

Habitat Mitigation Monitoring Plan for the Restoration for Bridge 51C-006 Replacement on the Santa Ynez River

Floradale Avenue County Bridge 51C-0006, over the Santa Ynez River, Santa Barbara County CA.



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1.0 INTRODUCTION

The plan was prepared by Santa Barbara County Public Works environmental planning staff to fulfill the conditions of approval of the National Marine Fisheries Service (NMFS) and the State of California, Department of Fish and Wildlife (CDFW) Lake and Streambed Alteration Agreement. It describes measures that will be implemented on Floradale Road as mitigation for jurisdictional construction impacts related to the replacement of County bridge 51C-0006 over the Santa Ynez River. The purpose of this plan is to comply CDFW 1602 Streambed Alteration Agreement Notification No 1600-2019-00XX-R5, USACE Nationwide 14 Permit and California Region Water Quality Control Board 401 Certification.

1.1 Background Information

The existing Floradale Avenue Bridge No. 51C-0006 was constructed in 1969 by the Federal Highway Administration and supports one vehicle lane in each direction crossing the Santa Ynez River. The Floradale Avenue Bridge provides access from west of the City of Lompoc to the Federal Correctional Institution Lompoc, Vandenberg Air Force Base, and as Floradale Avenue turns into Santa Lucia Canyon Road to Vandenberg Village Community, and to Cabrillo Highway (HW1). A Joint Exercise of Powers Agreement was executed on December 30, 1970 between the County of Santa Barbara and the City of Lompoc. In the Agreement, the County was delegated to perform the maintenance on a portion of Floradale Avenue and Bridge 51C-006. Following the 1994 Northridge Earthquake, Caltrans identified that the existing bridge was potentially seismically vulnerable and the bridge was placed into the Caltrans Mandatory Local Seismic Safety Retrofit Program and the Federal Highway Administration-Highway Bridge Program. In 1997, a Seismic Retrofit Strategy was completed and it was concluded that the structure is seismically deficient due to the liquefiable subsurface materials. The purpose of the project is to replace the existing bridge over The Santa Ynez River in order to meet current seismic standards and provide safe passage for the traveling public.

The project area over the Santa Ynez River, which is a seasonal river system within a large portion of Santa Barbara County. The Santa Ynez River is one the largest rivers in California with a drainage basin of nearly 900 square miles that covers much of Santa Barbara County. The terminus of the Santa Ynez River is located near the bridge on Floradale Avenue where the channel widens into a natural floodplain.

The following vegetative communities and land cover types were identified within the biological study area which covers approximately 88.5 acres: Agriculture (39.9%), Central

Coast Willow Forest (19.5%), Coyote Brush Scrub (5.5%), Developed/Disturbed (12.3%), Eucalyptus (4.6%), Freshwater Marsh/Open Water (4.0%), and Non-Native Grasses (14.1%).

The grading portion of the operation shall not impact more than 1.39 acres (60,850 square feet) of Central Coast Willow Forest and Freshwater Marsh/Open Water habitat. The project impact area is approximately 17 acres that includes CDFW jurisdictional areas of approximately 1.39 acres of temporary impact area and 113 square feet of permanent impacts.

The mitigation shall consist of reseeded for revegetation both banks adjacent to bridge 51C-006 with a compost blanket and seed mix of native vegetation. After which Central Coast Willow Forest species will be planted in the jurisdictional areas, Coastal Scrub Brush and Coast Live-oak woodland species scrub will be utilized above top of bank and in the road right of way along Floradale Avenue adjacent to the riverbanks. Mitigation shall also consist of invasive species removal. Invasive species removal will occur immediately downstream of the proposed project area. Invasive species removal will focus on giant reed (*Arundo donax*) and tree tobacco (*Nicotiana glauca*) observed in the riparian corridor.

1.2 Project Description

The existing bridge is a six-span, 520-foot long, approximately 41-foot wide, reinforced concrete box girder bridge, with a Type 15 bridge railing. It is supported by reinforced concrete abutments on concrete pile footings and reinforced concrete pier walls. The bridge consists of two lanes, one in each direction of travel. The existing bridge on Floradale Avenue was constructed after the previous bridge was washed out during the 1969 floods.

The proposed new bridge will be number 51C-0370. The proposed bridge would consist of a four span cast-in-place post-tensioned concrete box girder, with a Type 742 barrier with tubular bicycle railing. The bridge would be supported on seat type abutments and three 6-foot by 8-foot single column piers on 10-foot cast-in-drilled-hole piles. Rock slope protection would be buried under two feet of earth on the banks below each abutment extending from the bottom of the bank up to the 100-year water surface elevation and wrapping around the approach roadway fill approximately 50 feet from the face of the abutment. The project would involve an estimated 15,472 cubic yards of imported fill, 2,500 cubic yards of buried Rock Slope Protection (RSP) and approximately 5,300 cubic yards of cut that would be exported.

The proposed project would also involve the realignment of Rancho Lompoc Farm Road, the relocation of the two sewer lines, the relocation of the overhead lines along the northeast quadrant of the Floradale Avenue and Rancho Lompoc Farm Road intersection, and the installation of drywells for stormwater treatment. No lighting would be provided along the connector roadway or on the proposed new bridge.

The project would require a temporary clear water diversion of the existing stream flows in Santa Ynez River during bridge removal, channel improvements and bridge construction. This includes water diversion structures and cofferdam as approved by the required regulatory agencies. The temporary clear water diversion is anticipated to be in place for two working seasons from June 1 through October 31.

The bridge is proposed to be constructed in two stages/season to allow maintenance of one bi-directional travel lane throughout construction. Similarly, the removal of the existing bridge superstructure, steel columns, and abutments will occur in the second season.

The existing bridge's reinforced concrete deck and steel girders are proposed to be demolished in place.

1.3 Mitigation Goal and Objectives

The mitigation goal is to return the impacted Santa Ynez River bank and channel area to a natural vegetated condition after construction activities resulting from the new bridge, and restore the upland areas along the roadway shoulder.

The project will have temporary jurisdictional impacts of 1.39 acres (60,850 sf) and permanent jurisdictional impacts of .0026 acres (113 sf). Temporary impacts will be mitigated at a 1:1 ratio and permanent impacts will be mitigated at a 3:1 ratio. The total restoration for the project will be 2.79 acres (121,601 sf) including riparian areas adjacent to County owned right-of-way.

The proposed restoration and revegetation area plan is approximately 2.79 acres in size and is composed of three separate areas. The first area is the east and west banks of the Santa Ynez River, the second is the channel area between the banks and the third includes the areas along the right of way adjacent to Floradale Avenue that will be disturbed by construction activities. All of the proposed mitigation area on site will be covered with a compost blanket with a native seed hydro-seed mix shown in appendix one as part of erosion control plan.

