

PRELIMINARY SITE RESTORATION PLAN

PG&E L-130 SACRAMENTO RIVER CROSSING PIPELINE REPLACEMENT PROJECT SOLANO AND SACRAMENTO COUNTIES, CALIFORNIA

Project No. 2002-5361

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1.0 INTRODUCTION

Padre Associates, Inc. (Padre) has prepared this Preliminary Site Restoration Plan for the Pacific Gas and Electric (PG&E) L-130 Sacramento River Crossing Pipeline Replacement Project (Project). This plan is intended to restore wetland, riparian, and upland habitats and special-status plant occurrences temporarily impacted by disturbance occurring due to implementation of the proposed pipeline replacement project. This plan is preliminary and may be updated based on current site conditions and plant species availability at the time of implementation.

1.1 PROJECT LOCATION

The Project is located on the Sacramento River south of Rio Vista, California. The terrestrial landing of the western portion of the Project area is located at the south end of the City of Rio Vista and the eastern portion of the Project area is located within residential and agricultural lands on Brannan Island (Figure 1). The site is located within the Rio Vista, California United States Geological Survey (USGS) 7.5-Minute Series topographic quadrangle map. The Project area is in Township 4 North, Range 3 East, Solano and Sacramento Counties, California.

1.1.1 Western Terrestrial Landing

The western terrestrial landing for L-130 is primarily located within a vacant lot owned by the City of Rio Vista. There are remnants of a peach orchard on this property, but the site is now a vacant lot dominated by non-native weeds. The vacant lot does not have any wetland areas aside from a narrow band of in-channel emergent wetland at the base of the west bank of the Sacramento River, which is located at the bottom of a steeply eroded cliff.

1.1.2 Eastern Terrestrial Landing

The eastern terrestrial landing for L-130 is within a disturbed area supporting non-native weedy vegetation and largely unvegetated lands. The east bank of the Sacramento River is a federal levee and State Route 160 is on the crown of the levee. The Project area for the HDD entry location and pipeline laydown area extends eastward across agricultural lands, access roads, and agricultural ditches.

1.2 PROJECT DESCRIPTION

PG&E Gas Transmission division proposes to replace the PG&E L-130 pipeline where it crosses the Sacramento River at Rio Vista. The National Transportation Safety Board (NTSB) has issued a safety recommendation to PG&E that the existing pipeline be assessed by December 22, 2022. PG&E has determined that the pipeline should be replaced prior to the assessment deadline to meet the NTSB recommendation and maintain natural gas service to customers. The objectives of Project are to install a new 16-inch diameter pipeline underneath the Sacramento River using horizontal directional drilling (HDD) techniques, tie the new crossing into the existing pipeline network, and then decommission the PG&E portion of the existing Sacramento River crossing.

All impacts are expected to be temporary; no permanent impacts will occur as a result of this Project. Once the pipeline replacement and decommissioning are complete, the temporary

disturbance footprints will be restored to preconstruction contours. Upon completion of construction activities, all temporary disturbance areas that were previously vegetated will be restored to their pre-construction condition via active or passive restoration techniques. Restoration within agricultural land will be restored consistent with landowner agreements for return to cropland, and no restoration will occur within developed or previously unvegetated lands. This Site Restoration Plan addresses the replacement of wetland, riparian, upland habitats, and special-status plant species impacted by implementation of the Project.

1.3 PROJECT SETTING

The Project area is bordered by the City of Rio Vista to the north, Montezuma Hills to the west, and agricultural lands within the Sacramento River Delta to the south and east and is located within the Sacramento Valley subregion of the Great Valley California floristic region (Baldwin et al., 2012). The surrounding area consists of annual grasslands, freshwater emergent wetlands (in-channel), agricultural land, developed land, and rural residential development. The western portion of the site is located within a vacant industrial area just south of residential Rio Vista. The eastern portion of the site is located predominantly within agricultural crop land and a federal levee and State Route 160 occur within the Project area on the east bank of the Sacramento River.

1.4 RESTORATION PLAN REQUIREMENTS

This Site Restoration Plan was prepared to meet the regulatory agency requirements and permit conditions of approval. The Site Restoration Plan is also consistent with field protocols set forth in PG&E's Bay Area Operations and Maintenance Habitat Conservation Plan (BAHCP) (ICF, 2017) and Multiple Region Operations & Maintenance Habitat Conservation Plan (MRHCP) (ICF, 2020). The Sacramento River is the dividing line between Solano and Sacramento Counties; therefore, the western portion of the Project area is within the BAHCP Area and the eastern portion of the Project area is within the MRHCP Area. Project-specific applicant proposed Mitigation Measures (MMs) as outlined in the Biological Technical Report for the PG&E R-1402 L-130 Sacramento River Crossing Pipeline Replacement Project (Padre, 2021a) were also considered in development of this Site Restoration Plan. Measures pertaining to site restoration and restoration of impact to special-status plant species includes the following:

MM BIO-1. If temporary impacts cannot be avoided, impact to special-status plant populations shall be restored upon project completion to pre-existing condition. A Site Restoration Plan shall be prepared that provides for plant salvage and transplantation and/or seed collection and replanting, as appropriate, and establish performance criteria and monitoring to ensure restoration to pre-project conditions.

MM BIO-7.

After decommissioning and removal activities are complete, the shoreline and levee disturbance areas will be restored to pre-project contours and condition. Levee disturbance areas will be restored consistent with Central Valley Flood Protection Board and Local Maintaining Agency requirements and encroachment permits issued for the Project. Wetland impact areas on the shoreline of the Sacramento River will be restored to pre-existing condition. A Site Restoration Plan will be developed that will include the

restoration of emergent wetland habitat removed for completion of the Project. The Site Restoration Plan will be submitted to the California State Lands Commission for approval prior to the start of construction.

PG&E MRHCP Field Protocol (FP) – 14. If the covered activity disturbs 0.1 acre or more of habitat for a covered species in grasslands, the field crew will revegetate the area with a commercial “weed free” seed mix

This Site Restoration Plan is also intended to meet regulatory agency requirements for restoration of temporary impacts to jurisdictional aquatic resources. Temporary disturbance to jurisdictional aquatic resources will be restored in accordance with this plan, landowner and agreements, and regulatory permit conditions, as applicable.

