes in coastal sage scrub. In the high desert - Joshua Tree woodland. In the low desert - Creosote Bush scrub

Climate
Annual Precipitation: 3.0" - 37.4", Summer Precipitation: 0.13" - 2.67", Coldest Month: 34.3" - 60.8", Hottest Month: 61.8" - 89.1", Humidity: 0.88" - 41.57", Elevation: -136" - 6023"

Alternative Names

Botanical Names: Isomeris arborea,Cleome arborea,Cleome isomeris
Common Names: Bladder Pod, Burrofat, California Cleome, Coastal Bladderpod

Links: Jepson eFlora Taxon Page CalPhotos Wikipedia Calflora

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Black Sage
Salvia mellifera

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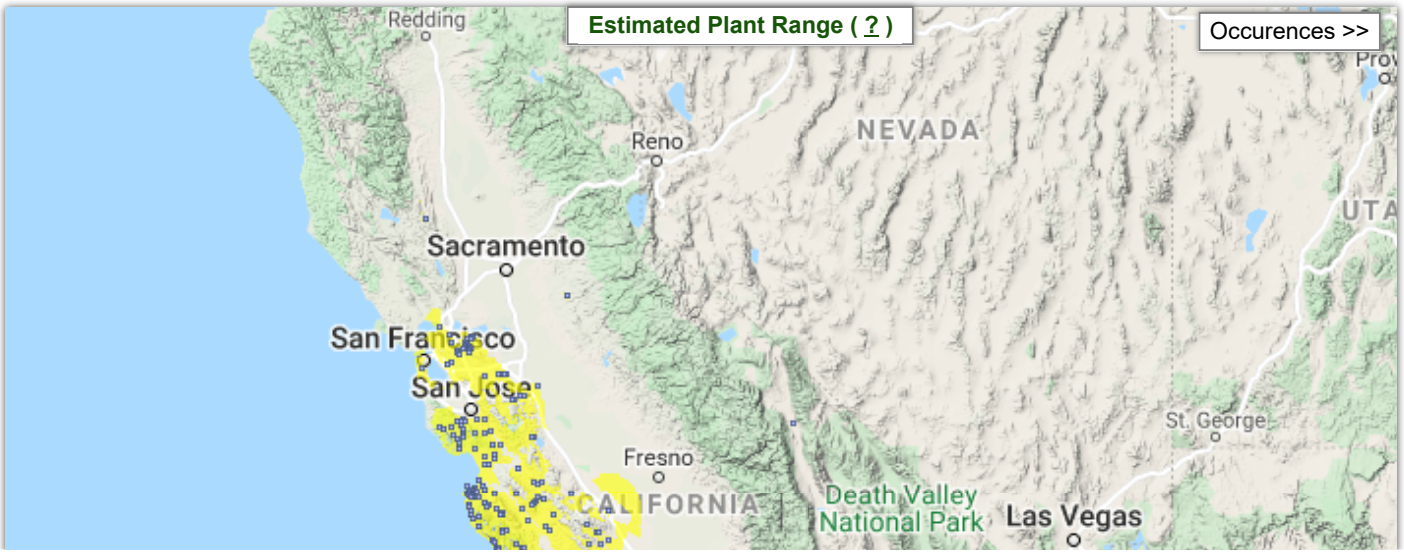
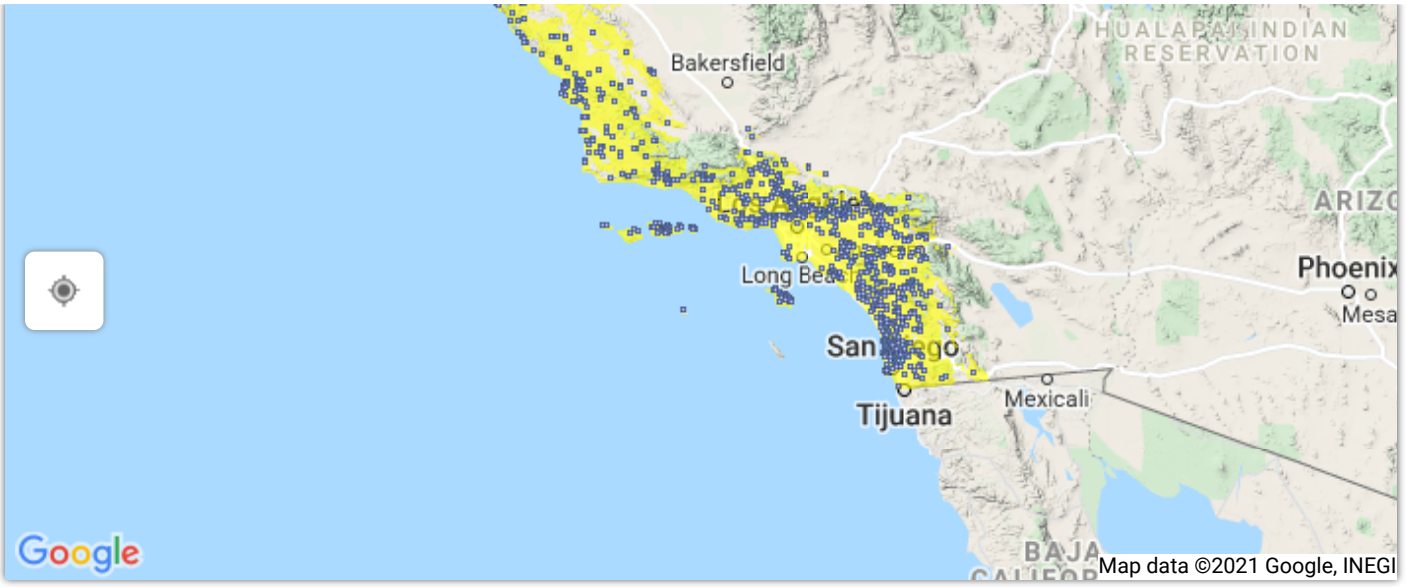




65 Nurseries Carry This Plant

About Black Sage (Salvia mellifera)

Black sage is the most common sage in California, and one of the keystone species of the coastal sage scrub plant community in the southern half of the state. Black sages grows quickly up to 3 feet in height, but mature specimens can reach up to 6 feet in height and 10 feet in width. The plant has attractive dark green leaves, with raised texture that looks somewhat like a fingerprint pattern when viewed closely. The leaves are 1-3 inches long. The upper surface of the leaf is somewhat smooth, while the lower surface of the leaf is hairy. It is semi-deciduous, depending on the location and severity of drought. Leaves curl during the summer drought instead of dropping off. The plant is highly aromatic. Flower occurs in.5-1.5" wide clusters. Flower colors vary from white, to pale blue, to lavender, or rarely to pale rose color. The plant flowers are an important food source for butterflies and hummingbirds. The seeds are an important food for quail and other birds.

Black sage is able to grow on a variety of different soils, including sandstone, shale, granite, serpentinite, and gabbro or basalt. It requires a minimum of 15" and a maximum of 40" of rain per year. In the drier part of its range, black sage is happier on flats, mesas or slope bottoms where there is slightly more moisture retained in the soil. Black sages tend to turn yellow and eventually die in poorly draining sites. The plant prefers sun, but tolerates part shade. The normal form of black sage can get very large. Prostrate forms of black sage grow to just 1-2 feet tall by 6 feet in width and tend to be denser than the normal form, making an excellent ground cover.

Plant Description

Plant Type
Shrub

Size
3 - 6 ft tall
10 ft wide

Form
Mounding

Growth Rate
Moderate

Dormancy
Evergreen, Summer Semi-Deciduous, Summer Deciduous,

Fragrance
Fragrant - Pleasant

Flower Color
Blue, Lavender, White

Flowering Season
Winter, Spring, Summer

Wildlife Supported

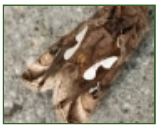
Insects, especially bees and butterflies, and hummingbirds are attracted to the flowers. Quail, Towhees and other birds are attracted to the seeds.

Butterflies & moths hosted (2 confirmed ✓, 8 likely *) SHOW ALL

✓ 
Gray Hairstreak
Strymon melinus

✓ 
Pherne subpunctata

* 
Alfalfa Looper Moth
Autographa californica

* 
Bilobed Looper Moth
Megalographa biloba

Landscaping Information

Sun
Full Sun

Moisture
Extremely Low, Very Low

Summer Irrigation
Max 2x / month once established

Nurseries
Carried by 65

Ease of Care
Very Easy

Cold Tolerance
Tolerates cold to 30° F

Soil Drainage
Fast, Medium

Soil Description
Tolerates a variety of soils although it is happier with good drainage. Tolerates Gabro Soil,Tolerates Serpentine Soil. Soil PH: 4.0 - 8.0

Common uses
Bank Stabilization, Groundcovers, Hedges, Deer Resistant, Bird Gardens, Butterfly Gardens, Bee Gardens

Companion Plants
Laurel Sumac (Malosma laurina), Lemonade Berry (Rhus integrifolia), Coast Live Oak (Quercus agrifolia), Scrub Oak (Quercus berberidifolia), Woolly Bluecurls (Trichostema lanatum), Climbing Penstemon (Keckiella cordifolia), California Encelia (Encelia californica), California Buckwheat (Eriogonum fasciculatum), Coast Sagebrush (Artemisia californica), California Adolphia (Adolphia californica), Diplacus puniceus, Chaparral Bush Mallow, White Coast Ceanothus (Ceanothus verrucosus) Hollyleaf Redberry (Rhamnus species), Manzanita (Arctostaphylos species), Yucca species, Dudleya species and cactus species

Propagation?
For propagating by seed: No treatment; sow outdoors in early fall. Germination may be poor. The following alternative treatments may improve germination: stratify 3 mos. or soak in 400 ppm GA3 1 hr., then dry and sow (Betty Atwater, personal communication 1981).