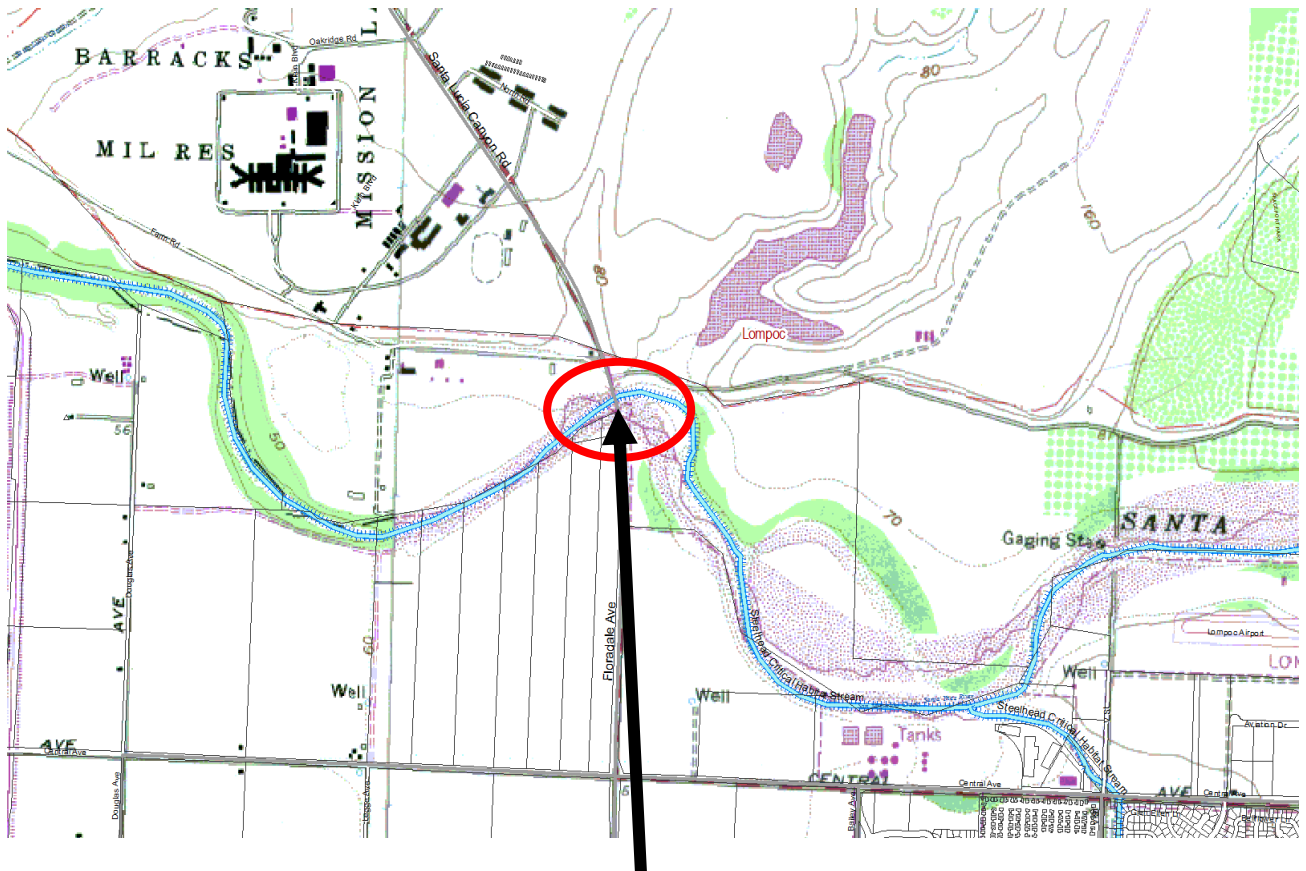
The proposed mitigation area will include 1) a compost blanket and native seed hydro-seeding and planting of native vegetation 2) weed removal and watering, 3) performance of periodic maintenance, monitoring and reporting.

The mitigation objectives are to establish self-sustaining native vegetation within the river channel and along the slopes of the riverbanks within five years, reduce slope erosion and to limit invasive plant species from the restoration area.

In the long term restoration of the right of way along Floradale Avenue above top of bank slope area will benefit the water quality of the downstream riverine habitat by reducing soil erosion and establishing a vegetative filter of petroleum and other contaminants from the roadway. Water quality will also be benefited with the placement of dry wells to capture water runoff from the roadway and bridge deck surface.

2.0 Existing site proximity to endangered species habitat.

2.1 Southern Steelhead Critical Habitat Map (*Oncorhynchus mykiss*)



Project location: Santa Barbara County Bridge 51C-006

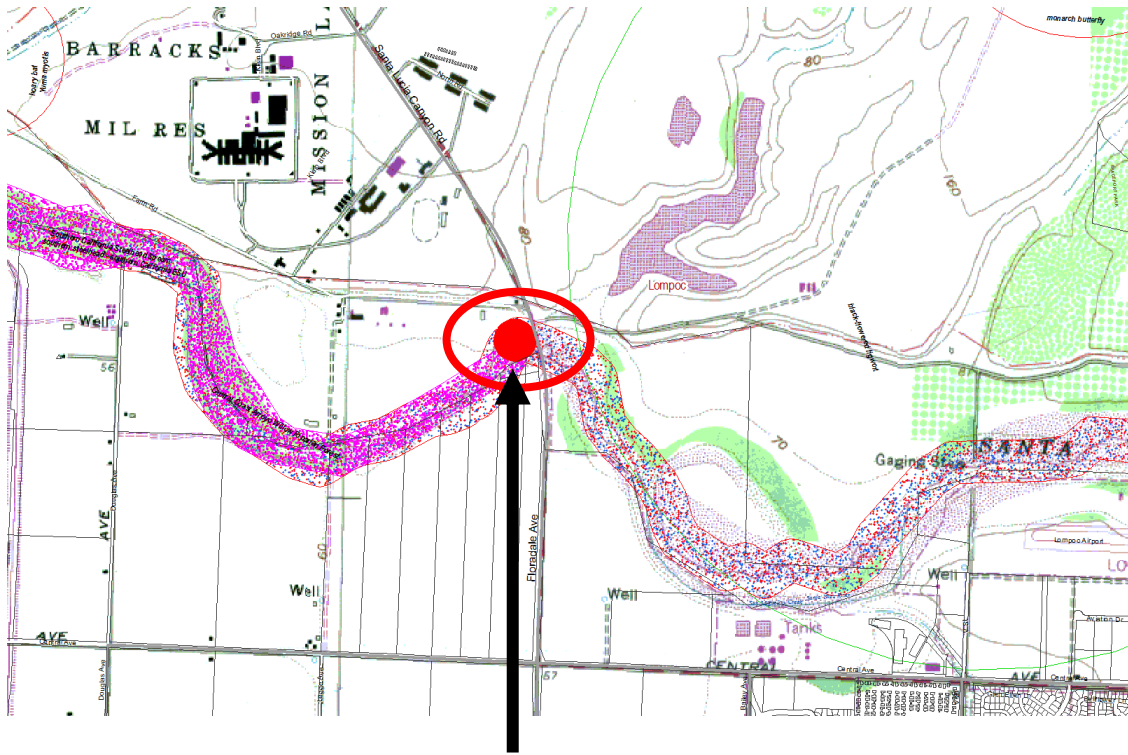
2.1.1 Figure One: Southern Steelhead Critical Habitat from Santa Barbara County Arc View

The project impact area may include Southern Steelhead rearing habitat, but is used as migration habitat for steelhead to move between the ocean and the upstream spawning areas of the watershed below Lake Cachuma.

2.2 California red-legged frog (CRLF) (*Rana aurora draytonii*)

When surveys were conducted in 2008 and 2013, no California red-legged frogs (CRLF) (*Rana aurora draytonii*) were observed. The project area is not included designated critical habitat for the CRLF. One CRLF was documented with the BSA in 2003.