1.5 RESPONSIBLE PARTIES

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Maintenance of Mitigation Area Plantings

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1.6 IMPACTS AND RESTORATION

The Project activities will result in impacts to wetland, riparian and upland habitats including jurisdictional areas aquatic resources on the Sacramento River. A biological resources survey was completed to document the existing biological resources and a preliminary aquatic resources delineation was conducted to support regulatory permitting for the Project (Padre, 2021a; Padre, 2021b). The portions of the study area that will be disturbed by pipeline replacement and decommissioning activities (e.g., vegetation clearing and excavation) were delineated as the impact areas. These impact areas will be restored and are referred to as restoration sites within this Site Restoration Plan. The baseline vegetation conditions of the restoration areas are discussed below.

1.6.1 Vegetation Communities

Seven vegetation communities were identified onsite during field surveys. In the western portion of the study area, non-native grasslands were present adjacent to Beach Drive. Communities with a significant amount of human disturbance were also present on the west side of the Sacramento River in the forms of Ruderal and Urban Mix communities. Along the west bank of the Sacramento River, Central Coast riparian scrub was present in a thin band near the shoreline. There was a narrow band of emergent hydrophytic vegetation growing along the west bank of the Sacramento River that is classified as Coastal and Valley freshwater marsh. The Sacramento River is classified as riverine. On the east bank of the river, the vegetation has been greatly altered and is classified as ruderal. The eastern portion of the study area, east of Highway 160, is predominantly active agricultural fields. Between some of the fields are agricultural ditches containing hydrophytic vegetation. These ditches can be classified as Coastal and Valley freshwater marsh. Vegetation communities were determined based on species composition and

the *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland, 1986), but were modified as needed to accurately describe the existing habitat observed onsite. The Botanical Resources Survey Report (Nomad Ecology, 2020) vegetation community mapping was used as a basis for vegetation community classification and mapping for this Site Restoration Plan. Below is a brief description of each vegetation type identified.

Agriculture. This community is not described in the *Preliminary Descriptions of the Terrestrial Natural Communities of California* because it is not a natural community. This cover type consists of land currently used in crop cultivation that is routinely disturbed by agricultural practices. This cover type is limited to portions of the study area east of Highway 160.

Central Coast Riparian Scrub. This cover type is described as a streamside thicket with a variable canopy cover of woody vegetation, typically dominated by a willow species (*Salix* sp.). It can occur at the mouths and along the banks of most perennial and some intermittent waterways of the South Coast Mountain Range. Within the study area, this community was present on the west bank of the Sacramento River and in one of the larger agricultural ditches in the eastern portion of the Project area. On the west bank of the Sacramento River, this community was characterized by the presence of Himalayan blackberry (*Rubus armeniacus*), edible fig (*Ficus carica*), scarlet sesban (*Sesbania punicea*), white alder (*Alnus rhombifolia*), Oregon ash (*Fraxinus latifolia*), and California button willow (*Cephalanthus occidentalis*).

In one of the agricultural ditches in the eastern portion of the study area, there is a dense but narrow thicket of arroyo willow (*Salix lasiolepis*) that is also classified as part of the Central Coast riparian scrub cover type.

Coastal and Valley Freshwater Marsh. This cover type is characterized by a dominance of perennial, emergent, herbaceous vegetation. It can be found in areas with pooled freshwater, typically with little flow, and typically permanently flooded. These conditions can form along the edges of water bodies, channels and mouth margins of rivers, ditch margins, lagoons, ponds, and reservoir margins. Within the study area, this vegetation community was found along the west bank of the Sacramento River as well as some of the agricultural ditches on the east side of the Sacramento River. On the west bank of the Sacramento River this community consists of a band of hardstem bulrush (*Schoenoplectus acutus*), also known as tule. Within some of the agricultural ditches, standing water was present and cattail (*Typha* sp.) have formed dense stands in association with duckweed (*Lemna minuta*), water smartweed (*Persicaria amphibia*), and tall cyperus (*Cyperus eragrostis*).

Non-Native Grassland. Non-native grasses that were introduced during European settlement of the Central Valley dominate the grasslands in the Project area. Typical species include non-native grasses such as soft chess (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*), hare barley (*Hordeum murinum* ssp. *leporinum*), Italian ryegrass (*Festuca perennis*), and wild oat (*Avena fatua*). Native grasses occur amongst the non-native grasses, including blue wild ryegrass (*Elymus glaucus*). Several non-native herbaceous plant species occur within this cover type including red-stemmed filaree (*Erodium cicutarium*), common mallow (*Malva neglecta*), and Italian thistle (*Carduus pycnocephalus*), as well as native herbaceous plant species including rancher's fireweed (*Amsinckia menziesii* var. *intermedia*). Within the study area, this cover type was located on the upland portions of the west bank of the Sacramento River and within the vacant lot adjacent to Beach Road. Dominant grasses in this community included slender wild oat

(*Avena barbata*), wild oat, and ripgut brome. Some of the forbs that were common within the Project area include telegraph weed (*Heterotheca grandiflora*), yellow star-thistle (*Centaurea solstitialis*), and western ragweed (*Ambrosia psilostachya*). Other species found within this community in the western portion of the study area included blue gum (*Eucalyptus globulus*), Gooding's black willow (*Salix goodingii*), almond (*Prunus dulcis*), and giant reed (*Arundo donax*).

Riverine. This community is not described in the *Preliminary Descriptions of the Terrestrial Natural Communities of California* because it is an open water aquatic community with limited vegetation. Within the study area, the Sacramento River traverses the Project area, and is a perennial and navigable waterway. Throughout most of this mapped feature, there is no emergent vegetation present; however, on the west bank of the Sacramento River there is a dense to sparse stand of hardstem bullrush (*Schoenoplectus acutus* var. *occidentalis*) where pioneer floating species like floating water primrose (*Ludwigia peploides*) and water hyacinth (*Eichhornia crassipes*) will occasionally float by or be lodged on a piece of vegetation.

Ruderal. This community is not described in the *Preliminary Descriptions of the Terrestrial Natural Communities of California* because it is not a natural community and is typically associated with human disturbance. In the study area, ruderal vegetation was present at various locations including patches of high disturbance on the west side of the Sacramento River and in a large area on the east bank of the Sacramento River. The species composition and cover density of this community varied greatly within the study area. The most prominent patch of ruderal cover, present on the east side of the Sacramento River, was in an open dirt parking lot that supported dense stands of giant reed in isolated patches. As a canopy in this community, tall stands of blue gum and red gum (*Eucalyptus camaldulensis*) were present on the east side of the Sacramento River.