Sunset Zones?
7*, 8, 9, 14*, 15*, 16*, 17*, 18, 19*, 20*, 21*, 22*, 23*, 24*

Natural Setting

Site Type
Flats, mesas, foothills, canyons, shallow slopes, and slope bottoms as part of coastal sage scrub and chaparral

Climate
Annual Precipitation: 4.5" - 51.2", Summer Precipitation: 0.14" - 2.64", Coldest Month: 34.4" - 60.4", Hottest Month: 58.6" - 88.3", Humidity: 0.41" - 42.82", Elevation: -18" - 6692"

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California Sagebrush
Artemisia californica

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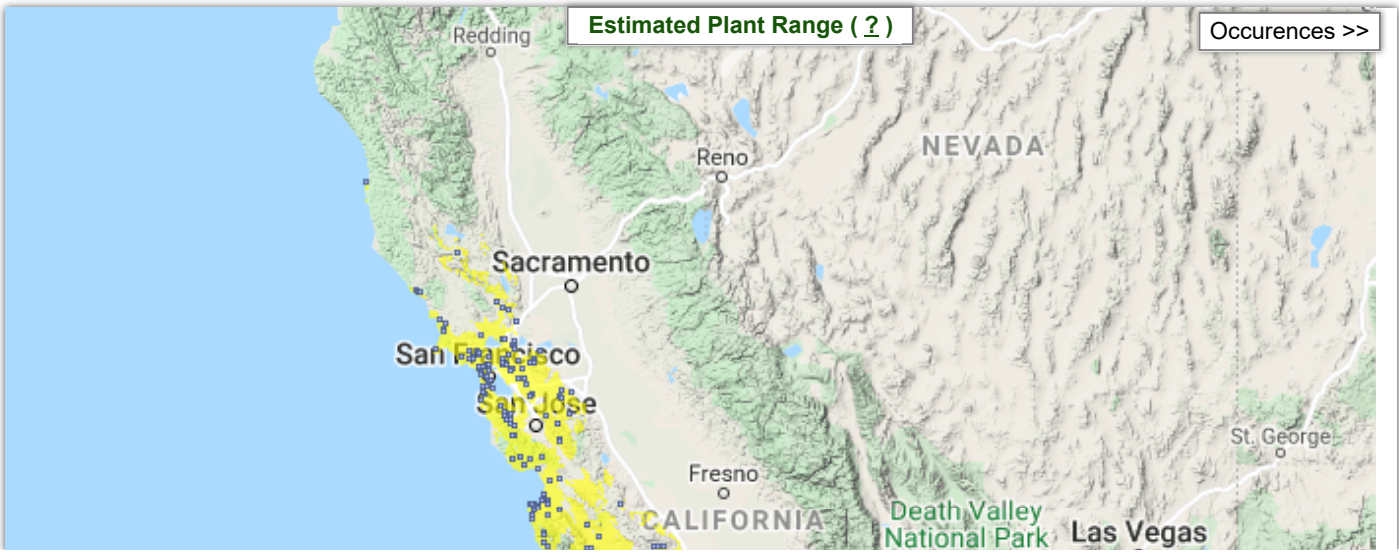
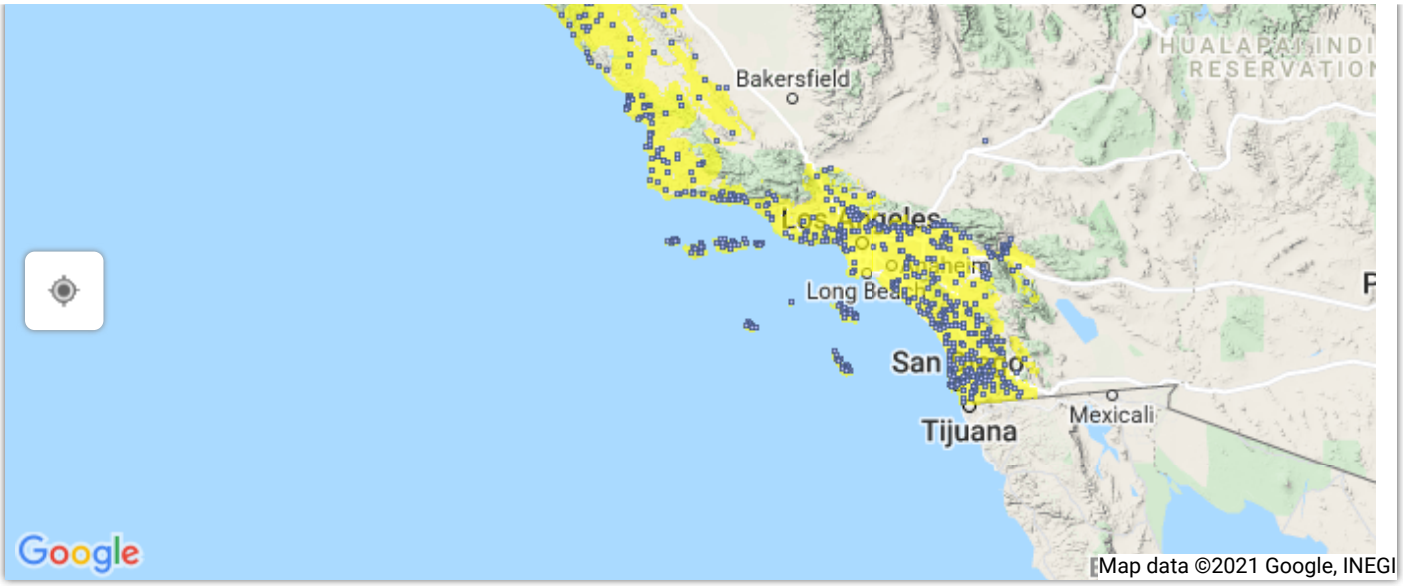




61 Nurseries Carry This Plant

About California Sagebrush (Artemisia californica)

California sagebrush, of the Asteraceae family, is a highly aromatic shrub that grows in coastal sage scrub, coastal strand, chaparral, and dry foothill communities, from sea level to 1000 meters (3300 feet). It is native to California and Baja California. The plant branches from the base and grows out from there, becoming rounded. Plant height varies significantly, ranging from low growing forms as little as.3 meters (1 foot) tall up to towering forms of up to 2.5 meters (8 feet) tall. The stems of the plant are slender, flexible, and smooth (hairless) or canescent (fuzzy). The leaves range from one to 10 centimeters long and are divided with 2-4 threadlike lobes less than five centimeters long. Their leaves are hairy and light green to gray in color; the margins of the leaves curl under. The flower clusters are leafy, narrow, and sparse. The pistillate flowers range in number from 6 to 10 and the disk flowers range from 15 to 30, and they are generally yellowish in appearance, but sometimes red. The fruits produced are resinous achenes up to 1.5 millimeters long.

This plant is extremely drought tolerant, and will often be the only plant growing on the driest, south-facing slopes in the driest parts of it's range. It's tough and easy to grow, fast growing up to 3 feet tall. It can handle occasional summer water, or no water at all during the summer. It can get weedy, but its foliage is a beautiful silvery color when backlit by the sun. This is one of the foundation plants of the coastal sage scrub community and the preferred plant of the California gnatcatcher, a threatened species. There are several selections available for the garden, some of which can be used as groundcovers.

Plant Description

Plant Type
Shrub

Size
1 - 8 ft tall
4 ft wide

Form
Mounding, Rounded, Spreading

Growth Rate
Fast

Dormancy
Summer Deciduous

Fragrance
Fragrant - Pleasant

Flower Color
Cream, White, Yellow

Flowering Season
Spring, Summer, Fall

Wildlife Supported

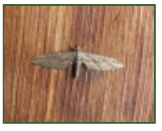
California Gnatcatcher, Quail, various other birds, insects

Butterflies & moths hosted (5 confirmed ✓, 21 likely *) SHOW ALL


✓ Pero macdunnoughi


✓ Plataea personaria


✓ Aseptis susquesa


✓ Eupithecia acutipennis

Landscaping Information

Sun
Full Sun

Moisture
Extremely Low, Very Low

Summer Irrigation
Max 1x / month once established

Nurseries
Carried by 61

Ease of Care
Very Easy

Cold Tolerance
Tolerates cold to 20° F

Soil Drainage
Fast, Medium, Slow

Soil Description
Usually found on very dry slopes or sandy soil with low nutrient content, although it is also said to tolerate clay.
Soil PH: 5.0 - 8.0

Common uses
Bank Stabilization, Groundcovers, Butterfly Gardens, Deer Resistant, Bird Gardens

Companion Plants
Black Sage, White Sage, California Encelia, Chamise, Coyote Brush, California Buckwheat, Sticky Monkeyflower, Woolly Bluecurls, Scrub Oaks, Toyon, Lemonadeberry, Yucca spp, various cactus species

Sunset Zones?
7, 8, 9, 14*, 15*, 16*, 17*, 18*, 19*, 20*, 21*, 22*, 23*, 24*

Natural Setting

Site Type
Dry slopes and flats, often south facing.

Climate
Annual Precipitation: 3.4" - 63.5", Summer Precipitation: 0.14" - 1.67", Coldest Month: 39.8" - 59.4", Hottest Month: 57.7" - 87.8", Humidity: 0.29" - 38.63", Elevation: -22" - 4748"

Alternative Names

Common Names: Coast Sagebrush, Coastal Sage Brush, Coastal Sagebrush

Links: Jepson eFlora Taxon Page CalPhotos Wikipedia Calflora

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Bladderpod
Peritoma arborea

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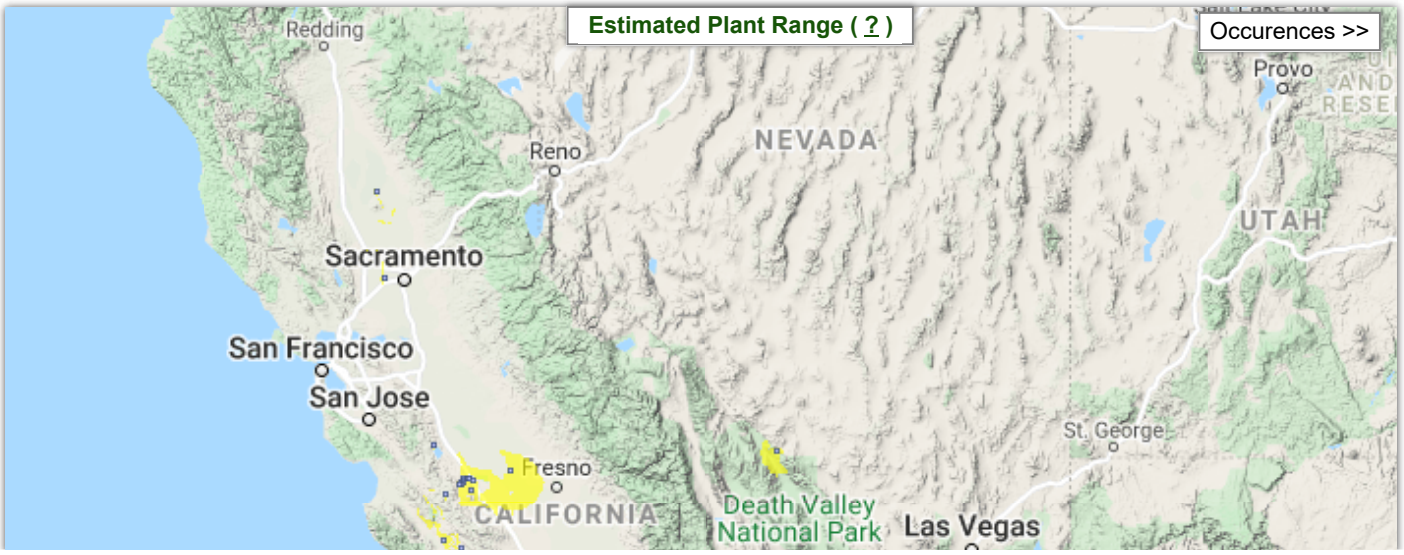
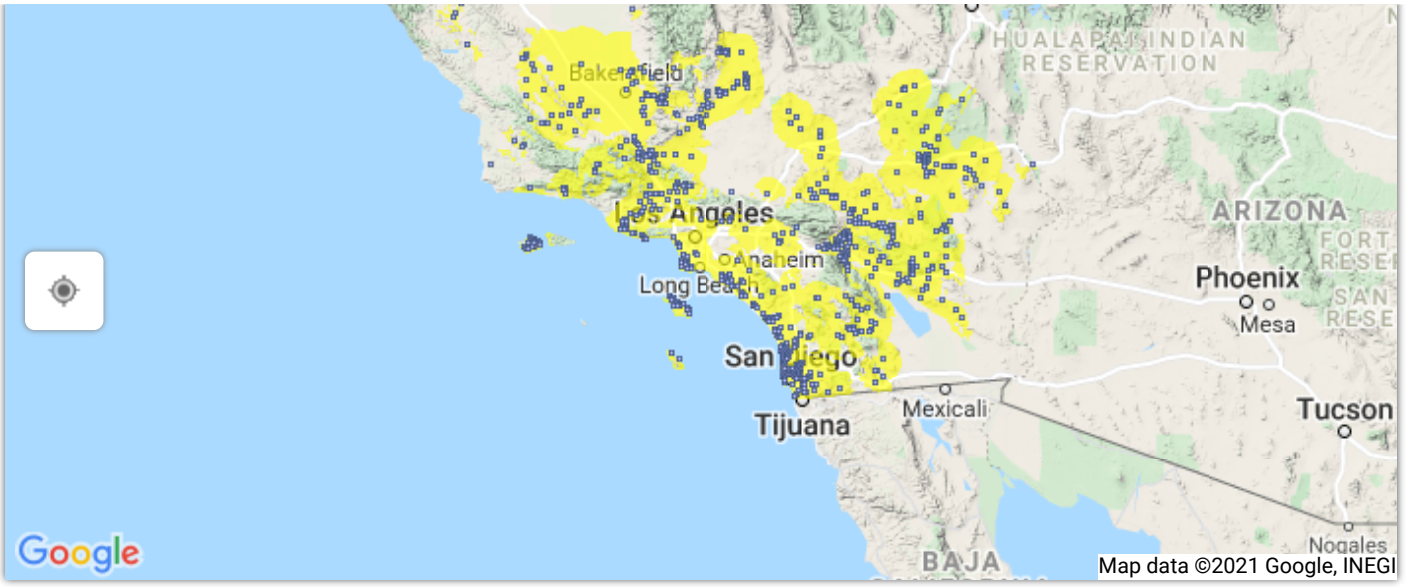