2.2.1 Figure two: California red-legged frog CNDDDB Map (CRLF) (*Rana aurora draytonii*)



Project location: Santa Barbara County Bridge 51C-006

3.0 Project Site Characteristics

3.1 Topography

The project site is within the existing Floradale Avenue travel way that runs in an approximately easterly and westerly direction and over the Santa Ynez River, its banks transect the project location from the southeast to the northwest. The top of bank elevation along Floradale Avenue is generally in the 75 foot elevation range and drops off to approximately 40 feet in elevation in the river bottom.

3.2 Soils

The US Department of Agriculture Natural Resources Conservation Services mapped the soils in the project area.

The soil type characteristics are described below:

300—Corducci-Typic Xerofluvents, 0 to 5 percent slopes, occasionally flooded, MLRA 14 Map Unit Setting. 3.4 acres in AIO 36.3%

- *National map unit symbol: 2xm5w*
- *Elevation: 70 to 2,480 feet*
- *Mean annual precipitation: 9 to 24 inches*
- *Mean annual air temperature: 58 to 61 degrees F*
- *Frost-free period: 219 to 346 days*

MnC Metz loamy sand, 2 to 9 percent slope 26.2%

This soil occupies small areas in alluvial fans and sloping valley floors in the coast part of the areas. Permeability is rapid. Surface run off is slow, and the erosion hazards is slight. Fertility is low. The available water capacity is 4 to 5 inches in the 60-inch rooting zone.

- *National map unit symbol: hc00*
- *Elevation: 30 to 2,500 feet*
- *Mean annual precipitation: 12 to 18 inches*
- *Mean annual air temperature: 59 degrees F*
- *Frost-free period: 180 to 340 days*

MaE Marina sand, 9 to 30 percent slopes 16.0%

This soil is nearly level and occurs on mesa-like areas and in swales. Permeability is moderate. Surface runoff is very slow, and the hazard of erosion by water is none to slight. The hazard of soil blowing is high. The available water capacity is 3 to 4 inches in the 60-inch effective rooting depth.

- *National map unit symbol: hbzv*
- *Elevation: 100 to 600 feet*
- *Mean annual precipitation: 14 to 22 inches*
- *Mean annual air temperature: 57 degrees F*
- *Frost-free period: 300 to 320 days*

Mu—Mocho fine sandy loam, 0 to 2 percent slopes 14.6%

MU This soil occupies flood plains and the Santa Maria and Santa Ynez Valleys and in the western part of the Cuyama Valley. Texture is fine sandy loam to loam throughout. In some areas this soil has thin strata of gravel, sand and silt below and a depth of 3 feet. Permeability is moderately rapid. Surface-ruffoff is often very slow, and the erosion hazard I none to slight. Fertility is high. The available water capacity is 7.5 to 8.5 in the 60 inch rooting depth

- *National map unit symbol:* 2tyyq
- *Elevation:* 10 to 1,660 feet
- *Mean annual precipitation:* 13 to 21 inches
- *Mean annual air temperature:* 56 to 60 degrees F
- *Frost-free period:* 300 to 360 days

3.3 Existing Vegetation

The following vegetative communities and land cover types were identified in association with the main channel and adjacent terraces of the Santa Ynez River.

The freshwater marsh/open water habitat within the river channel and is generally restricted to the lower, wetter lands. It is vegetated with emergent southern cattail (*Typha domengensis*), bur-reed (*Sparganium eurycarpum*), and alkali bulrush (*Scirpus maritimus*). Understory consists primarily of yellow waterweed (*Ludwegia peploides*). Open water areas include all unvegetated areas within the main channel of the Santa Ynez River.

The canopy of the main river channel is dominated by arroyo willow (*Salix lasiolepis*), red willow (*Salix laevigeta*), and patches of sandbar willow (*Salix exigua*), Fremont cottonwood trees (*Populus fremontii*) with mule fat (*Baccharis salicifolia*) and California blackberry (*Rubus ursinus*) as understory within its undisturbed locales.

In the more disturbed and human-influenced portion of this habitat, the understory consists of non-native forbs and grasses, including black mustard (*Brassica nigra*), summer mustard (*Hirschfeldia incana*), smooth cocklebur (*Xanthium strumarium*), giant horseweed (*Conyza canadensis*), bristly ox-tongue (*Picris echioides*), and biennial wormwood (*Artemisia biennis*). Two areas of Giant Reed (*arundo donax*) of approximately .05 acres or 2200 square feet are present on the west bank of the river approximately 225 feet down stream of the existing bridge.

Coyote Brush Scrub habitat is generally limited to upland areas south of the Santa Ynez River adjacent to the east side of Floradale Avenue. Vegetation is generally comprised of coyote bush (*Baccharis pilularis*) and Mexican elderberry (*Sambucus mexicana*). Additional species include California sagebrush (*Artemisia californica*).

The Eucalyptus community is observed adjacent to the upland areas on the eastern side of the river channel and is located in heavily disturbed areas. Dominant flora within the community

includes blue gum eucalyptus (*Eucalyptus globulus*), with non-native forbs in the understory, such as black mustard (*Brassica nigra*), sweet fennel (*Foeniculum vulgare*), red-stemmed filaree (*Erodium botrys*), perennial pepperweed (*Lepidium latifolium*), wild radish (*Raphanus sativus*), poison hemlock (*Conium maculatum*), and milk thistle (*Silybum marianum*).

3.4 Project Construction Impacts to Habitat

Total natural and disturbed habitats in 88.5 acre Biological Study area:

Agriculture: 39.9% (35.5 acres); Central Coast Willow Forest 9.5% (17.3 acres); Coyote Brush Scrub 5.5% (4.9 acres); Freshwater Marsh/Open Water 4.0% (4.0 acres); Eucalyptus woodland 4.6% (4.1 acres); Non-Native Grasses 14.1% (3.5 acres); Developed/Disturbed 12.3% (10.9 acres).

Project Construction Impacts to Jurisdictional Habitat areas

Disturbance to CDFW/RWQCB jurisdiction. Temporary Impact Area 1.39 acres/60,850 square feet of vegetation removal. Permanent Impact Area .0026 acres or 113 square feet for the three columns in the Santa Ynez River Channel.