Urban Mix. This community is not described in the *Preliminary Descriptions of the Terrestrial Natural Communities of California* because it is not a natural community and is associated with human disturbance. Within the study area, this cover type was characterized primarily by paved or gravel roadways and rural residential areas that contain ornamental plantings. Notable vegetation that was mapped as part of the urban mix cover type are the large eucalyptus trees present on the east side of the Sacramento River and along the western reaches of the agricultural fields.

1.6.2 Jurisdictional Impact Areas

A preliminary aquatic resource delineation was conducted within the study area to identify regulated habitats including waters and wetlands, under regulatory authority of federal and state agencies (Padre, 2021b). The preliminary aquatic resource delineation identified and delineated 0.35 acres of Federal jurisdictional waters of the U.S. and wetlands, and other features under State jurisdiction including waters of the state regulated by the Regional Water Quality Control Board and Section 1600 stream features regulated by the California Department of Fish and Wildlife jurisdiction. Table 1 provides a breakdown of Project impacts to waters of the U.S. and wetlands.

Table 1. Project Impacts to Waters of the United States and Wetlands

Impact Description	Impact Type	Impact Area (Acres)	Impact by Wetland Type	Associated Vegetation Community
Project excavation activities on west bank of Sacramento River	Temporary	0.005-acre	0.005-acre Tidal Emergent Wetland (W1)	Coastal and Valley Freshwater Marsh
				Central Coast Riparian Scrub
Surface disturbance and excavation activities	Temporary	0.29-acre	0.29-acre Tidal Riverine Water (R1)	N/A (Open Water)
Impacts to Water of the U.S. and Wetlands		0.30-acre		

The Sacramento River (Tidal Riverine Water) is an open water aquatic community with no vegetation. Within tidal riverine waters, excavation areas will be restored to pre-existing contours but no revegetation is prescribed. Tidal emergent wetlands on the west bank of the Sacramento will be restored to pre-existing condition.

2.0 GOALS OF SITE RESTORATION

The goal of the site restoration is to restore pre-project biological conditions within the temporary impact areas for the purposes of maintaining and preserving the hydrologic, plant community, and faunal habitat function of waters/wetlands and upland ecosystems that were temporarily impacted by Project activities. The methodologies included in this Plan focus on establishment and maintenance of the revegetated plant communities to be restored onsite at a 1:1 ratio. Specifically, the goals of site restoration are:

- Restore temporary impact areas to pre-construction contours.
- Restore temporarily impacted wetlands and riparian corridor to pre-construction conditions.
- Restore special-status plant species temporarily impacted to pre-construction conditions through salvage/transplant.
- Restore temporarily impacted upland areas to pre-construction conditions.
- Monitor the success of restoration efforts for three years or until performance criteria are met.

These actions will restore wetland, riparian, and upland habitats and conserve special-status plants to pre-existing conditions or better, within the temporary impact areas of the Project Site. The restoration area is a total of 19.55 acres and is comprised of five distinct restoration sites based on impact area boundaries within the overall Project area (Figure 2A-2E). Each restoration site has restoration requirements based on the pre-existing condition of the site. See Section 4.3 for more information on each restoration site.

3.0 DESCRIPTION OF THE RESTORATION AREA

The restoration area encompasses a total of 19.55 acres and is comprised of five distinct restoration sites based on impact area boundaries within the overall Project area. Each restoration site will be restored to the pre-disturbance condition or better. Active and/or passive restoration methods will be used based on the pre-disturbance conditions of mapped vegetation communities. Table 2 outlines the size, impact type, pre-disturbance vegetation community and acres, impact/restored acres, general restoration method, and revegetation methods for each restoration site. The restoration sites and the specific planting areas are depicted on Figures 2A-2E.

Table 2. Impact Areas and Restoration Summary

Restoration Site	Site Impact / Restoration (Acres)	Impact Type(s)	Pre-Disturbance Vegetation Community(s)	Jurisdictional Waters	Habitat Impact / Restoration (Acres)	Restoration Method	Revegetation Activity
1	0.15	Excavation	Urban Mix (Developed)	No	0.15	N/A	N/A (pre-existing condition is developed and unvegetated)
2	3.5	Vegetation removal, excavation, equipment and materials staging	Urban Mix	No	0.17	N/A	N/A (unvegetated)
			Non-Native Grassland	No	2.40	Active	Topsoil replacement, hydroseed
			Ruderal	No	0.59	Active	Topsoil replacement, hydroseed
			Central Coast Riparian Scrub	No	0.10	Active	Topsoil replacement, plant cuttings
			Coastal and Valley Freshwater Marsh	Yes (Tidal Emergent Wetland)	0.24	Passive	Recontour, passive restoration
			Special-Status Plant Species	No	1 Individual	Active	Salvage, transplant, topsoil preservation and/or seed collection
3	4.08	Vegetation removal, excavation, equipment and materials staging	Urban Mix	No	0.09	N/A	N/A (pre-existing condition is developed and unvegetated)
			Ruderal	No	3.97	N/A	N/A (pre-existing condition is disturbed and unvegetated)
			Riverine	Yes (Tidal Riverine Water)	0.017	N/A	N/A (pre-existing condition is open water and unvegetated)
4	0.19	Vegetation removal, excavation	Urban Mix	No	0.09	N/A	N/A (pre-existing condition is developed and unvegetated)
			Ruderal	No	0.1	Active	Topsoil replacement, hydroseed
5	11.63	Vegetation removal, excavation, equipment and materials staging	Agriculture	No	10.79	N/A	Return to cropland and agricultural uses consistent with landowner agreements (Temporary Construction Easements [TCE])
			Central Coast Riparian Scrub	No	0.07		
			Coastal and Valley Freshwater Marsh	No	0.16		
			Ruderal	No	0.09		
			Urban Mix	No	0.52		

4.0 RESTORATION IMPLEMENTATION

The focus of this Site Restoration Plan is to restore the site to pre-Project conditions to the extent feasible, and to restore and improve the habitats present in the Project area to pre-Project health and functionality following Project activities.

4.1 SCHEDULE

The restoration implementation schedule will maximize potential for success of vegetation restoration. Seeding and cutting installation will be conducted in the fall or early winter following completion of Project activities. Monitoring of the restoration sites will be conducted at least annually, beginning the year following construction and implementation of the Site Restoration Plan. It is expected that a minimum of three years will be required for the plantings to reach the appropriate size and maturity to provide substantial wildlife habitat functions.