40 Nurseries Carry This Plant

About Bladderpod (Peritoma arborea)

Bladder Pod is a species of the Caper family also known by the common names burrofat, and California Cleome. It is native to California (primarily southern) and Baja California where it grows in a variety of habitats from coastal bluffs to desert arroyos. It is a densely branching shrub reaching one half to two meters in height. Its leaves are made up of three equal leaf-like leaflets, each a long, pointed oval one to four centimeters long. The plant produces abundant flower clusters at the ends of the stem branches, each a cluster of bright yellow flowers. Each flower has usually four petals and six whiskery protruding stamens with curling tips holding the anthers. At the middle is a long, protruding style which holds the developing fruit at its tip. The fruit is an inflated capsule about 4 centimeters long. It is edible. It is smooth and green when new, aging to light brown. A typical flower cluster bears a number of unopened flower buds at its tip, open flowers proximal to the buds, and maturing fruits which have shed their flowers below these.

Bladderpod is one of the easiest California natives to grow in landscape applications. It tolerates weekly summer water but can also get by with only natural rainfall. They are easy to grow from seeds, usually growing in a year to 3 feet tall. The readily self seed, and once you have a few mature plants in your garden, expect new seedlings to pop up each winter. This tough plant grows well even on south-facing slopes, alkaline soils and salty conditions. The flowers are beautiful, bright yellow, and stay on the plant most of the year, and attract bees, butterflies and hummingbirds. It is highly fragrant, though the public is divided on whether it is pleasant or unpleasant.

Plant Description

Plant Type
Shrub

Size
1.6 - 6.6 ft tall
6 ft wide

Form
Mounding

Growth Rate
Fast

Dormancy
Evergreen

Fragrance
Fragrant - Pleasant, Fragrant - Unpleasant

Flower Color
Yellow

Flowering Season
Spring, Summer, Fall, Winter

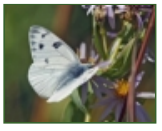
Wildlife Supported

It particularly attracts harlequin beetles which eat the leaves

Butterflies & moths hosted (4 likely *) SHOW ALL

* 
Checkered White
Pontia protodice

* 
Becker's White
Pontia beckerii

* 
Western White
Pontia occidentalis

* 
Eidophasia dammersi

Landscaping Information

Sun
Full Sun

Moisture
Very Low, Low

Summer Irrigation
Max 1x / month
once established

Nurseries
Carried by 40

Ease of Care
Very Easy

Soil Drainage
Fast

Soil Description
Prefers well drained soils such as sand or decomposed granite. Tolerates Saline Soil. Soil PH: 7.0 - 9.0

Common uses
Bank Stabilization, Deer Resistant, Bird Gardens, Hummingbird Gardens, Butterfly Gardens

Companion Plants
A huge range of potential companions including Sand Verbena (Abronia species), California Sea Lavender (Limonium californicum), California Sagebrush (Artemisia californica), Chamise (Adenostema fasciculatum), Brittlebush (Encelia species), Joshua Tree (Yucca brevifolia), Indian Mallow (Abutilon palmeri), Rush Milkweed (Asclepias subulata), Buckwheat (Eriogonum species), Ocotillo (Fouquieria splendens), Chuparosa (Justicia californica), Apricot Mallow (Sphaeralcea ambigua), Yucca species, numerous cactus species

Maintenance
If harlequin beetles become a problem they can be removed by hand or sprayed off with a garden hose. It is usually not possible to eliminate them entirely.

Propagation?
By seed.

Sunset Zones?
8, 9, 12, 13, 14*, 15, 16, 17, 19*, 20*, 21*, 22*, 23*, 24*

Natural Setting

Site Type
This plant is unique in occurring in the immediate vicinity of the seashore, inland valleys and foothills, as well as in high desert and low desert. Near the coast it is typically found on dry slopes in coastal sage scrub. In the high desert - Joshua Tree woodland. In the low desert - Creosote Bush scrub

Climate
Annual Precipitation: 3.0" - 37.4", Summer Precipitation: 0.13" - 2.67", Coldest Month: 34.3" - 60.8", Hottest Month: 61.8" - 89.1", Humidity: 0.88" - 41.57", Elevation: -136" - 6023"

Alternative Names

Botanical Names: Isomeris arborea,Cleome arborea,Cleome isomeris
Common Names: Bladder Pod, Burrofat, California Cleome, Coastal Bladderpod

Links: Jepson eFlora Taxon Page CalPhotos Wikipedia Calflora

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Ashyleaf Buckwheat
Eriogonum cinereum

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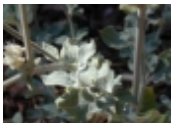
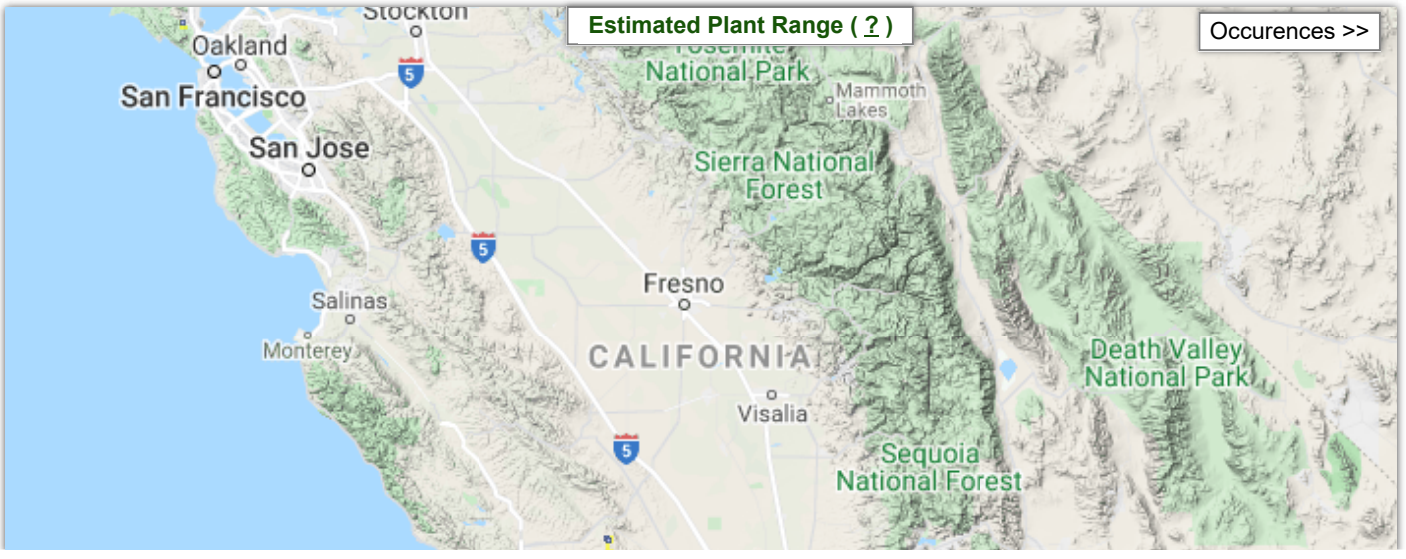


28 Nurseries Carry This Plant

About Ashyleaf Buckwheat (Eriogonum cinereum)

Eriogonum cinereum is a species of wild buckwheat known by the common names coastal buckwheat and ashyleaf buckwheat. This shrub is endemic to the coastline of California, where it grows on beaches and bluffs and in coastal scrub and chaparral. This plant may reach up over a meter in height and width and is light silvery gray in color due to the woolly hairs on its stems and foliage. The leaves are wavy-edged ovals one to three centimeters long. The flower clusters stick out from the plant, each with one to several heads of tiny tightly-packed frilly flowers which are usually light brownish-pink in color and quite hairy. This is the foodplant for Euphilotes bernardino, the Bernardino dotted blue butterfly.

Plant Description

Plant Type
Shrub

Size
2 - 4 ft tall
3 - 5 ft wide

Form
Rounded

Growth Rate
Fast

Dormancy
Evergreen

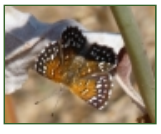
Flower Color
Brown, Yellow

Flowering Season
Winter, Spring, Summer, Fall

Wildlife Supported

Many butterfly species (including Euphilotes bernardino, the Bernardino dotted blue butterfly) and other pollinators including wasps which prey on harmful garden pests! They may attract small mammals and birds who eat the seeds.

Butterflies & moths hosted (3 confirmed ✓, 41 likely *) SHOW ALL

✓ 
Mormon Metalmark
Apodemia mormo

✓ 
Square-spotted Blue
Euphilotes battoides

✓ 
Bernardino Blue
Euphilotes bernardino

* 
Gray Hairstreak
Strymon melinus

Landscaping Information

Sun
Full Sun

Moisture
Extremely Low, Very Low

Summer Irrigation
Max 1x / month once established

Nurseries
Carried by 28

Ease of Care
Moderately Easy

Cold Tolerance
Tolerates cold to 15 - 25° F

Soil Drainage
Fast, Medium, Slow

Soil Description
Adaptable. Soil PH: 6 - 8

Common uses
Bird Gardens, Butterfly Gardens, Bee Gardens

Companion Plants
Plant alongside other natives of the California coastal scrub region, such as California Larkspur (Delphinium californicum), Common Tidy Tips (Layia platyglossa), Maritime Brome (Bromus maritimus), and Monterey Indian Paintbrush (Castilleja latifolia).

Maintenance
Remove dead seed heads in late fall and dead branches during the growing season. Older untidy plants can be pruned back to 8 inches in the fall to reestablish shape.

Propagation?
For propagating by seed: No treatment.