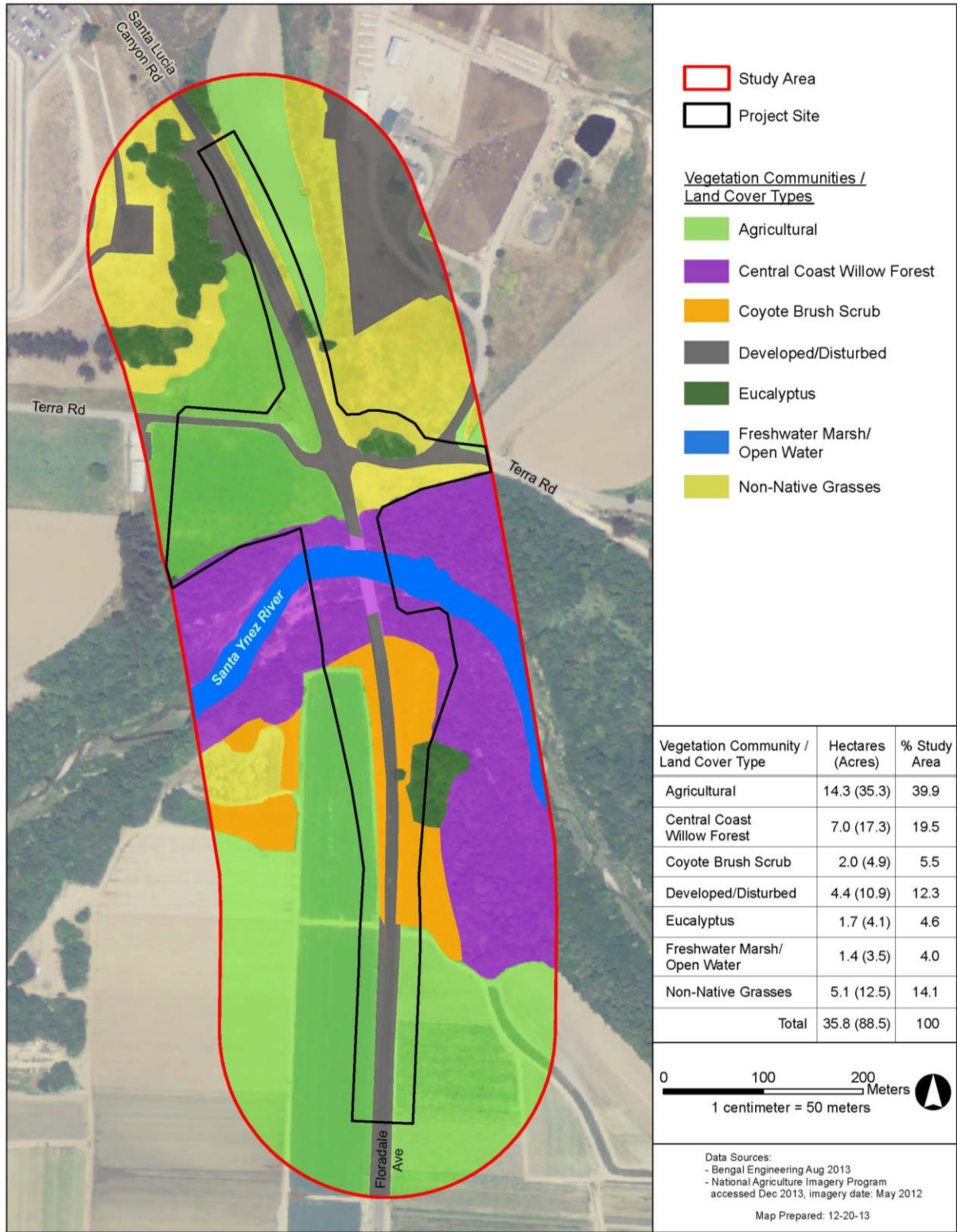
Disturbance to USACE jurisdiction. Temporary Impact Area 0.3 acres or 13,000 square feet for the two seasons of water diversion. Permanent Impact Area 0.0 acres or 0 Square feet.

Project Construction Impacts to Non-Jurisdictional Habitat areas

Eucalyptus woodland: Temporary Impact Area 0.4 acres or 21527 square feet. Permanent Impact Area 0.1 acres or 5381 square feet. Non-Native Grasses: Temporary Impact Area 1.2 acres or 53,819 square feet. Permanent Impact Area 0.1 acres or 5381 square feet.

Developed/Disturbed: Temporary Impact Area: 1.3 acres or 53,819 square feet: Permanent Impact Area 3.6 acres or 150,695 Square feet. Agriculture: Temporary Impact Area 5.9 acres or 258,334 square feet. Permanent Impact Area 1.1 acres or 48,437 Square feet.

3.4.1 Figure Three. Existing Vegetation Map

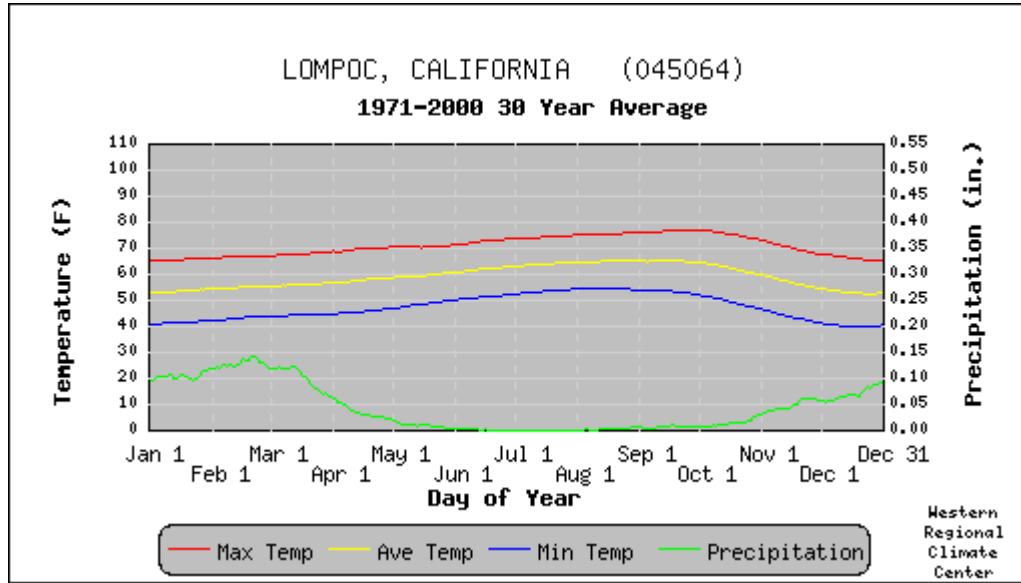


3.5 Climate and Rainfall

The closest location with 30 years of temperature and precipitation data is in Lompoc California. This data is shown below.

LOMPOC, CALIFORNIA

1971 - 2000 Temperature and Precipitation



Data is smoothed using a 29 day running average.

(Western Regional Climate Center 2010)

Native plants typically germinate and grow when there is adequate moisture and when temperatures are above freezing. Thus, at the on set of the winter rainy season the result is growth and is followed by a profusion of flowers in the spring. However, during the dry summer month many native species become dormant unless they have deep tap roots or are confined to wetland areas. Precipitation and temperature are both critical factors in directing native plant growth.

4.0 Proposed mitigation

4.1 Habitat Restoration Areas

The proposed creek bank restoration involves a combination of erosion control and enhancement measures near bridge 51C-006 along the Santa Ynez River. The scope of restoration within the river channel on the east side and west side of the bridge and will cover all disturbed earth on each side of the structure and along the County roadway right of way. Replacement of the Floradale Avenue Bridge will restore the natural grade of the channel with the removal of 1.1 acres of existing imported fill, piles and footings, including one pile set in the low-flow channel of the Santa Ynez River. An in channel debris dam will be removed, the 3-foot high debris dam consisting of reeds, woody material, and deposited sediment is located approximately 250 feet downstream of the Floradale Avenue Bridge. The debris dam obstructs water flows, and it will be removed to facilitate steelhead passage. The staging area will be reseeded with a grass mixture suitable for erosion control and to return the area to its former use as farming area. No upland habitat enhancement will be done on the Federal Penitentiary property due to security and access restrictions. Although roadway prism will be covered with a compost blanket and hydro-seeded with the native mix developed of the area.