Table 3. General Restoration Schedule

Restoration Activity	Action	Timing
Baseline surveys	Complete baseline surveys within the restoration sites and adjacent areas representative of the disturbed habitat types.	Completed June-July 2020 to be updated based on pre-construction surveys.
Pre-Construction Survey	Conduct pre-construction survey of impact area prior to construction and during the appropriate blooming season to confirm special-status plant occurrence within the temporary impact footprint. If special-status plants are identified, pre-construction surveys will determine the extent of the population to be impacted and document and photograph baseline conditions for the purposes of restoration.	Prior to Phase 2 Decommissioning impact occurrence
Special-status plant salvage and/or seed collection	Salvage individual plants and/or collect seed from special-status plants located within the Project impact area.	Prior to vegetation removal and/or ground disturbance.
Erosion Control	Placement of straw wattles, geotextiles, or other appropriate storm water/erosion best management practices (BMPs), as described in the Project plans or recommend by the restoration biologist.	During and upon completion of construction activities.
Revegetation	Hydroseed with appropriate seed mix; harvest and plant cuttings	Following construction activities, during the appropriate season.
Irrigation	The Restoration Area will be watered, as necessary, for the first year as recommended by the restoration biologist if rainfall is insufficient.	Following seeding and installation of cuttings, as needed.
Maintenance	Weed abatement, maintenance of erosion control measures, as necessary.	Year 1 - Quarterly Year 2+ - Biannually

Restoration Activity	Action	Timing
Site Visits/Monitoring	Qualitative surveys to investigate restoration progress and determine maintenance recommendations.	Year 1 - Monthly/quarterly Year 2+ - Annually
Reporting	Reporting of all maintenance activities completed on site, results of site visits, discussion of success criteria, and photo documentation.	Annually for up to 3 years, or until performance criteria are met.

4.2 SITE PREPARATION

Once the Project is complete and excavations are backfilled, the topography will be restored to pre-construction conditions and the restoration area prepared for planting. Vegetation removal will be minimized to the extent feasible and subsurface vegetation components (roots, rhizomes, seeds) will remain intact whenever possible. Topsoil containing the existing seedbank will be preserved and replaced on top of the subsoil backfill within all excavation areas. Preservation and replacement of the topsoil will promote natural regeneration of vegetation in areas disturbed by excavation and will maintain the integrity of the soil profile. The topsoil also contains roots, rhizomes, nutrients, and microorganisms that were previously existing onsite and will facilitate recovery of vegetation in areas of ground disturbance.

In addition, best management practices (BMPs) will be implemented during and after completion of construction activities to prevent erosion and migration of soils out of the impact areas. The specific materials such as fiber rolls, silt fencing, and jute netting will be determined during the site preparation phase and will be based on site conditions.

4.3 REVEGETATION

Each restoration site is comprised of a distinct combination of wetland or riparian and/or upland habitat that will be restored based on the pre-disturbance habitat and vegetation. Following are the specific site preparation components for each of the restoration sites. Note that the specific revegetation methods described for each restoration site below may change as determined by the onsite biologist during initial restoration activities. The specific revegetation areas within each restoration site are depicted on Figures 2A-2E.

4.3.1 Restoration Site 1

Restoration Site 1 (RS-1) is surrounded by agricultural land and paved roads. The pre-disturbance conditions of RS-1 consists of unvegetated developed lands consisting of pavement and gravel, and pre-construction photos will be taken to document baseline condition of RS-1. Following completion of Project activities, the excavation area will be backfilled, and the site will be recontoured to original grade. No revegetation is proposed for this developed area because the pre-construction condition is unvegetated.

4.3.2 Restoration Site 2

Restoration Site 2 (RS-2) extends from a paved road (Beach Drive) to the west bank of the Sacramento River and is surrounded primarily by urban development and vacant lots. The pre-disturbance conditions of RS-2 consists of jurisdictional waters / wetlands, riparian and upland

habitats supporting Non-native Grassland, Ruderal, Central Coast Riparian Scrub, and Coastal and Valley Freshwater Marsh vegetation communities. This site also includes some unvegetated developed lands (roadway). Pre-construction photos will be taken to document baseline condition of RS-2. Following completion of Project activities, the excavation areas will be backfilled, and the site will be recontoured to original grade. Based on pre-disturbance vegetation communities, the vegetated upland areas (ruderal and non-native grassland vegetation communities) will be actively restored by application of hydroseed using a native erosion control seed mix.

The riparian area (Central Coast riparian scrub vegetation community) on the west bank of the Sacramento River will be planted with native riparian species occurring in this location prior to Project implementation and adapted to frequently flooded conditions. Woody vegetation consisting predominantly of shrubs will be actively restored by planting arroyo willow and California button willow cuttings sourced from the Project site and surrounding area. Hydroseed application using a seed mix of native herbaceous species will provide understory habitat and reduce erosion.

The in-channel wetlands (Coastal and Valley freshwater marsh) on the lower west bank of the Sacramento River will be passively restored. Because of the small excavation footprint through the band of emergent wetland vegetation on the lower riverbank, the proximity to emergent wetland vegetation within undisturbed adjacent locations along the riverbank, and rhizomatous or stoloniferous growth habitat known for vegetative reproduction, this community is conducive to passive restoration techniques. Emergent wetland vegetation, consisting predominantly of hardstem bulrush (also known as tule), would be passively restored on the lower bank of the Sacramento River.

Suisun marsh aster, if confirmed to be present within the disturbance footprint during the pre-construction survey, will be salvaged prior to ground disturbance and transplanted into a container and then transplanted into the original location following completion of Project activities. If more expansive populations of Suisun marsh aster occur in surrounding areas and seed can be sustainably sourced from adjacent populations, seed may be collected for use in restoration as an alternative to transplantation of individuals. See Section 4.5.1 for more details on special-status plant restoration methods.