Sunset Zones?
5, 14*, 15*, 16*, 17*, 19, 20, 21, 22*, 23*, 24*

Natural Setting

Site Type
Beaches, bluffs

Climate
Annual Precipitation: 11.4" - 39.3", Summer Precipitation: 0.14" - 1.97", Coldest Month: 35.4" - 56.6", Hottest Month: 61.1" - 77.0", Humidity: 0.93" - 23.07", Elevation: -25" - 8222"

Alternative Names

Common Names: Coastal Buckwheat

Links: Jepson eFlora Taxon Page CalPhotos Wikipedia Calflora

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Bladderpod
Peritoma arborea

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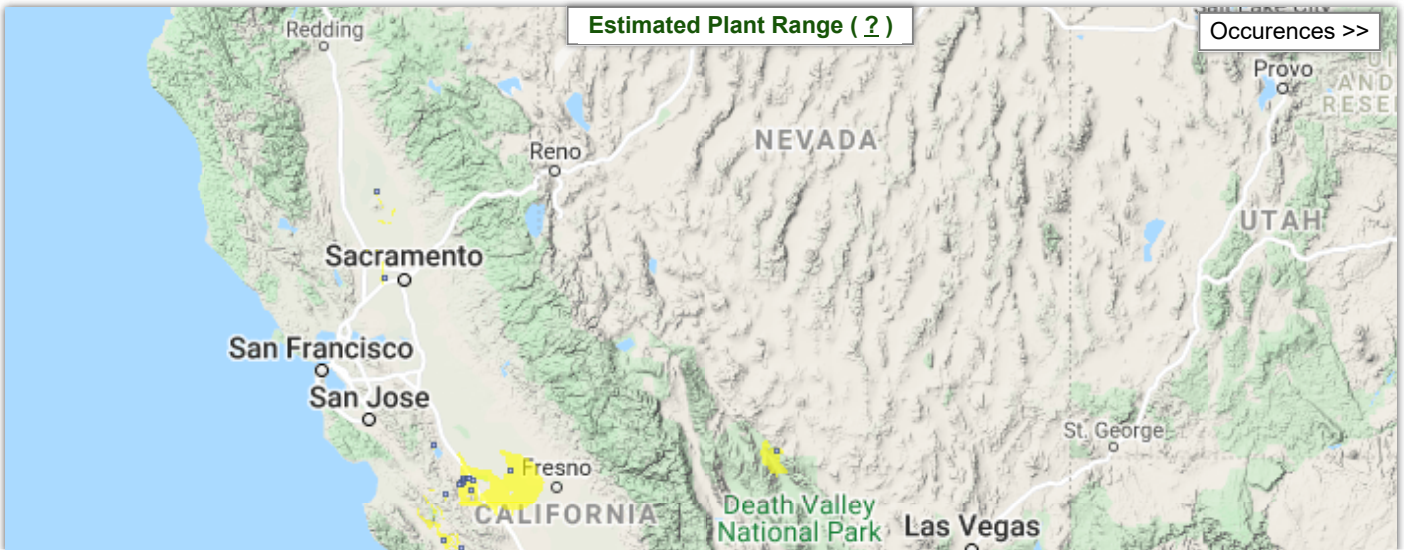
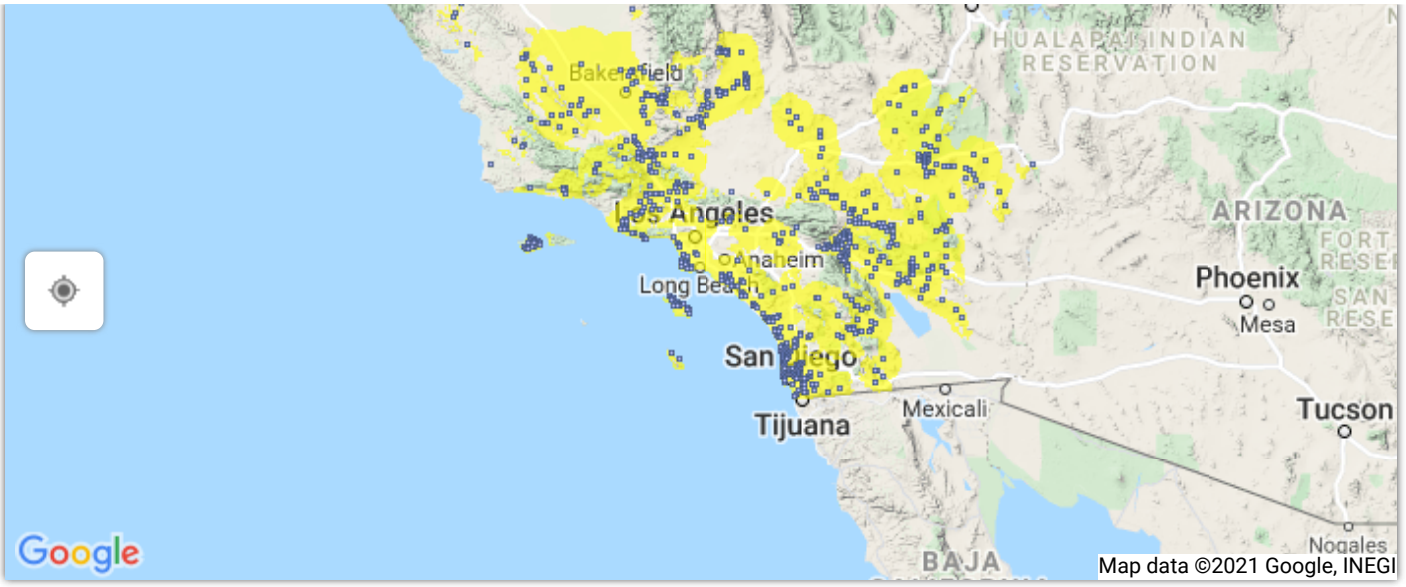




40 Nurseries Carry This Plant

About Bladderpod (Peritoma arborea)

Bladder Pod is a species of the Caper family also known by the common names burrofat, and California Cleome. It is native to California (primarily southern) and Baja California where it grows in a variety of habitats from coastal bluffs to desert arroyos. It is a densely branching shrub reaching one half to two meters in height. Its leaves are made up of three equal leaf-like leaflets, each a long, pointed oval one to four centimeters long. The plant produces abundant flower clusters at the ends of the stem branches, each a cluster of bright yellow flowers. Each flower has usually four petals and six whiskery protruding stamens with curling tips holding the anthers. At the middle is a long, protruding style which holds the developing fruit at its tip. The fruit is an inflated capsule about 4 centimeters long. It is edible. It is smooth and green when new, aging to light brown. A typical flower cluster bears a number of unopened flower buds at its tip, open flowers proximal to the buds, and maturing fruits which have shed their flowers below these.

Bladderpod is one of the easiest California natives to grow in landscape applications. It tolerates weekly summer water but can also get by with only natural rainfall. They are easy to grow from seeds, usually growing in a year to 3 feet tall. The readily self seed, and once you have a few mature plants in your garden, expect new seedlings to pop up each winter. This tough plant grows well even on south-facing slopes, alkaline soils and salty conditions. The flowers are beautiful, bright yellow, and stay on the plant most of the year, and attract bees, butterflies and hummingbirds. It is highly fragrant, though the public is divided on whether it is pleasant or unpleasant.

Plant Description

Plant Type
Shrub

Size
1.6 - 6.6 ft tall
6 ft wide

Form
Mounding

Growth Rate
Fast

Dormancy
Evergreen

Fragrance
Fragrant - Pleasant, Fragrant - Unpleasant

Flower Color
Yellow

Flowering Season
Spring, Summer, Fall, Winter

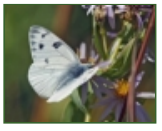
Wildlife Supported

It particularly attracts harlequin beetles which eat the leaves

Butterflies & moths hosted (4 likely *) SHOW ALL

* 
Checkered White
Pontia protodice

* 
Becker's White
Pontia beckerii

* 
Western White
Pontia occidentalis

* 
Eidophasia dammersi

Landscaping Information

Sun
Full Sun

Moisture
Very Low, Low

Summer Irrigation
Max 1x / month
once established

Nurseries
Carried by 40

Ease of Care
Very Easy

Soil Drainage
Fast

Soil Description
Prefers well drained soils such as sand or decomposed granite. Tolerates Saline Soil. Soil PH: 7.0 - 9.0

Common uses
Bank Stabilization, Deer Resistant, Bird Gardens, Hummingbird Gardens, Butterfly Gardens

Companion Plants
A huge range of potential companions including Sand Verbena (Abronia species), California Sea Lavender (Limonium californicum), California Sagebrush (Artemisia californica), Chamise (Adenostema fasciculatum), Brittlebush (Encelia species), Joshua Tree (Yucca brevifolia), Indian Mallow (Abutilon palmeri), Rush Milkweed (Asclepias subulata), Buckwheat (Eriogonum species), Ocotillo (Fouquieria splendens), Chuparosa (Justicia californica), Apricot Mallow (Sphaeralcea ambigua), Yucca species, numerous cactus species

Maintenance
If harlequin beetles become a problem they can be removed by hand or sprayed off with a garden hose. It is usually not possible to eliminate them entirely.

Propagation?
By seed.

Sunset Zones?
8, 9, 12, 13, 14*, 15, 16, 17, 19*, 20*, 21*, 22*, 23*, 24*

Natural Setting

Site Type
This plant is unique in occurring in the immediate vicinity of the seashore, inland valleys and foothills, as well as in high desert and low desert. Near the coast it is typically found on dry slopes in coastal sage scrub. In the high desert - Joshua Tree woodland. In the low desert - Creosote Bush scrub

Climate
Annual Precipitation: 3.0" - 37.4", Summer Precipitation: 0.13" - 2.67", Coldest Month: 34.3" - 60.8", Hottest Month: 61.8" - 89.1", Humidity: 0.88" - 41.57", Elevation: -136" - 6023"

Alternative Names

Botanical Names: Isomeris arborea,Cleome arborea,Cleome isomeris
Common Names: Bladder Pod, Burrofat, California Cleome, Coastal Bladderpod

Links: Jepson eFlora Taxon Page CalPhotos Wikipedia Calflora

California Native Plant Society Calscape
Restore Nature One Garden at a Time

Deergrass
Muhlenbergia rigens

Show All Photos

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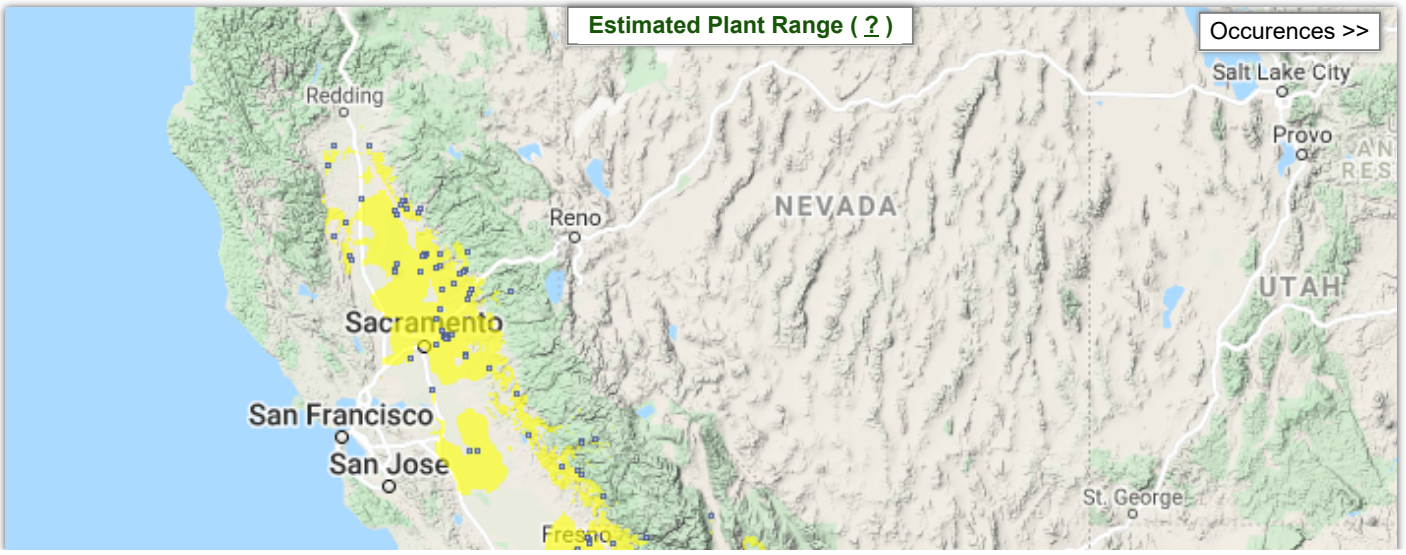