The entire restoration area will be re-vegetated and restored with native vegetation defined by topographic delineation. The River Flood Zone (RFZ) and River Bank Zone (RBZ) will contain riparian trees and riparian shrubs. The Upper Riparian Zone (URZ) will be comprised of Coastal Live-oak trees and Coastal Sage Scrub habitat species.

The River Flood Zone (RFZ) consists of the area between the banks containing the low-flow channel of the Santa Ynez River which will be planted with species such as southern cattail (*Typha domingensis*), alkali bulrush (*Scirpus maritimus*), Pacific blackberry (*Rubus ursinus*), California Rose (*Rosa Californica*) and similar container plants. The RFZ is roughly from 40 feet to 60 feet in elevation. No Willow or Cottonwood trees will be planted with 75 feet of the waters edge to prevent clearing of the tree by Flood Control Department maintenance activities.

The River Bank Zone (RBZ) will contain riparian trees and Coast Scrub habitat. The RBZ will contain native species such as Black Cottonwood (*Populus balsamifera ssp. Trichocarpa*), and Arroyo Willow (*Salix lasiolepis*), Mule Fat (*Baccharis salicifolia*). The RBZ roughly from 60 feet to 75 feet in elevation.

Upper Riparian Zone (URZ) planting area will be composed of Coastal Live-oak trees and Coastal Sage Scrub habitat species. The URZ will be planted native species such as Coast live oaks (*Quercus agrifolia*), California sagebrush (*Artemisia californica*), Purple Sage (*Salvia leucophylla*), Fuchsia-flowered gooseberry (*Ribes speciosus*) and other similar plant species. The URZ is roughly about 80 in elevation near the bridge and roadway interface and from 60 feet to 75 feet in elevation outside of jurisdictional areas as the road tapers down to conform with the existing Floradale Avenue road.

The combination of native trees, large and small shrubs species from the RFZ and URZ should be sufficient to provide to cover the 75% of the jurisdictional area after three years and 90% cover at the end of five years for the life of the project in jurisdictional areas. Additional augmentation of a compost blanket with native hydro-seed stock will also be used and throughout the project areas on all exposed earth.

4.12 Invasive Species Removal

Invasive, non-native *Arundo Donax* will be removed as a project mitigation measure. Approximately .05 acres or 2200 square feet square of *Arundo* will be targeted for removal the eastern bank area of the Santa Ynez River at the project location.

Giant Reed Grass (*Arundo donax*)

Background: Giant reed grass (*Arundo*) is commonly found in riparian areas of the southwest. This invasive plant is rhizomatous, meaning it spreads through shoots underground. It has vigorous growing habits, is bamboo-like, and can grow to 30' tall. *Arundo* is native to Asia but was cultivated in Europe, the Middle East, and northern Africa for thousands of years. It was introduced to California as an ornamental plant used for erosion control in drainage ditches. *Arundo* reproduces from stems and rhizomes that are buried even 3' to 10' deep. Stems are hollow and robust with knotted nodes. It grows best in moist soils, wetland and riparian areas, and sand dunes. *Arundo* forms dense stands, crowding out vegetation for resources. *Arundo* is very flammable when it's dry, making it a fire danger. It also requires ample amounts of water and therefore disrupts natural flood regimes. *Arundo* produces little shade along stream banks (compared to native riparian trees) that negatively affect stream temperatures, and increase algae photosynthesis. Water quality is also impaired by decaying *Arundo* biomass that is transformed into toxic ammonia (NH_4^+ to NH_3). The leaves and stems of this plant also have chemical defense compounds in high levels that prevent growth of other vegetation. In general, *Arundo* should first be addressed in waterways and along banks and then in the 100-year floodplain. Address high quality areas first then work into stands that are most easily managed.

Chemical Control: Herbicide application is an effective method to control *Arundo*. It usually takes 3-5 years of continual herbicide applications. Primary herbicides include imazapyr or glyphosate, Rodeo (for wetlands) and Roundup (not for use near streams). Herbicide should be applied immediately after the *Arundo* is cut (no more than 5 minutes). Applications should be very cautious to not affect any other surrounding vegetation, especially with glyphosate since it is a broad-spectrum herbicide. A typical treatment is 1.5 % glyphosate by volume with 0.5% non-ionic surfactant. A concentrated glyphosate solution (50%-75% rodeo, or 27%-40% glyphosate) can be applied directly to freshly cut stems within 5 minutes of being cut. It is highly recommended to mix in dye or food coloring herbicide solution to know what exactly is being treated. Mixture should be applied with a sponge or hand mister. The best time to spray is after flowering and before dormancy, which is generally late August to early November when the plants nutrients are moving into the roots and rhizomes. Spraying

during active growing periods, early spring to late fall, is the best time to ensure the plant will uptake the herbicide.

Manual Control: First, cut the canopy at the surface with a chainsaw, pruning shears, or a machete. Then pull up the remainder of the reed stems, roots, and rhizomes. Commonly used tools are pick axes, mattocks, and shovels. All biomass must be completely removed from the soil. Moistened soils are best for hand pulling.

Mechanical: Hand tools, backhoes, and an excavator are all examples of small tools that can be used. Other broad clearing, small scale tools include hammer-flail mowers, root lows, rakes and the like. Mechanical methods work best when combined with herbicides and planting or seeding of native material. Large scale mechanical methods cause major soil disturbance that promote growth of *Arundo*. It is not recommended to use an excavator next to the stream, on banks or in the streambed, because it allows roots and shoots to move downstream and take again. Do not put remnants in a wood chipper.

Other methods include mulching, prescribed fire, and biological control. However these methods are not recommended.

Removal may require reoccurring treatments over a period of 5 years using a mini-excavator along with manual methods to ensure the rhizomonous roots are completely removed. Appendix two on page 3 of 5 shows the locations of giant reed grass, which will be removed from Santa Ynez River.

4.2 Site Preparation: Compost Blanket

Post bridge construction the restoration area will have a compost blanket installed. The use of compost as a Best Management Practice (BMP) has several benefits. Such as helping to prevent and reduce erosion, reduce runoff, establish vegetation and retention of a large volume of water.

Use of compost improves down stream water quality by retaining pollutants such as heavy metals, nitrogen, phosphorus, oil and grease, fuels, herbicides and pesticides. Nutrients and hydrocarbons are absorbed and or trapped by compost are decomposed by naturally occurring microorganisms. Compost improves soil structure and nitrogen content, which reduces the need for chemical fertilizers. Compost based BMP's remove as much or more sediment from storm water as traditional perimeter controls, such as silt fences, while allowing a larger volume of clear water to pass through.

A compost blanket is a layer of loosely applied compost that is placed on the soil in disturbed areas to control erosion and retain sediment resulting from sheet flow runoff. It is used in place of sediment and erosion control tools such as mulch, netting or chemical stabilization.