4.3.3 Restoration Site 3

Restoration Site 3 (RS-3) extends east from the east bank of the Sacramento River to the east side of a paved road (Highway 160). The pre-disturbance conditions of RS-3 consists of upland habitat that is mostly unvegetated but supports sparse Ruderal and Urban Mix vegetation communities in the form of giant reed stands. The riverbank at this location consists of rock riprap at the surface and does not support emergent wetland or riparian vegetation. Pre-construction photos will be taken to document baseline condition of RS-3. Following completion of Project activities, the excavation area will be backfilled and the site will be recontoured to original grade. The majority of RS-3 is a developed area that is unvegetated and is used by the current owner for parking and staging of materials and equipment. No revegetation is proposed for this developed area because the pre-construction condition is predominantly unvegetated and weedy. Application of hydroseed using a native erosion control seed mix may occur in some portions of this restoration site, if appropriate or required for compliance with the Stormwater Pollution Prevention Plan.

4.3.4 Restoration Site 4

Restoration Site 4 (RS-4) is surrounded by paved road and vegetated open space. The pre-disturbance conditions of RS-4 consists of upland habitat supporting ruderal and urban mix vegetation and pre-construction photos will be taken to document baseline condition of RS-4. Following completion of Project activities, the excavation area will be backfilled, and the site will be recontoured to original grade. Active restoration will be employed and will consist of hydroseeding with a native erosion control seed mix in the previously vegetated areas (e.g., the landward slope of the levee).

4.3.5 Restoration Site 5

Restoration Site 5 (RS-5) consists of agricultural lands, with four transecting agricultural ditches. The pre-disturbance conditions of RS-5 consists of cultivated agricultural lands with patches of Ruderal and Urban Mix vegetation occurring in uncultivated locations. Central Coast Riparian Scrub, and Coastal and Valley Freshwater Marsh vegetation communities occur in agricultural ditches that transect this restoration site and pre-construction photos will be taken to document baseline condition of RS-5. Following completion of Project activities, the excavation area will be backfilled, and the site will be recontoured to original grade with the upper six inches of topsoil preserved and spread evenly over the excavation footprint. Topsoil consists of seeds, nutrients, and microorganisms that will assist in the rapid recovery of the vegetative community. Since these lands are privately owned and used in agricultural production, this restoration site will be returned to cultivated agricultural lands in accordance with landowner agreements. Temporary disturbance to agricultural ditches at the crossing locations will be returned to pre-project contours and passively restored to pre-project condition in accordance with landowner agreements.

4.4 PLANT MATERIALS

4.4.1 Seed mix

Seed used in hydroseed application will be obtained from a native seed supplier, using a seed source collection site as close to the restoration site as possible. Seed purity will be the highest available, and no more than 0.1 percent weed seeds. Seed mixes will be applied with 1,800 pounds fiber mulch and compost with 150 pounds M-binder per acre to prevent seed predation. The native erosion control seed mix will be applied to upland Project impact areas and is intended to promote future establishment of native species in the vicinity of the restoration area.

4.4.2 Cuttings

Arroyo willow and California buttonwillow will be planted using cuttings obtained from donor plants occurring in the vicinity of the Project site. Collection of cuttings will be conducted such that donor stands will not be substantially affected. Cuttings will be obtained during the dormancy period (between October and February) and soaked in water for 5-7 days prior to planting and will be scheduled during the late fall or winter to take advantage of rainfall and reduce the need for supplemental irrigation.

Table 4. Restoration Plant Material

Plant Material	Species ¹		Seeding Rate/ Spacing ²	Method
	Common Name	Scientific Name		
Upland Restoration – Annual Grasslands and Ruderal Lands				
Native Upland Species Seed Mix	Fiddleneck	<i>Amsinckia menzesii</i>	50 lbs/acre	Hydroseed
	Blue wildrye	<i>Elymus glaucus</i>		
	California brome	<i>Bromus carinatus</i>		
	Small fescue	<i>Festuca microstachys</i>		
	Western ragweed	<i>Ambrosia psilostachya</i>		
	Spanish clover	<i>Acmispon americanus</i> var. <i>americanus</i>		
	California poppy	<i>Eschscholzia californica</i>		
	Miniature lupine	<i>Lupinus bicolor</i>		
	Tree clover	<i>Trifolium ciliolatum</i>		
Riverbank Restoration – Riparian				
Riparian Cuttings	Arroyo willow	<i>Salix lasiolepis</i>	10-foot on center	Cutting
	California button willow	<i>Cephalanthus occidentalis</i>	6-foot on center	Cutting
Native Riparian Seed Mix	Blue wildrye	<i>Elymus glaucus</i>	50 lbs/acre	Hydroseed
	Meadow barley	<i>Hordeum brachyantherum</i>		
	Soft rush	<i>Juncus effusus</i>		
	Umbrella sedge	<i>Cyperus eragrostis</i>		
	Mugwort	<i>Atrrtemesia douglasiana</i>		
	Western goldenrod	<i>Euthamia occidentalis</i>		

Notes:

¹ Species recommended consist of native species occurring onsite and in region; other appropriate native species may be substituted if available and approved by the Project biologist. Seed is acquired from a California native seed vendor and species availability may depend on existing regional seed collection sites at the time of order, species may be omitted or substituted if not available at the time of restoration.

² Seeding rate will vary depending on seed availability and final plant palette. Spacing recommendations may be adjusted based on local topography and soil conditions as approved by the Project biologist.

4.5 RESTORATION METHODS

A biologist experienced in native plant restoration will supervise all seeding and planting within the restoration area. If seasonal rainfall is low or does not coincide with the desired planting dates, both the ground and plant materials will be thoroughly irrigated prior to planting. If species recommended for use in the site restoration are unavailable, other appropriate native seed blends or cuttings may be substituted as approved by the Project biologist.

4.5.1 Active Restoration

Cutting installation. Arroyo willow and California buttonwillow will be planted using cuttings obtained from donor plants occurring in the vicinity of the Project site, if available. Shrub cuttings should be approximately one-inch in diameter and should consist of young or green tissue. The base of the cuttings should be cut at a steep angle, the tops cut flat removing the apical bud, and all branches stripped from the cutting. Cuttings will be stored (if required) with the lower end immersed in water. Planting holes will be excavated using hand tools, the lower end of cuttings will be dipped in rooting hormone (3-indole-butyric acid, or equivalent), and planted vertically in the holes. Approximately one-third of the cutting will be planted above ground (at least 3-to-4 buds above ground). The base of the cutting should be installed below the level of the normal groundwater table to ensure adequate soil moisture throughout the year. The exact location of each cutting will be determined according to field conditions at the time of planting. If donor stands are unavailable at the time of restoration, nursery stock may be substituted for cuttings.