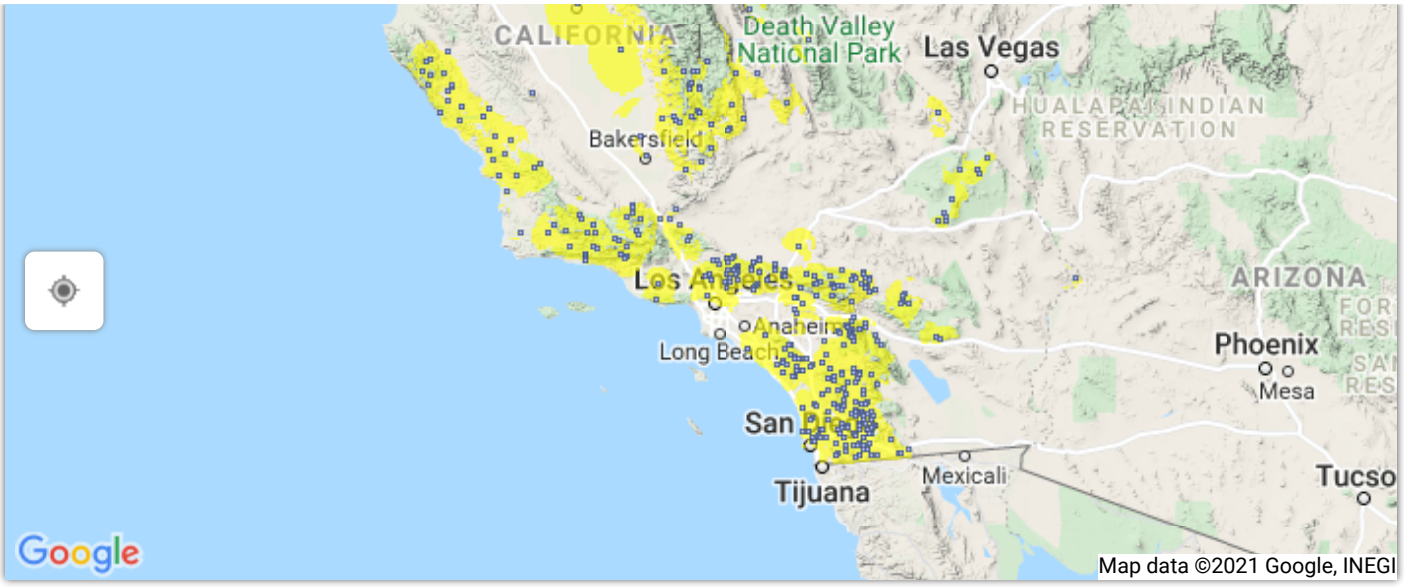

77 Nurseries Carry This Plant

About Deergrass (Muhlenbergia rigens)

Deergrass is a large perennial bunchgrass found in sandy or well drained soils below 7000 feet in elevation in the southwestern United States and parts of Mexico. In California, it grows primarily in the coast ranges of central and southern California, the Sierra and Cascade foothills, and the eastern part of the North Coast range. The plant is characterized by dense, tufted basal foliage consisting of narrow pointed leaves that reach lengths of about 3 feet and range in color from light silver-green to purple. The spike-like stems are less than half an inch wide and 3 to 4 feet in length. During bloom, the numerous flower bunches often reach heights of five feet. Deergrass is characteristic of tallgrass prairie of much of the Western United States. It inhabits a wide range of ecotypes including grassland, riparian, chaparral, mixed conifer, and oak woodland communities.

Deergrass is one of the most beautiful and probably the easiest to grow of all the native California bunchgrasses, typically reaching mature size in one or two years. It prefers sandy or gravelly soils, but does OK in almost any soil as long as it's well drained. It can handle fairly frequent summer water (up to 1x per week), but once mature, it really doesn't need any supplementary water. It prefers full sun or part shade, but handles full shade reasonably well - it just grows more slowly.

Plant Description

Plant Type
Grasses

Size
4 - 5 ft tall
4 ft wide

Form
Upright, Fountain

Growth Rate
Fast, Moderate

Dormancy
Evergreen

Fragrance
None

Flower Color
Yellow, Cream

Flowering Season
Spring

Wildlife Supported

Seed eating birds will be attracted to it in summer

Butterflies & moths hosted (1 likely *) SHOW ALL

* 

Green Cutworm Moth

Anicla infecta

Landscaping Information

Sun
Full Sun

Moisture
Low

Summer Irrigation
Max 1x / month

Nurseries
Carried by 77

once established

Ease of Care
Very Easy

Soil Drainage
Fast, Medium, Slow

Soil Description
Tolerant of sand and clay. Tolerates Serpentine Soil. Soil PH: 5.0 - 8.0

Common uses
Groundcovers, Deer Resistant

Companion Plants
This is a large clumping grass, so use with shrubs that won't be overwhelmed by it, such as Toyon (Heteromeles arbutifolia), Lemonade Berry (Rhus integrifolia), larger Ceanothus, Manzanita species, or Scrub Oaks.

Maintenance
Can be cut back in fall if it becomes unruly

Propagation?
For propagating by seed: No treatment.

Sunset Zones?
1, 2, 3, 6*, 7*, 8*, 9*, 10*, 11*, 14*, 15*, 16*, 17*, 18*, 19*, 20*, 21*, 22*, 23*, 24*

Natural Setting

Site Type
In southern California and along the central coast it is found in sandy gravelly places, canyons, and washes as part of the chaparral community. In inland mountain areas it may occur with Ponderosa Pine and other trees in yellow pine woodland or foothill woodland. In a few locations it may be found on seasonal stream banks or other wetland areas.

Climate
Annual Precipitation: 4.1" - 61.8", Summer Precipitation: 0.14" - 2.83", Coldest Month: 32.3" - 60.5", Hottest Month: 55.0" - 87.5", Humidity: 0.46" - 40.07", Elevation: 14" - 7694"

Alternative Names

Common Names: Deer Muhly

Links: Jepson eFlora Taxon Page CalPhotos Wikipedia Calflora

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Ashyleaf Buckwheat
Eriogonum cinereum

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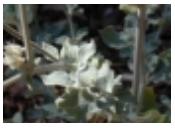
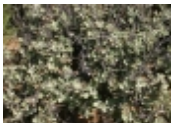
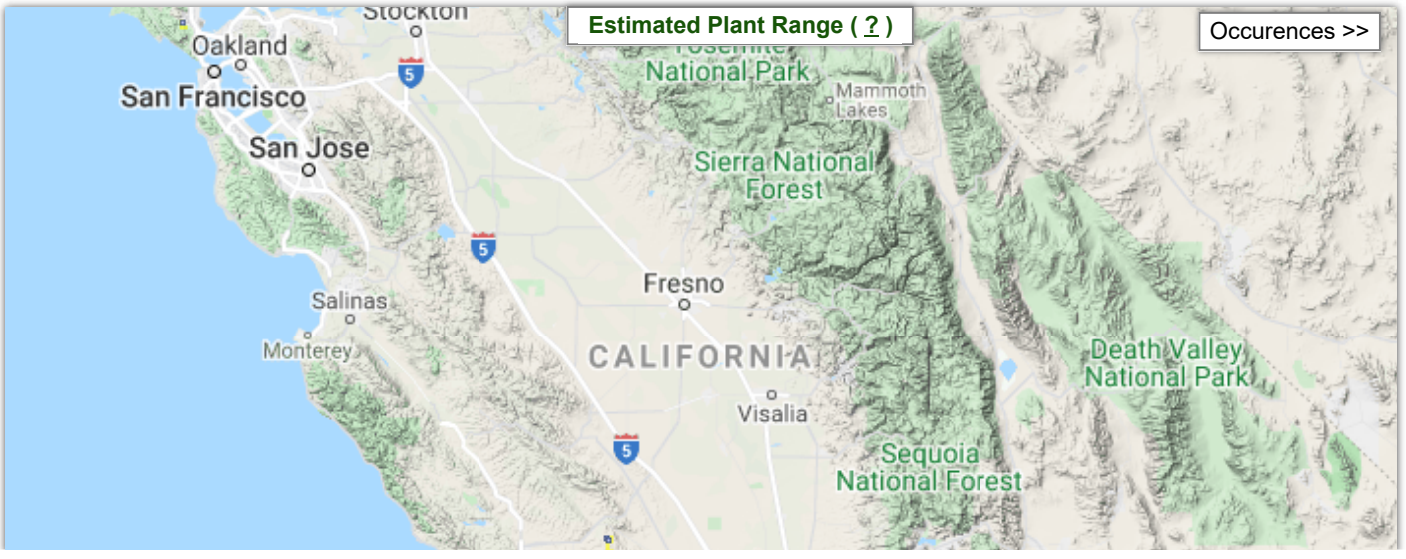





28 Nurseries Carry This Plant

About Ashyleaf Buckwheat (Eriogonum cinereum)

Eriogonum cinereum is a species of wild buckwheat known by the common names coastal buckwheat and ashyleaf buckwheat. This shrub is endemic to the coastline of California, where it grows on beaches and bluffs and in coastal scrub and chaparral. This plant may reach up over a meter in height and width and is light silvery gray in color due to the woolly hairs on its stems and foliage. The leaves are wavy-edged ovals one to three centimeters long. The flower clusters stick out from the plant, each with one to several heads of tiny tightly-packed frilly flowers which are usually light brownish-pink in color and quite hairy. This is the foodplant for Euphilotes bernardino, the Bernardino dotted blue butterfly.

Plant Description

Plant Type
Shrub

Size
2 - 4 ft tall
3 - 5 ft wide

Form
Rounded

Growth Rate
Fast

Dormancy
Evergreen

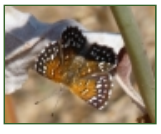
Flower Color
Brown, Yellow

Flowering Season
Winter, Spring, Summer, Fall

Wildlife Supported

Many butterfly species (including Euphilotes bernardino, the Bernardino dotted blue butterfly) and other pollinators including wasps which prey on harmful garden pests! They may attract small mammals and birds who eat the seeds.