4.3 Timing

All planting should be done between October 1 and April 30. Ideally, once construction has been completed all plantings should be done after the first wetting rains between October 1 and February 1 to take full advantage of the winter rainy season, dormancy of foliage and rooting period to ensure optimal survival of plantings. The fall months in California are comparable to early spring in the rest of temperate North America. At this time soils are still warm but not too hot for tender new roots. Capillary movement of water is upward, toward the soil surface. Nights are cool, promoting less shoot growth and more root growth while the days are relatively cool, leading to less stress on new plantings. These cooler conditions are less favorable to many soil-borne pathogens that infect roots systems which are broken or damaged during planting,

4.4 Plant Pallet Sources

To the extent feasible, all tree and shrub stock will be grown from cutting and seed stock obtained from the south coast area of Santa Barbara County. All replacement tree stock, which cannot be grown from cutting or seeds, shall be obtained from a native plant nursery, be ant free and shall not be inoculated to prevent heart rot. The operator shall provide a list of all material which must be obtained from other than onsite sources. All plant materials will be provided by one or more of the following local native plant nurseries: San Marcos Growers (805) 683-1561, Matillija Nursery (805) 523-8604, Las Pilitas Nursery (805) 438-5992, Growing Solutions (805) 452-7516, Santa Barbara Natives (805) 729-3855, Santa Barbara Botanical Garden, (805) 682- 4726. All plant material (cutting and seed source) will be from the Santa Barbara County area.

Plant material in containers larger than one-gallon cans should be avoided. All container plants will be planted as shrubs to allow for deep mulching and to provide an established root mass. Table 4.4.1 below lists the species, quantities and container sizes of trees and shrubs that will be planted.

4.4.1 Plant Species Pallet

Trees		Quantity	Size
Coast Live Oak	<i>(Quercus agrifolia)</i>	50	one-gallon
Freemont Cottonwood	<i>(Populus fremontii)</i>	100	one gallon
Western Sycamore	<i>(Platanus racemosa)</i>	20	one-gallon
Arroyo Willow	<i>(Salix lasiolepis)</i>	50	one-gallon
River Channel Plants			
Southern cattail	<i>(Typha domingensis)</i>	200	one-gallon
Alkali bulrush	<i>(Scirpus maritimus)</i>	200	one-gallon
Arrow Weed	<i>(Pluchea sericea)</i>	200	one-gallon
Mexican Rush	<i>(Juncus mexicanus)</i>	100	one-gallon
Mule Fat	<i>(Baccharis salicifolia)</i>	950	one-gallon
Mugwort	<i>(Artemisia douglasiana)</i>	900	one-gallon
Common Spike Rush	<i>(Eleocharis palustris)</i>	100	one gallon
Yerba Mansa	<i>(Eleocharis palustris)</i>	200	one-gallon
CA Rose	<i>(Rosa californica)</i>	900	one-gallon
Pacific Blackberry	<i>(Rubus ursinus)</i>	1000	one-gallon
Hummingbird Sage	<i>(Salvia spathacea)</i>	30	one-gallon
Upper Riparian area plants			
Toyon	<i>(Heteromeles arbutifolia)</i>	20	one-gallon
Laurel Sumac	<i>(Malosma laurin)</i>	80	one-gallon
Coffee berry	<i>(Rhamnus californica)</i>	20	one-gallon
Lemonade berry	<i>(Rhus integrifoli)</i>	20	one-gallon
Mexican elderberry	<i>(Sambucus mexicana)</i>	160	one-gallon
Purple sage	<i>(Salvia leucophylla)</i>	50	one-gallon
Fuchsia-flowered gooseberry	<i>(Ribes speciosus)</i>	50	one-gallon
Hollyleaf Redberry	<i>(Rhamnus crocea ilicifolia)</i>	60	one-gallon
California fuchsia	<i>(Epilobium canum)</i>	100	one-gallon
California buckwheat	<i>(Eriogonum fasciculatum)</i>	100	one-gallon
California sagebrush	<i>(Artemisia californica)</i>	100	one-gallon
Holly leaf Cherry	<i>(Prunus ilicifolia)</i>	20	one-gallon
		Total	
		5780	

4.5 Planting locations

Tree plantings will be placed approximately 10 to 20 feet apart to allow for future growth. Large shrubs will be planted in groupings of the same species and will be spaced approximately 5 to 10 feet apart. Smaller shrubs will be planted in groups three feet apart to create natural appearing clusters of vegetation comprised of species that occur in an undisturbed habitat. Plantings will be designed to copy natural associations of plant species found in a natural undisturbed riparian or coastal sage scrub habitat.

4.5.1 Plantings locations and species by topographic zone delineation.

Three distinct planting zones will be established based on topographic position and inundation tolerance of the planting stock at the location. The three zones are the River Flood Zone (RFZ), River Bank Zone (RBZ) and Upper Riparian Zone (URZ).

The River Flood Zone (RFZ) is roughly from 40 feet to 60 feet in elevation. Generally the lower bank area has a higher capacity for retaining water in the soil after rainfall and is subject to flooding during high water events.

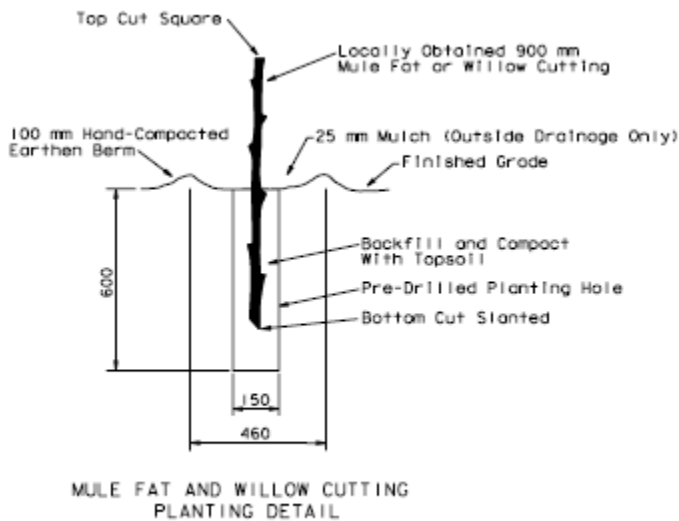
The River Bank Zone (RBZ) roughly from 60 feet to 75 feet in elevation. The RBZ is the bank area of the buried rock slope protection for the new bridge and the areas where the abutments and fill was removed from the river channel during demolition of the old structure.

The Upper Riparian Zone (URZ) range is from approximately 75 to 80 feet in elevation, with the exception of the roadway fill outside of jurisdictional areas where it is approximately 60 to 75 in elevation and is entirely on the roadway prism slope with better drainage.

4.5.2 Harvest and planting plan for cuttings

Branches from mature Cottonwood, Arroyo Willow trees and Mule Fat may be used for restoration. They will be cut in the late fall or early winter as soon as these plants have stopped growing for the season. Branches will be cut in the 1 to 3 inch diameter range into lengths of three feet. The exposed portion of the cutting will be cut horizontal and the end to be will be cut at an angle of 45 degrees to avoid planting cuttings upside down. All branches and leaves will be stripped from the cutting and all buds will be removed from the top one third of the cutting. Cuttings will be planted in holes in the LBZ and with a slightly larger hole than the cutting with a hand held drill or gasoline powered auger if needed, to a depth of two feet. The cutting will be inserted into the hole with native soil that will be tightly compressed into the hole for root growth.