Arroyo willow cuttings will be planted in clusters of three, with clusters spaced 10-feet apart (on average and as space allows). The exact cluster location will be determined at the time of planting, but the clusters will be placed in an irregular pattern. California buttonwillow will be planted about six feet apart in an irregular pattern. It should be noted that the riparian restoration area is small, and installation of cuttings may be limited to one or two clusters each, as necessary to adequately reestablish similar vegetation in the final restoration area.

Hydroseeding. The upland areas with a pre-disturbance condition of vegetation that supported Urban Mix, Ruderal, and Non-Native Grassland and will be hydroseeded with a native erosion control mix intended to promote future establishment of native species within and in the vicinity of the Restoration Sites. Hydroseeding of upland habitat is proposed at RS-2 and RS-4 in the upland locations where vegetation cover was present prior to construction disturbance.

Following installation of trees and shrubs within the riparian planting area, hydroseed consisting of a native riparian seed mix will be applied over the designated planting area. Application of native riparian seed mix is proposed at RS-2 on the bank of the Sacramento River.

The specified amounts of seed will be hydroseeded over designated planting areas. Recommended seed mix and application rate is outlined in Table 4; however, if this specific seed mix is unavailable, appropriate native substitutions are acceptable upon approval of the Project biologist. The hydroseed mix shall consist of a homogenous slurry of water, organic soil stabilizer, cellulose fiber, and seed. The slurry shall be mixed in the hydroseed tank immediately prior to application and shall not be allowed to remain in the tank for more than one hour. The soil surface will be raked prior to seeding.

Special-Status Plant Salvage and Seed Collection. During preparation for excavation of the west bank of the Sacramento River during the decommissioning phase of the Project, the single Suisun marsh aster (and any others that may have become established in the area since the time of the botanical survey) will be carefully removed with the root ball intact and placed in a one-gallon or five-gallon container filled with native soil. The container plant(s) will be kept on site in adjacent suitable habitat location that provides similar environmental conditions to the location from which it was removed. If possible, remove plants for transplantation in early spring when plants are dormant and prior to the growth phase. Following restoration site preparation and seeding, the plant will be transplanted back to the salvaged location. If plant salvage is not feasible, other methods may be employed such as seed collection (from affected population and/or donor populations) and seed bank salvage.

If more expansive populations of Suisun marsh aster occur in surrounding areas and seed can be sustainably sourced from nearby populations, seed may be collected for use in restoration as an alternative to transplantation of individuals. Seed collection will take place during the appropriate time of the year when seed is ripe prior to initial ground disturbance. The seed will be stored in a cool, dry environment, then sowed into raked soil following completion of Project activities.

Seed bank salvage is intended to collect the plant's roots and seeds that may be in the soil even if the plant is not visible. The upper six inches of soil from the location surrounding the Suisun marsh aster will be salvaged and stockpiled in similar suitable habitat in the vicinity of the impact area. Following completion of Project activities, the special-status plant seed bank soil will be placed back to the salvaged location.

4.5.2 Passive Restoration

Passive restoration methods will be used to restore the wetland habitat (Coastal and Valley Freshwater Marsh vegetation community) within RS-2 on the lower west bank of the Sacramento River. In addition, upland areas that sustain minimal surface disturbance (above ground foliage damage) may be passively restored. The passive restoration area at RS-2 will be monitored with the same methods used to monitor the active restoration areas.

4.6 IRRIGATION

After planting is completed, the revegetated areas will be naturally irrigated during the winter season with rains and elevated channel flows. Based on historical seasonal rainfall averages, this should provide sufficient moisture to ensure proper plant establishment for wetland and riparian vegetation. If planting is completed during the drier months, or if natural soil moisture is insufficient, supplemental irrigation may be required.

Shrub plantings may need supplemental watering during the dry season until they become established. Watering and maintenance will occur on a weekly basis for the first quarter, or until the rain provides sufficient moisture, and then monthly thereafter for the first dry season. Subsequent maintenance will occur bi-monthly during the growing season and quarterly during the dormant season. Frequency of irrigation will be adjusted at the direction of the monitoring biologist, as determined by frequency of seasonal rainfall and plant establishment rates. The

irrigation schedule should be designed to deliver periodic deep irrigation to promote deep root growth.

4.7 INVASIVE PLANT SPECIES CONTROL

Control or eradication of invasive species will focus on mechanical methods (hand-pulling, mowing). However, herbicide application may also be used to address localized weed infestations. Roundup® would be used for upland areas, and Rodeo® (an herbicide approved for aquatic use) would be used for wetland areas. Roundup® and Rodeo® both have glyphosate as their active ingredient. Glyphosate does not affect vertebrates, and bioaccumulation does not occur (Newton et. al., 1984). Glyphosate is considered practically non-mobile in soils and sediments because it rapidly and strongly adheres to soil particles (Sprankle et al., 1975). Thus, even though it is highly soluble in water, field and laboratory studies show it does not leach appreciably and has a low potential for runoff (Edwards et al., 1991). One estimate indicated that less than two percent of the applied chemical is lost to runoff (Malik et al., 1989). Because of these properties, it would not be expected to migrate into the groundwater.

Giant reed is a non-native grass that can rapidly invade stream banks and roadside habitats following introduction of a few plants. Giant reed occurs onsite in both RS-2 and RS-3 and is likely to occur onsite during restoration at these locations requiring control. Reproduction occurs primarily through growth of rhizomes (horizontal stems that grow under or along the soil surface) that send out roots along the stems. Giant reed may also spread through seed dispersal if viable seeds are present. For these reasons, several precautionary measures should be implemented to avoid the dispersal of root and/or seed stock. In addition, several eradication options are discussed based on their effectiveness during different growth phases of the plant.

The following precautionary measures will be taken to avoid the inadvertent dispersal of reproductively viable rootstock or seeds of giant reed or other invasive species.

- Invasive species removal should occur prior to setting seed if feasible.
- Cut vegetation should be placed into plastic bags or wrapped in tarps prior to removal from the work area to prevent seed dispersal into the water and/or surrounding habitat.
- Care should be taken by workers to avoid extensive contact of the seed heads with clothing or hair as this may facilitate seed dispersal.
- Equipment brought into the site for use in restoration activities will be thoroughly cleaned prior to use to limit introduction of invasive species seed from other locations.