Butterflies & moths hosted (3 confirmed ✓, 41 likely *) SHOW ALL

✓ 
Mormon Metalmark
Apodemia mormo

✓ 
Square-spotted Blue
Euphilotes battoides

✓ 
Bernardino Blue
Euphilotes bernardino

* 
Gray Hairstreak
Strymon melinus

Landscaping Information

Sun
Full Sun

Moisture
Extremely Low, Very Low

Summer Irrigation
Max 1x / month once established

Nurseries
Carried by 28

Ease of Care
Moderately Easy

Cold Tolerance
Tolerates cold to 15 - 25° F

Soil Drainage
Fast, Medium, Slow

Soil Description
Adaptable. Soil PH: 6 - 8

Common uses
Bird Gardens, Butterfly Gardens, Bee Gardens

Companion Plants
Plant alongside other natives of the California coastal scrub region, such as California Larkspur (Delphinium californicum), Common Tidy Tips (Layia platyglossa), Maritime Brome (Bromus maritimus), and Monterey Indian Paintbrush (Castilleja latifolia).

Maintenance
Remove dead seed heads in late fall and dead branches during the growing season. Older untidy plants can be pruned back to 8 inches in the fall to reestablish shape.

Propagation?
For propagating by seed: No treatment.

Sunset Zones?
5, 14*, 15*, 16*, 17*, 19, 20, 21, 22*, 23*, 24*

Natural Setting

Site Type
Beaches, bluffs

Climate
Annual Precipitation: 11.4" - 39.3", Summer Precipitation: 0.14" - 1.97", Coldest Month: 35.4" - 56.6", Hottest Month: 61.1" - 77.0", Humidity: 0.93" - 23.07", Elevation: -25" - 8222"

Alternative Names

Common Names: Coastal Buckwheat

Links: Jepson eFlora Taxon Page CalPhotos Wikipedia Calflora

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Black Sage
Salvia mellifera

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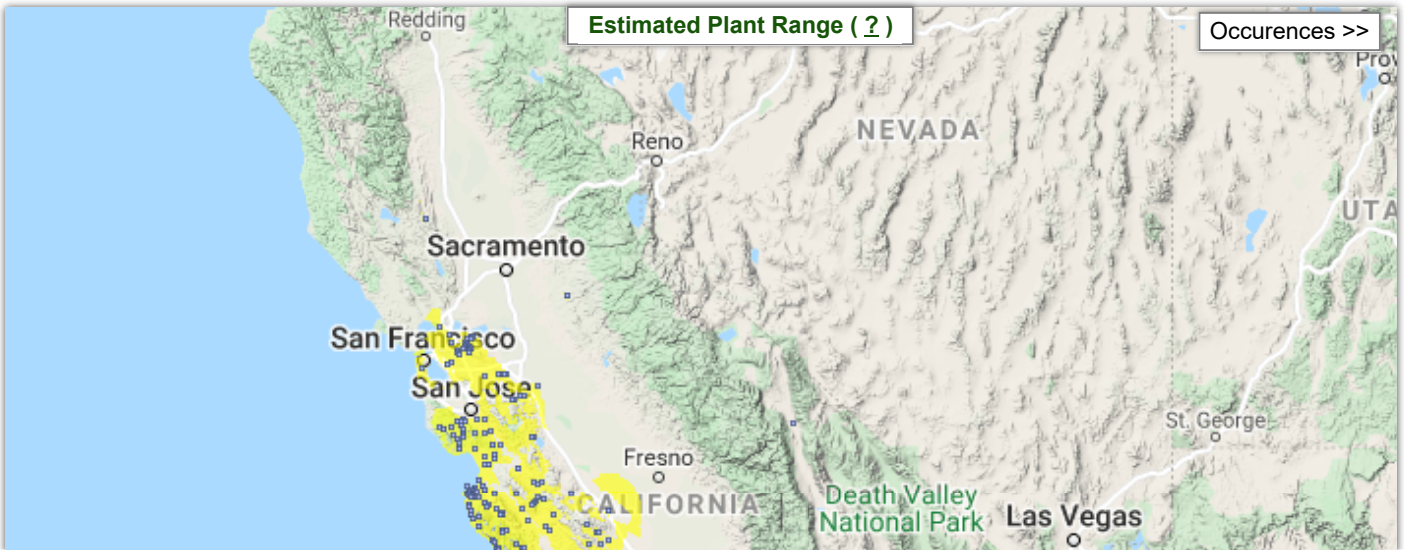
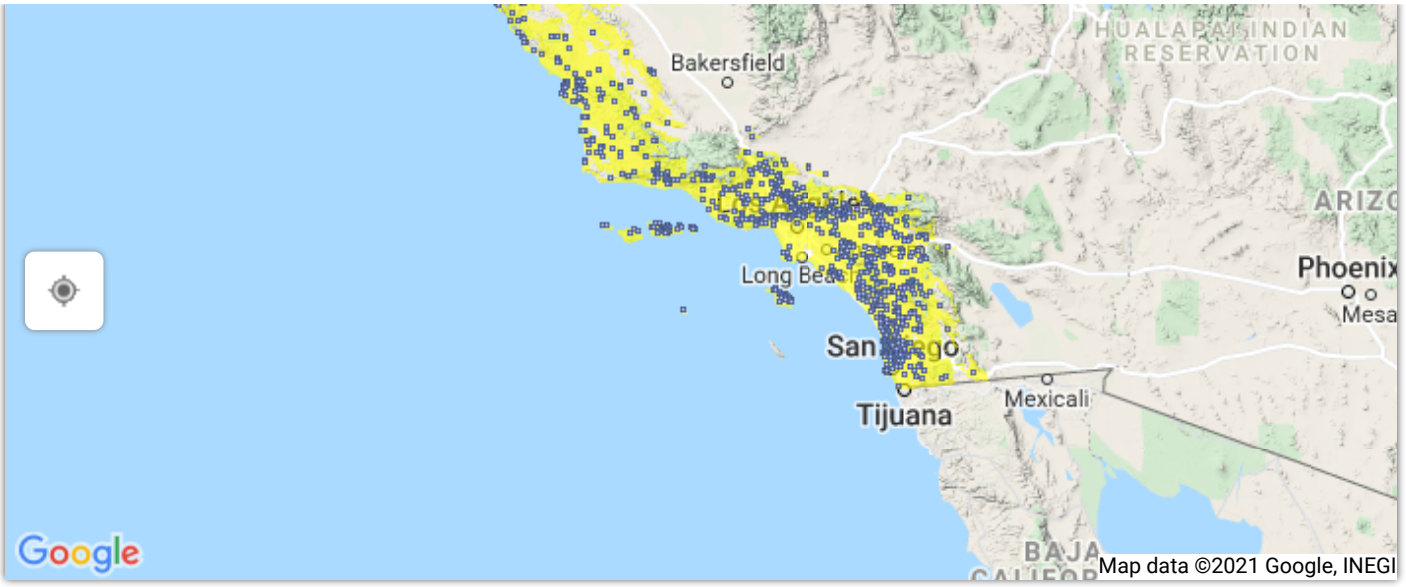




65 Nurseries Carry This Plant

About Black Sage (Salvia mellifera)

Black sage is the most common sage in California, and one of the keystone species of the coastal sage scrub plant community in the southern half of the state. Black sages grows quickly up to 3 feet in height, but mature specimens can reach up to 6 feet in height and 10 feet in width. The plant has attractive dark green leaves, with raised texture that looks somewhat like a fingerprint pattern when viewed closely. The leaves are 1-3 inches long. The upper surface of the leaf is somewhat smooth, while the lower surface of the leaf is hairy. It is semi-deciduous, depending on the location and severity of drought. Leaves curl during the summer drought instead of dropping off. The plant is highly aromatic. Flower occurs in.5-1.5" wide clusters. Flower colors vary from white, to pale blue, to lavender, or rarely to pale rose color. The plant flowers are an important food source for butterflies and hummingbirds. The seeds are an important food for quail and other birds.

Black sage is able to grow on a variety of different soils, including sandstone, shale, granite, serpentinite, and gabbro or basalt. It requires a minimum of 15" and a maximum of 40" of rain per year. In the drier part of its range, black sage is happier on flats, mesas or slope bottoms where there is slightly more moisture retained in the soil. Black sages tend to turn yellow and eventually die in poorly draining sites. The plant prefers sun, but tolerates part shade. The normal form of black sage can get very large. Prostrate forms of black sage grow to just 1-2 feet tall by 6 feet in width and tend to be denser than the normal form, making an excellent ground cover.

Plant Description

Plant Type
Shrub

Size
3 - 6 ft tall
10 ft wide

Form
Mounding

Growth Rate
Moderate

Dormancy
Evergreen, Summer Semi-Deciduous, Summer Deciduous,

Fragrance
Fragrant - Pleasant

Flower Color
Blue, Lavender, White

Flowering Season
Winter, Spring, Summer

Wildlife Supported

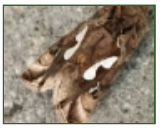
Insects, especially bees and butterflies, and hummingbirds are attracted to the flowers. Quail, Towhees and other birds are attracted to the seeds.

Butterflies & moths hosted (2 confirmed ✓, 8 likely *) SHOW ALL

✓ 
Gray Hairstreak
Strymon melinus

✓ 
Pherne subpunctata

* 
Alfalfa Looper Moth
Autographa californica

* 
Bilobed Looper Moth
Megalographa biloba

Landscaping Information

Sun
Full Sun

Moisture
Extremely Low, Very Low

Summer Irrigation
Max 2x / month once established

Nurseries
Carried by 65

Ease of Care
Very Easy

Cold Tolerance
Tolerates cold to 30° F

Soil Drainage
Fast, Medium

Soil Description
Tolerates a variety of soils although it is happier with good drainage. Tolerates Gabro Soil,Tolerates Serpentine Soil. Soil PH: 4.0 - 8.0

Common uses
Bank Stabilization, Groundcovers, Hedges, Deer Resistant, Bird Gardens, Butterfly Gardens, Bee Gardens

Companion Plants
Laurel Sumac (Malosma laurina), Lemonade Berry (Rhus integrifolia), Coast Live Oak (Quercus agrifolia), Scrub Oak (Quercus berberidifolia), Woolly Bluecurls (Trichostema lanatum), Climbing Penstemon (Keckiella cordifolia), California Encelia (Encelia californica), California Buckwheat (Eriogonum fasciculatum), Coast Sagebrush (Artemisia californica), California Adolphia (Adolphia californica), Diplacus puniceus, Chaparral Bush Mallow, White Coast Ceanothus (Ceanothus verrucosus) Hollyleaf Redberry (Rhamnus species), Manzanita (Arctostaphylos species), Yucca species, Dudleya species and cactus species

Propagation?
For propagating by seed: No treatment; sow outdoors in early fall. Germination may be poor. The following alternative treatments may improve germination: stratify 3 mos. or soak in 400 ppm GA3 1 hr., then dry and sow (Betty Atwater, personal communication 1981).