4.5.3 Figure Four: Diagram for planting cuttings.

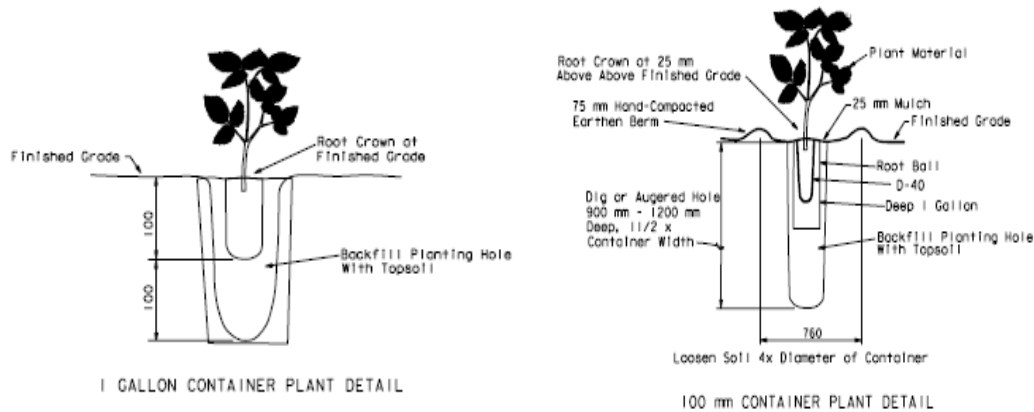


4.5.4 Planting plan and procedure for container plants

Planting holes will be dug by hand with a posthole digger or by mechanical methods such as an auger at least twice as deep and wide as the container size. While the plant is still in the container, the root ball will be thoroughly wetted. The plant will then be removed from the container. If the taproot has begun to encircle the container, the roots will be cut back to a single taproot. For most native revegetation projects, soil amendment is not recommended. The soil should be soft and friable. Large rocks and clods should be removed from planting whole backfill soil. If the supervising biologist calls for soil amendment, a mix of approximately one-third composted or nitrolized forest humus to two-third native soil should be blended and used as backfill. Prior to placement of the plant into the planting hole, fill the hole with water, which will be allowed to percolate into the subsoil. Some of the backfill material will then be spilled in the planting hole, moistened, and tamped to form a mound in the bottom of the planting hole. With water flowing slowly from the hose into the hole, more backfill material will be placed into the hole, up to about two-thirds of the height of the root ball. The backfill material will be moistened, tamped, and set all around. The position of the plant, relative to finished grade, will be rechecked to be sure that the collar is still above grade. The remaining portion of the planting hole surrounding the root ball will be filled with backfill material. An irrigation basin berm 2 to 3 feet outside the dimension of the trunk will be created using the remaining backfill and soil. Coarse, organic, weed-and disease-free mulch will be applied at least one-inch deep. The exposed collar and inside the entire basin area will be top-dressed. Once planting is complete, the plant will be irrigated from the top, filling the irrigation basin and sprinkling the surrounding area to settle backfill, mulch, and berm. Plants will be deep-watered once per week through the first 3 to 5 months following planting, unless frequent rainfall

makes deep-watering unnecessary. Weeding will be conducted as needed to reduce competition with non-native species.

4.5.5 Figure Five: Diagram for planting container plants.



4.6 Irrigation

A temporary irrigation system will be installed with irrigation control valves and drip emitters. Two gallon per-hour drip emitters will be used for all smaller shrubs and two gallon per-hour emitters will be used for all large shrubs and trees. Supplemental watering will need to be performed at least once a week for three or five months until the plants have become established. Once the plantings are established watering should become bi-weekly, for at least a two year maintenance period. All plantings shall be irrigated by drip irrigation for at least a two year maintenance period. Irrigation shall be phased out during the winter of the second year unless unusually severe conditions threaten survival of the planting. After irrigation is removed all plantings must survive and grow for at least three years without supplemental irrigation.

5.0 Maintenance

5.1 Weed control

Eradication measures to control exotic weeds on site shall be primarily conducted by hand. Weed removal will be required to aid the establishment of the newly install plants during the maintenance period. Weed removal will need to be performed once a month for the first three or four months and then every other month thereafter until the end of the first year. In the remaining period weed control will be performed twice yearly, once in the spring and once in the fall.

Given the tenacity of some weeds the preferred hand pulling removal method may not be effective. For effective weed control, applications of herbicide may be required. Spot applications of Aquamaster™, a glyphosate herbicide registered by the Environmental Protection Agency for use in flowing streams and creeks will be needed. Only herbicides approved for use near creeks and streams will be used. **Surfactant LI700, Agri-Dex** shall not be used on site.

Herbicide application shall only be used as a last result to eliminate stubborn weeds that cannot be eliminated by hand such as Giant Reed (*Arundel donax*). Repeated spot applications may be necessary during the maintenance period.

5.2 Irrigation System

The temporary irrigation system with irrigation hose, including control valves, drip emitters and shall be functional for a minimum of the entire two year maintenance period. The entire systems should be field inspected to check for leaks caused by chewing of rodents or material failure. Field inspections should occur bi-weekly for three or four months until the plants have become established and then monthly for the duration of the two year maintenance period. System field inspections will allow the maintenance contractor to determine if supplemental watering will needed and if severe conditions threaten survival of the planting. The temporary irrigation system shall be removed the end of the five years.

6.0 Performance measures

Performance standards are measure of how well a project is meeting the goals and objectives of the plan. The mitigation goal is to return native vegetation cover to Santa Ynez River channel and bank area after the construction of Bridge 51C-0370 project. The proposed jurisdictional revegetation area is 1.40 acres or 61,189 square feet in size and is composed of the bank below the proposed bridge and the channel between the bridge abatements.

6.1 Success criteria

This planting plan requires that all planting shall achieve a minimum survival and coverage rate. All planting shall have a minimum survival rate of 80% for the first year, and a 100% survival rate the after and/or shall obtain after three years 75% of the disturbed area shall have coverage of 45,892 square feet and then 90% coverage or 55,070 square feet at the end of the five years for the life of the project.

In order for this plan to be deemed successful, the additional three performance measures shall be met.

- 1) All plants must survive and grow for at least three years without supplemental water for the restoration phase of the project to be eligible for acceptance by the CDFW.

- 2) No single species shall constitute more than 50% of vegetation cover.
- 3) No woody invasive species shall be present, and herbaceous invasive species shall not exceed 5% cover.

If minimum growth rate is not achieved then the County shall be responsible for taking corrective measures as determined by the CDFW.

7.0 Mitigation monitoring

The County shall ensure that the maintenance, monitoring and reporting activities are overseen by a specialist familiar with restoration of native plants. The purpose of this monitoring is to document implementation of the habitat restoration plan, CDFW condition compliance and revegetation performance measures.

7.1 Monitoring Methodology

Monitoring will be performed by visually inspecting the site and recording qualitative site conditions and quantitative measures of performance in the restoration area.

Qualitative observations in the restoration area shall include human or other disturbance, wildlife activity, soil conditions, and activities adjacent to the project site that affect or may in the future affect the site.

Quantitative measurements will include an accounting of all trees and shrubs planted in the restoration area, any mortality and average heights. A visual estimate of the absolute shrub and weed cover will also be conducted. Cover estimates shall measure the aerial extent of unvegetated ground and shrub and weed cover. Monitoring reports will include identification of plant species within the re-vegetation areas, visual estimation of percentage cover and photographs from established key view locations and documenting need for additional maintenance.

7.2 Schedule

Monitoring shall be performed weekly in the first two weeks, then monthly for three months, and then quarterly for the next 12 months, unless success criteria are met earlier. After the first year, trees and shrub species will be monitored annually in spring for a period of five years or until the success criteria has been achieved.

7.3 Reporting

An annual report shall be submitted to CDFW by January 1 of each year for 5 years after planting. This report shall include the survival rate, % cover and height of species of both trees and shrubs. The number of species of plants replaced, an overview of the revegetation and exotic plants control efforts and the methods used to assess these parameters shall also be included. Photos from designated photo stations shall be included.