Several eradication methods are available to control the regeneration and spread of giant reed. An integrated management approach, using manual, mechanical, and chemical methods should be used to improve results. Manual methods rely on hand labor to remove the undesirable vegetation. Hand digging is effective for the removal of larger rootstocks but must be thorough, as any piece of root that remains in the ground may produce a new plant.

Mechanical control involves the use of mowers and scythes and can remove above ground vegetation faster, more economically, and with less soil disturbance than manual methods; however, because giant reed is a perennial species that primarily reproduces asexually, several cuttings may be required to exhaust reserve food supplies. Chemical control is also an effective

means of eradication and may be used in conjunction with mechanical control methods. Rodeo is the recommended herbicide for use in riparian habitats. To reduce the amount of pesticide used, stems should be cut several feet above the ground, and the herbicide applied directly to the cut portion of the stems. Periodic monitoring of the eradication area is necessary to gauge the effectiveness of eradication measures and to determine if follow-up efforts are needed.

4.8 MAINTENANCE

Planned maintenance activities to be conducted during the monitoring period include the following:

- General weed abatement focusing on control of invasive species
- Focused application of an approved herbicide application, as needed, in upland areas and only with regulatory approvals in wetland areas
- Manual watering of cuttings as needed

A qualified botanist will train the landscape maintenance crew in the identification of native plants to ensure that only non-native plants are removed during weed abatement activities. Invasive vegetation observed within the restoration sites will be removed, annually during the three-year maintenance period. Invasive plants within the planting areas will be manually removed whenever possible, and herbicide application will be limited to infestations that cannot be feasibly controlled by hand weeding, and where adverse effects to native plants can be avoided.

4.9 RATIONALE FOR EXPECTING RESTORATION SUCCESS

Plant species selected for use in the wetland and riparian restoration of the L-130 Sacramento River Crossing Pipeline Replacement Project restoration area are species that are currently present on the sites or within the watershed upstream or downstream of the sites. Revegetation methods were developed in consideration of the type and location temporary impacts, and the reproductive methods of the dominant plant species that currently occur within existing wetland and riparian plant communities. Therefore, it is expected that hydrophytic plant species representative of the species that previously occurred onsite will become established in the wetland restoration areas. In the case of ruderal and non-native grassland upland habitats, species selected for use are native species known to occur in the Project region. Upland restoration methods have been selected to minimize erosion and weed infestation. The restoration sites will be irrigated, as needed, to ensure vegetation becomes established. Privately owned agricultural lands (RS-5) will be returned to agricultural uses and restored in accordance with landowner agreements.

5.0 MONITORING AND REPORTING

5.1 SUCCESS CRITERIA

Success criteria have been developed to assess the revegetation progress and determine if the restoration sites have met the objectives and goals of the Site Restoration Plan. Success criteria are specific to each disturbed habitat type and summarized in Table 5. Restoration monitoring will only be conducted at RS-2 and RS-4 to meet performance requirements in areas with vegetated pre-construction condition. No monitoring will occur at RS-1 and RS-3 because the disturbance areas at these locations are unvegetated uplands not requiring restoration. No monitoring will occur at RS-5 because agricultural lands will be returned to agricultural uses consistent with landowner agreements.

Table 5. Restoration Monitoring Success Criteria

Monitoring Location ¹	Total Vegetative Cover ²	Hydrophytic Species Composition ²	Percent Survival ²	Invasive Species Cover ^{2,3}
In-channel Emergent Wetland (RS-2) on lower west bank of Sacramento River	At least 75 percent total vegetative cover relative to adjacent reference site within the same community.	At least 75 percent hydrophytic vegetation cover relative to reference site within the same community.	NA	No invasive species present that are not found in adjacent undisturbed habitat. Invasive species cover is equal to or less than in reference site.
Riparian (RS-2) on west bank of Sacramento River	At least 75 percent total vegetative cover relative to adjacent reference site within the same community.	N/A	80 percent survival of cuttings by end of the monitoring period.	No invasive species present that are not found in adjacent undisturbed habitat. Invasive species cover is equal to or less than in reference site.
Vegetated Uplands (RS-2, RS-4)	At least 75 percent total vegetative cover relative to adjacent reference site.	NA	NA	No invasive species present that are not found in adjacent undisturbed habitat. Invasive species cover is equal to or less than in reference site.

Monitoring Location ¹	Total Vegetative Cover ²	Hydrophytic Species Composition ²	Percent Survival ²	Invasive Species Cover ^{2,3}
Special-Status Plant Species	Special-status species cover is equal to or more than baseline condition based on pre-construction survey	NA		NA
Notes: NA – Not applicable ¹ Areas with a pre-disturbance condition of being unvegetated (RS-1 and RS-3) will not receive active or passive restoration and will not be subject to monitoring or performance criteria. The agricultural lands in RS-5 will be returned to agricultural uses in accordance with landowner agreements. No monitoring will be conducted, or success criteria applied to RS-5. ² Success criteria outlined will be met by the end of a 3-year monitoring term. Restoration sites requiring monitoring are located within privately owned lands. Landowner activities or other non-project related events outside of PG&E's control may compromise the success of restoration. In that circumstance, non-success of restoration would be addressed through adaptive management changes to the restoration monitoring and performance criteria outlined in this plan. ³ Target invasive species are defined as species rated "high" by the California Invasive Plant Council (Cal-IPC).				

5.1.1 Total Vegetative Cover

Wetland and riparian areas that were actively planted and/or passively restored and upland areas that were hydroseeded shall achieve 75 percent vegetative cover, relative to an adjacent reference transect located within the same vegetation community, at the end of the monitoring term. If these cover requirements are not met, additional planting and/or hydroseeding will be conducted to achieve these criteria and the monitoring period will be extended, if necessary, to ensure that plants become established within disturbance areas.

Special-status species cover is the same or more than it was prior to construction based on pre-construction survey documentation of baseline condition immediately prior to construction.

5.1.2 Hydrophytic Species Composition

The restored wetland area at RS-2 shall achieve 75 percent hydrophytic species composition, relative to an adjacent reference transect located within similar adjacent Coastal and Valley Freshwater Marsh vegetation community, at the end of the monitoring term.

5.1.3 Percent Survival

Cuttings installed in the riparian planting area at RS-2 will meet 80 percent survival at the end of the three-year monitoring period to be deemed successful. If this survival requirement is not met, additional cuttings and/or plant material will be installed to achieve these criteria and the monitoring period will be extended, if necessary, to ensure that plantings become established (see Section 6.0 for Adaptive Management and Contingency Measures).