Sunset Zones?
7*, 8, 9, 14*, 15*, 16*, 17*, 18, 19*, 20*, 21*, 22*, 23*, 24*

Natural Setting

Site Type
Flats, mesas, foothills, canyons, shallow slopes, and slope bottoms as part of coastal sage scrub and chaparral

Climate
Annual Precipitation: 4.5" - 51.2", Summer Precipitation: 0.14" - 2.64", Coldest Month: 34.4" - 60.4", Hottest Month: 58.6" - 88.3", Humidity: 0.41" - 42.82", Elevation: -18" - 6692"

Links: Jepson eFlora Taxon Page CalPhotos Wikipedia Calflora

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Bee Plant
Scrophularia californica

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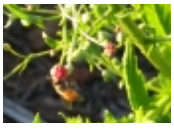
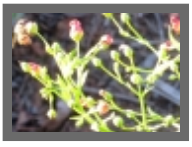
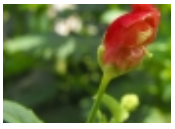
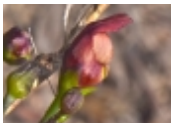
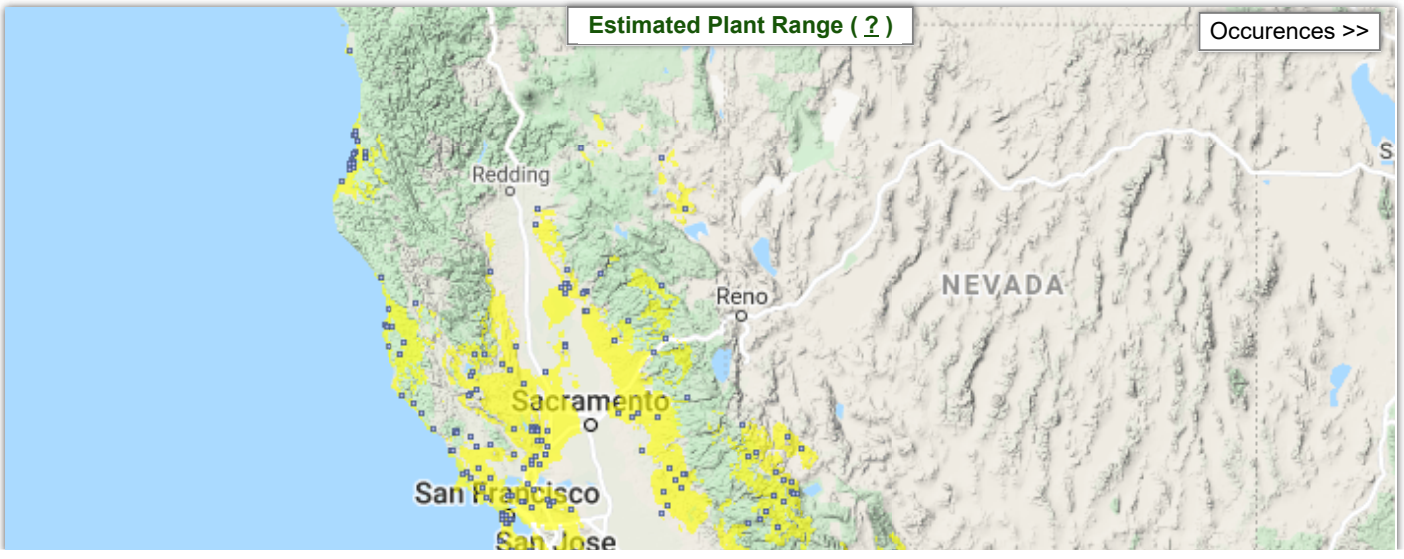
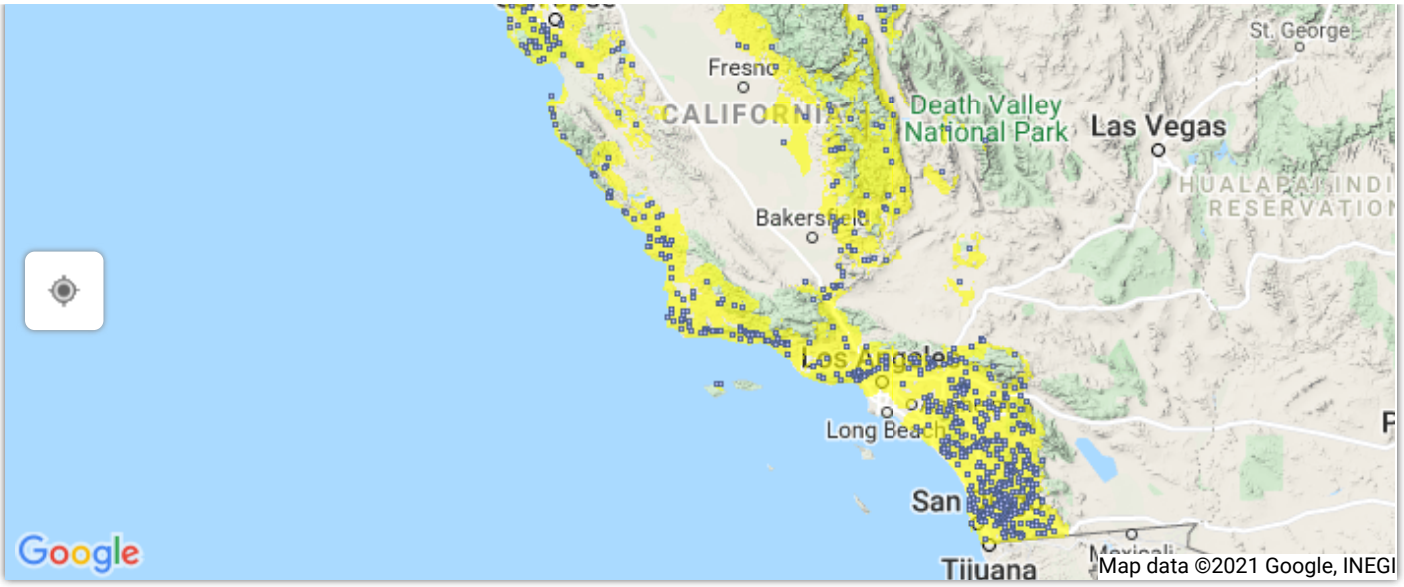








42 Nurseries Carry This Plant

About Bee Plant (Scrophularia californica)

Scrophularia californica is a flowering plant in the figwort family which is known by the common names California figwort and California bee plant. This perennial herb is native to the western United States and British Columbia. This is an unassuming plant with triangular, toothed, blue-green leaves in pairs opposite each other on a spindly, squared stem. The brownish-magenta flowers are rounded, hollow buds about a centimeter long with two long upper lobes. This species is a strong bee attractant.

Plant Description

Plant Type
Perennial herb

Size
2 - 4 ft tall
6 - 12 in wide

Form
Upright

Growth Rate
Fast

Dormancy
Evergreen

Fragrance
Slight

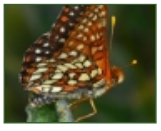
Flower Color
Red

Flowering Season
Winter, Spring

Wildlife Supported

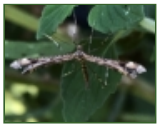
Attracts bees, hummingbirds, and a species of small wasp, for which nectar is awarded. Figwort is a host plant for the butterfly larvae of Common Buckeye.

Butterflies & moths hosted (7 confirmed ✓, 5 likely *) SHOW ALL



✓ **Variable Checkerspot**
Euphydryas chalcedona

✓ **Garden Tortrix Moth**
Clepsis peritana



✓ **Geranium Plume Moth**
Amblyptilia pica

✓ **Orange Tortrix Moth**
Argyrotaenia franciscana

Landscaping Information

Sun
Part Shade

Moisture
Low

Summer Irrigation
Max 1x / month once established

Nurseries
Carried by 42

Ease of Care
Very Easy

Cold Tolerance
Tolerates cold to 20F° F

Soil Drainage
Fast, Medium

Soil Description
Adaptable to garden soils. Soil PH: 5.2 - 8.2

Adaptable to garden soils. Soil pH: 6.2 - 8.2

Common uses
Deer Resistant, Hummingbird Gardens, Bird Gardens, Butterfly Gardens, Bee Gardens

Companion Plants
Mimulus guttatis (Yellow Monkey Flower) Agrostis exarata (Bentgrass) Trifolium variegatum (Variegated Clover) Salix lasiolepis (Arroyo Willow) Asclepias fascicularis (Narrowleaf Milkweed) Alnus rhombifolia (White Alder) Ranunculus californicus (Common Buttercup) Equisetum arvense (Common Horsetail) Apocynum cannabinum (Indian Hemp) Clematis ligusticifolia (Creek Clematis) Aquilegia formosa (Columbine) Juncus balticus (Wire Rush) Salix exigua (Narrowleaf Willow) Artemisia douglasiana (California Mugwort) Salix laevigata (Red Willow) Rubus ursinus (California Blackberry) Rubus parviflorus (Thimbleberry) Rosa californica (California Wild Rose) Baccharis salicifolia (Mulefat) Golden Yarrow (Eriophyllum confertiflorum) Showy Penstemon (Penstemon spectabilis)

Sunset Zones?
4*, 5*, 6*, 7, 8, 9, 14*, 15*, 16*, 17*, 18*, 19*, 20*, 21*, 22*, 23*, 24*

Natural Setting

Site Type
Slope bottoms, north facing slopes, slightly moister places that receive 11-85 inches of rain per year.

Climate
Annual Precipitation: 4.4" - 71.8", Summer Precipitation: 0.14" - 4.20", Coldest Month: 21.1" - 56.4", Hottest Month: 46.0" - 83.5", Humidity: 0.01" - 34.47", Elevation: -40" - 10537"

Alternative Names

Common Names: California Bee Plant, California Bee-plant, California Figwort

Sources include: Wikipedia. All text shown in the "About" section of these pages is available under the Creative Commons Attribution-ShareAlike License. Plant observation data provided by the participants of the California Consortia of Herbaria, Sunset information provided by Jepson Flora Project. Propogation from seed information provided by the Santa Barbara Botanical Garden from "Seed Propagation of Native California Plants" by Dara E. Emery. Sources of plant photos include CalPhotos, Wikimedia Commons, and independent plant photographers who have agreed to share their images with Calscape. Other general sources of information include Calflora, CNPS Manual of Vegetation Online, Jepson Flora Project, Las Pilitas, Theodore Payne, Tree of Life, The Xerces Society, and information provided by CNPS volunteer editors, with special thanks to Don Rideout. Climate data used in creation of plant range maps is from PRISM Climate Group, Oregon State University, using 30 year (1981-2010) annual "normals" at an 800 meter spatial resolution.