8.0 Contingency Measures

If plant survival rates or % cover requirements have not been met, there shall be contingency measures to ensure the success criteria of the restoration plan. The contingency measures require that the County approved maintenance contractor shall replant to a level to achieve the plan requirements. All replacement plants shall be monitored and have the same survival and growth rate requirements for five years after planting. The county will adopt an adaptive management strategy as a tool for dealing with unexpected situations or methodologies which are beneficial or have a negative impact on the restoration project.

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10.0 Appendix One Seed Mix Pallet Floradale Avenue Bridge 51C-006

Common Name	Scientific Name	Habit	Habitat Notes ¹	Flowering Season ²	Flower Color	Fruit Type
Annual wildflowers						
Farewell-to-spring	<i>Clarkia</i> spp.	Annual		May-Jul	Purple or pink flrs.	Small seeds
California poppy	<i>Eschscholzia californica</i>	Annual		Feb-Jul	6-20 in.; Orange flowers.	Dry seeds
Globe gilia	<i>Gilia capitata</i>	Annual	CH	Mar-Jun	4-29 in.; Flrs. pale purple.	Dry seeds
Goldfields	<i>Lasthenia californica</i>	Annual		Mar-May	1-12 in.; yellow flrs.	Dry seeds
Tidy tips	<i>Layia platyglossa</i>	Annual		Feb-Jun	3-16 in.; Flrs yellow with white tips.	Dry seeds
Sky lupine	<i>Lupinus nanus</i>	Annual <u>legume</u>		Feb-May	4-16 in.; Flrs. blue-purple	Large seeds.
Succulent lupine	<i>Lupinus succulentus</i>	Annual <u>legume</u>		Feb-May	To 20 in.; Blue-purple flrs.	Large seeds.
Sticky phacelia	<i>Phacelia viscida</i>	Annual		Mar - Jul	Royal blue, white	Dry seeds.
Chia sage	<i>Salvia columbariae</i>	Annual		Mar - Jun	Purple	
Native Grasses						
California brome	<i>Bromus carinatus</i>	Perennial grass		Apr-Jun	8-30 in. grass	Dry seeds
Giant rye	<i>Leymus condensatus</i>	Perennial grass		Jun - Sep		Dry seeds
Purple Needlegrass	<i>Nassella pulchra</i>	Perennial grass		Mar - May		Dry seeds
Nuttall's fescue	<i>Vulpia microstachys</i>	Annual grass		Mar - Jun		
Six weeks fescue	<i>Vulpia octoflora</i>	Annual grass		Mar - Jun		
Perennials/Shrubs						
California sagebrush	<i>Artemisia californica</i>	Shrub, summer deciduous		Sep-Oct	Inconspicuous flrs, grayish foliage.	Dry seeds

Mugwort	<i>Artemisia douglasiana</i>	Shrub		Jul-Oct	To 5 ft., Bicolored lvs. Inconspicuous flrs.	Dry seeds
Coyote brush	<i>Baccharis pilularis</i> ssp. <i>consanguineous</i>	Shrub, dioecious		Aug-Oct	White fruits	Dry seeds
Morning-glory	<i>Calystegia macrostegia</i> ssp. <i>cyclostegia</i>	Vine, perennial		Jan-Sep	Twining vine	Dry seeds
Greenbark ceanothus	<i>Ceanothus spinosus</i>	Shrub (needs good drainage)	CH	Mar-May	Some to 15 ft. or more, flrs blue to purplish	Dry seeds
Coast encelia	<i>Encelia californica</i>	Shrub, may be summer deciduous		Feb-Jul	To 4 ft.; Flrs. large, yellow and maroon.	Dry seeds
California fuchsia	<i>Epilobium canum</i>	Perennial	CH	Jun-Nov	8-24 inches, whitish leaves, red flowers.	Dry seeds
California buckwheat	<i>Eriogonum fasciculatum</i>	Shrub, sun	CH	Apr-Oct	To 3 ft.; Flrs pinkish, fruit clusters rusty orange	Dry seeds
Small-leaved buckwheat	<i>Eriogonum parvifolium</i>	Shrub, evergreen, low		May-Oct	12-36 in, spreading; Flrs whitish to pinkish.	Dry seeds
Golden yarrow	<i>Eriophyllum confertiflorum</i>	Shrub, summer deciduous	CH	Feb-Jul	1-3 ft.; Flrs yellow, in clusters.	Dry seeds
Saw-toothed goldenbush	<i>Hazardia squarrosa</i>	Shrub, evergreen, low, sun		Jun-Dec	To 40 in.; Yellow flrs.	Dry seeds
Toyon	<i>Heteromeles arbutifolia</i>	Shrub to small tree, sun		Jun-Nov	To 25 ft., Flrs. white, Fruit red.	Berries
Coast goldenbush	<i>Isocoma menziesii</i> ssp. <i>venetus</i>	Shrub. evergreen, low, sun		Mar-Sep	To 3 ft.; Flrs. yellow.	Dry seeds
Deerweed	<i>Lotus scoparius</i>	Perennial <u>legume</u>		Mar-Nov.	2-4 ft, Yellow-orange flowers. Fire follower.	Dry seeds

Coastal bush lupine	<i>Lupinus arboreus</i>	Perennial legume		Mar - Sep	Purple to white, yellow	Dry seeds.
Lompoc monkeyflower	<i>Mimulus aurantiacus (lompocense)</i>	Shrub, summer deciduous		Apr-Jul	2-4 ft.; Flrs. apricot.	Dry seeds
Caterpillar phacelia	<i>Phacelia ramosissima var. montereyensis</i>	Perennial	Northern subspecies	May-Sep	To 40 in.; pale purple	Dry seeds.
Coffeeberry	<i>Rhamnus californicus</i>	Shrub, sun or shade		May-Jul	5-15 ft.; Flrs. greenish, berries reddish	Berries
Redberry	<i>Rhamnus crocea</i>	Shrub, evergreen sun or shade		Mar-May	Leaves shiny green, flrs greenish, berries red.	Berries
Lemonade berry	<i>Rhus integrifolia</i>	Shrub, evergreen, can hedge		Feb-May	To 15 ft.; Flrs. white, Fr. reddish.	Fleshy
Fuchsia-flowered gooseberry	<i>Ribes speciosum</i>	Shrub, evergreen		Nov-May	3-8 ft.; Flrs. red, Fr. reddish	Berries
Purple sage	<i>Salvia leucophylla</i>	Shrub, summer deciduous		Jan-Jul	To 5 ft., Flrs pale purple.	Dry seeds
Black sage	<i>Salvia mellifera</i>	Shrub, summer deciduous		Jan-Jul	3-6 ft.; Flrs. purple	Dry seeds
Elderberry	<i>Sambucus mexicana</i>	Shrub to small tree, deciduous		Feb-Jul	To 20 ft.; Flrs. white, fruit blue-purple	Berries
Western vervrain	<i>Verbena lasiostachys</i>	Perennial		Mar - Oct	Purple flowers	Dry seeds

The plants in this table are presented as a list from which the actual planting palette may be developed.

- ¹ CH = More typical of chaparral habitat: needs good drainage
- ² Flowering season is based on the local flora (Smith 1998), but some species have a wide elevational range, which extends the overall flowering season.