Links: Jepson eFlora Taxon Page CalPhotos Wikipedia Calflora

California Native Plant Society
Calscape
Restore Nature One Garden at a Time

Swamp Carex
Carex senta

Show All Photos

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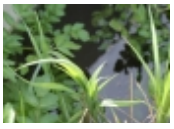



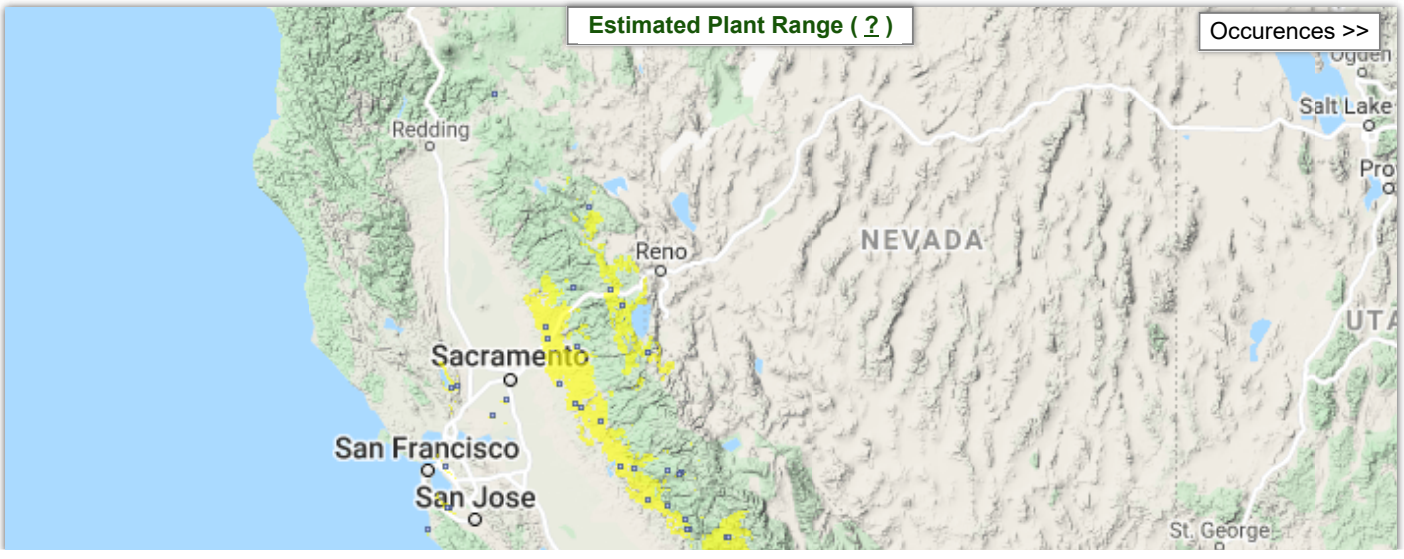

2 Nurseries Carry This Plant

About Swamp Carex (Carex senta)

Swamp Carex (Carex senta) is a native grass that grows in northern, southern and central California. It tends to grow in streambanks, marshy places and meadows, at elevations from 200-9500 feet.

Plant Description

Plant Type
Grasses

Flower Color
Brown

Wildlife Supported

Butterflies & moths hosted (7 likely *) SHOW ALL

Umber Skipper
Poanes melane

Common Ringlet
Coenonympha tullia

Dun Skipper
Euphyes vestris

American Ear Moth
Amphipoea americana

Landscaping Information

Sun
Part Shade

Moisture
Moderate - High

Nurseries
Carried by 2

Ease of Care
moderately easy

Soil Drainage
Standing

Sunset Zones?
1, 2, 3, 7*, 8*, 9*, 14*, 15*, 16*, 17, 18*, 19*, 20*, 21*, 22*, 23*, 24*

Natural Setting

Site Type
Streambanks, marshy places, meadows

Streambanks, marshy places, meadows

Climate
Annual Precipitation: 5.7" - 66.2", Summer Precipitation: 0.14" - 3.17", Coldest Month: 24.6" - 58.5", Hottest Month: 49.9" - 87.2", Humidity: 0.69" - 37.81", Elevation: 0" - 9656"

Alternative Names

Common Names: Swamp Sedge

Links: Jepson eFlora Taxon Page CalPhotos Wikipedia Calflora

California Native Plant Society
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Creeping Wild Rye
Elymus triticoides

Show All Photos

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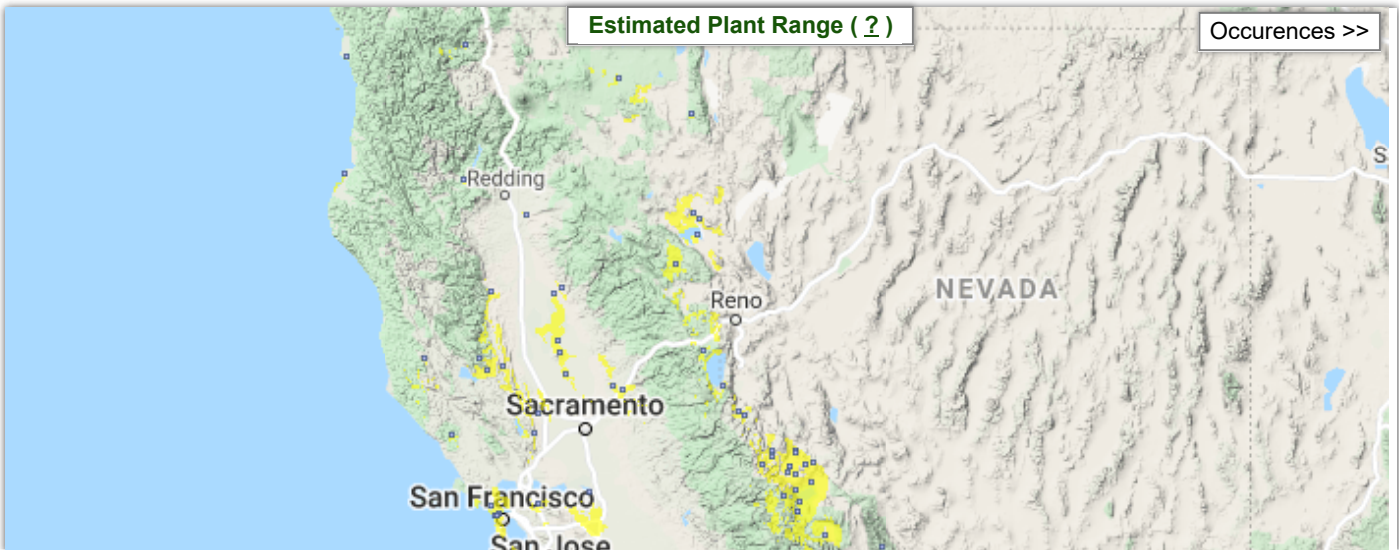


35 Nurseries Carry This Plant

About Creeping Wild Rye (Elymus triticoides)

Elymus triticoides is species in the Poaceae (Grass) family known by the common names Creeping Wild Rye and Beardless Wild Rye. It is native to western North America from British Columbia to Texas, where it often grows in moist habitat, sometimes with heavy and saline soils. It forms a solid, rhizomatous root system which allows it to grow at water's edge and prevent the soil from eroding. It reaches 1.3 meters in maximum height with stiff, slender green to blue-green leaves that stand away from the stems at an obvious angle. The flower cluster is a narrow spike up to 20 centimeters long. This grass is not frequently used in residential gardens, but it is a good range land grass for grazing, and it is used to stabilize waterways because of its soil-retaining rhizome network.

Plant Description

Plant Type
Grasses

Size
2.1 - 4.3 ft tall

Growth Rate
Fast

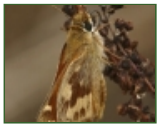
Dormancy
Winter Deciduous

Flower Color
Green

Wildlife Supported

This species is host plant to the Woodland Skipper butterfly

Butterflies & moths hosted (10 likely *) SHOW ALL



Woodland Skipper
Ochlodes sylvanoides

Nevada Skipper
Hesperia nevada

Armyworm Moth
Mythimna unipuncta

Bronzed Cutworm
Nephelodes minians

Landscaping Information

Sun
Part Shade

Moisture
Moderate - High

Summer Irrigation
Max 1x / month once established

Nurseries
Carried by 35

Ease of Care
Very Easy

Cold Tolerance
Tolerates cold to 0° F

Soil Drainage
Medium, Slow

Soil Description
Tolerates most soils. Tolerates Sodic Soil. Soil PH: 6.0 - 9.0

Common uses
Butterfly Gardens, Groundcovers

Companion Plants
Use under Oaks (Quercus sp.), Cottonwoods (Populus sp.), Sycamores (Platanus racemosa) and Willows (Salix sp.) along with Milkweed (Asclepias sp.), Seaside Daisy (Erigeron sp.), Coffeeberry (Frangula sp.), Toyon (Heteromeles arbutifolia), Vervain (Verbena lasiostachys), and Hollyleaf Redberry (Rhamnus ilicifolia).

Propagation?
For propagating by seed: No treatment. Germination may be poor.

Sunset Zones?
1, 2*, 3*, 4, 5*, 6*, 7*, 8*, 9*, 10*, 11, 14*, 15*, 16*, 17*, 18*, 19*, 20*, 21*, 22*, 23*, 24*

Natural Setting

Site Type
Moist, often saline, meadows and understory of various woodlands

Climate
Annual Precipitation: 5.8" - 64.4", Summer Precipitation: 0.14" - 3.37", Coldest Month: 23.8" - 56.5", Hottest Month: 46.4" - 80.9", Humidity: 0.49" - 31.51", Elevation: 3" - 10173"

Alternative Names

Common Names: Beardless Wild Rye

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Links: Jepson eFlora Taxon Page CalPhotos Wikipedia Calflora

APPENDIX 2

SEED MIXES

SANTA MONICA MOUNTAIN COVER MIX

This mix is a blend of grasses, flowers and shrubs for revegetation of soil and slopes with plant types that belong in the Santa Monica Mountain area. There is a quick start grass to protect soil and allow slower perennials to provide their permanent cover in the years to come. Designed as a non-irrigated mix, irrigation will foster establishment and prolong the blooming period.

SPECIES	COMMON NAME	BULK #'s/ACRE	MIN % PLS*
Artemisia californica	California sagebrush	2.00	18
Bromus carinatus	California brome	4.00	86
Bromus carinatus 'Cucamonga'	Cucamonga brome	6.00	86
Camissoniopsis cheiranthifolia	Beach evening primrose	1.00	86
Clarkia purpurea	Wine cup clarkia	1.00	86
Encelia californica	Bush sunflower	3.00	21
Eriogonum cinerum	Coastal buckwheat	2.00	7
Eriogonum fasciculatum	California buckwheat	7.00	10
Eriophyllum confertiflorum	Golden yarrow	3.00	36
Eschscholzia californica	California poppy	2.00	83
Lupinus succulentus	Arroyo lupine	5.00	83
Melica imperfecta	Coast range Melic	2.00	60
Mimulus aurantiacus longiflorus	Sticky monkeyflower	2.00	3
Penstemon spectabilis	Royal penstemon	1.00	81
Stipa lepida	Foothill needle grass	2.00	64
Stipa pulchra	Purple needle grass	4.00	73
Verbena lasiostachys	Common vervain	1.00	50
		48.00	

* MIN % PLS (Pure Live Seed) = Seed Purity x Germination Rate

Seed:	48 lbs per acre
Height:	12-54 inches
Emergence:	14-24 days
Establishment:	50-70 days to 90% cover after emergence

For additional plant characteristics visit the plant database portion of our website at www.ssseeds.com.

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E-MAIL:INFO@SSSEEDS.COM WEBSITE: WWW.SSSEEDS.COM

BASIC RIPARIAN MIX

SPECIES	COMMON NAME	BULK #'s/ACRE	MIN % PLS*
Anemopsis californica	Yerba mansa	2.00	44
Artemisia douglasiana	Mugwort	2.00	08
Bolboschoenus robustus	Bull tule	2.00	83
Carex spissa	Sawgrass sedge	2.00	62
Deschampsia danthonoides	Annual hairgrass	2.00	72
Festuca microstachys	Small fescue	6.00	90
Hordeum intercedens	Little barley	4.00	72
Juncus acutus	Spiny rush	2.00	76
Juncus bufonius	Toad rush	1.00	57
Oenothera elata hookerii	Monterey evening primrose	1.00	82
Typha latifolia	Broadleaf cattail	1.00	40
		25.00	

* MIN % PLS (Pure Live Seed) = Seed Purity x Germination Rate

Seeding rate: 25 lbs per acre

For additional plant characteristics visit the plant database portion of our website at www.ssseeds.com.

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