5.1.4 Invasive Plant Species Percent Cover

Invasive species are defined as species rated “high” by the California Invasive Plant Council (Cal-IPC). The percent cover of target invasive species shall be the same or less than in an adjacent reference site within the same vegetation community, and no invasive species shall be present that do not also occur in adjacent undisturbed habitat.

5.2 MONITORING METHODS

To ensure the success of the restoration, the site will be monitored annually. Monitoring activities will include the establishment of photo-documentation locations, and surveys to determine percent survival and percent cover. Photographs will be taken during each monitoring visit at established locations to document overall progress. Percent survival surveys will be conducted for the installed cuttings to determine mortality. Line intercept surveys will be conducted to determine the percent cover of herbaceous species.

5.2.1 Quantitative Monitoring

Quantitative vegetation monitoring methods will be conducted using transect sampling to determine percent vegetation cover, hydrophytic and invasive species composition to compare to success criteria. The length, number of transects within each restoration site, and number of samples will be determined during restoration implementation. A GPS position will be recorded at the beginning and end point of each transect for consistency in locating transects during subsequent annual monitoring events. Generally, a transect tape measure will be placed on the ground and the sample quadrat will be placed against the tape on the right-hand side beginning at the zero point. Quadrat placement will begin on the right side of each transect and alternate between right and left sides of the tape to the end of the transect. A botanist will survey each quadrat and estimate and record the absolute percent cover of each species observed within the quadrat. The data collected in the field will be used to calculate the total percent cover of vegetation established at each site. Quantitative monitoring will occur at the established transects annually to consistently measure site restoration performance.

A reference transect, equal in length to the sample transect, will be established near each of the locations designated for quantitative vegetation sampling. The reference transect will be established within the same plant community as the sample transect. Quantitative vegetation sampling will also be conducted at the reference transects and reference data collected will be

compared to data collected at the sample locations and used in determining whether restoration areas are meeting the prescribed performance criteria relative to adjacent reference sites. Reference sites are used to neutralize the effect of non-project related variables (e.g., landowner uses, environmental condition, predation, etc.) on the re-establishment of vegetation within the temporary impact areas. The re-development of a plant community will be documented by the percent cover in the planting area as it changes over time and approaches that of undisturbed adjacent vegetation.

5.2.2 Percent Survival

Cuttings installed in the planting areas will meet 80 percent survival at the end of the three-year monitoring period to be deemed successful. If this survival requirement is not met, additional cuttings and/or plant material will be installed to achieve these criteria and the monitoring period will be extended if necessary, to ensure that plantings become established (see Section 6.0 for Adaptive Management and Contingency Measures).

5.2.3 Photo Documentation

Color photographs will be taken at established locations at the time of surveys to document the findings of the surveys and will be compared to pre-construction photos to document progress of restoration. The direction of each photograph at each location will remain relatively constant throughout the monitoring events so that change and growth will be evident from year to year.

5.3 MONITORING SCHEDULE

The restoration sites will be monitored annually to demonstrate successful restoration of wetland, riparian, and upland habitats. Qualitative and/or quantitative monitoring of the vegetation cover will be sampled annually for a three-year monitoring term or until performance criteria are met. The annual monitoring report will be submitted in the year following the first growing season after planting and continue until performance criteria are met.

5.4 MONITORING REPORTS

Annual monitoring reports will be prepared each year following completion of Project activities and the implementation of the Site Restoration Plan until performance criteria are met and site restoration is deemed successful. An as-built report will be prepared upon completion of the Project to document the location of weedy vegetation installed within the riparian habitat restoration area. GPS coordinates will be recorded at each cutting and special-status plant installation locations for future reference during annual monitoring events. The GPS data will be used to create a map of the restoration site and will be used in all future annual monitoring events to document the survival of each cutting. Photographic monitoring stations will be established, and baseline photos will be taken at the site to document site restoration and depict baseline conditions. Subsequent annual reports will include results of the past year's monitoring results. Annual monitoring reports will be submitted to the regulatory agencies, as required by regulatory permits, by December 31 of each year.

5.4.1 Annual Monitoring Report

Annual reports will be submitted by the end of the calendar year throughout the monitoring term. The annual monitoring report will be prepared by a qualified biologist and include the following (as a minimum):

- Project name, applicant name and contact information
- Names and qualifications of all monitoring personnel and report preparers
- Regulatory permit numbers
- Copy of the As-Built Landscape Plans
- All data sheets and photographs
- Discussion of monitoring methods and dates surveys were completed
- Comparison of collected data to the success criteria
- Discussion of maintenance activities performed (if any)
- Discussion of problems encountered, and probable reasons success criteria were or were not attained
- Discussion of all activities conducted to remediate planting areas which failed to meet the success criteria
- Recommendations to modify the success criteria based on past performance
- Recommendations to minimize future mortality, excessive weeds, herbivory losses, slow growth
- Discussion of storm-related damage (if any), activities conducted to repair damage and recommendations to minimize future damage

5.4.2 Final Monitoring Completion Report

Once the restoration site has successfully met the final performance criteria, a final report will be submitted to the regulatory agencies, as required by regulatory permits. After the monitoring period is complete, and the final success criteria have been met, PG&E will notify the agencies of the completion of the restoration requirements in the final monitoring report and request release from further monitoring of the restoration site. Following receipt of the final report, the agencies may require a site visit to confirm the completion of the mitigation effort.

6.0 ADAPTIVE MANAGEMENT / CONTINGENCY MEASURES

In the event the success criteria are not met at the end of the three year monitoring term, a qualified biologist may recommend adaptive management strategies to increase success within the restoration areas and extend the monitoring term to document successful site restoration. These adaptive management strategies will be presented to appropriate regulatory agencies in the annual monitoring report with a request for approval to changes in the site restoration approach (if necessary). Adaptive management strategies are an important tool to account for unexpected changes in the landscape, surrounding land uses, weather impacts, etc. All adaptive management strategies will be documented in the annual reports.

Additional planting and/or seeding may be required if the performance standards are not met. A qualified biologist or restoration specialist will review annual monitoring data and compare them against the success criteria and recommend remedial actions, if needed, to ensure performance standards are met. If recommended remedial actions are deemed feasible by PG&E and acceptable by the agencies, remedial measures will be implemented and documented in the final report.

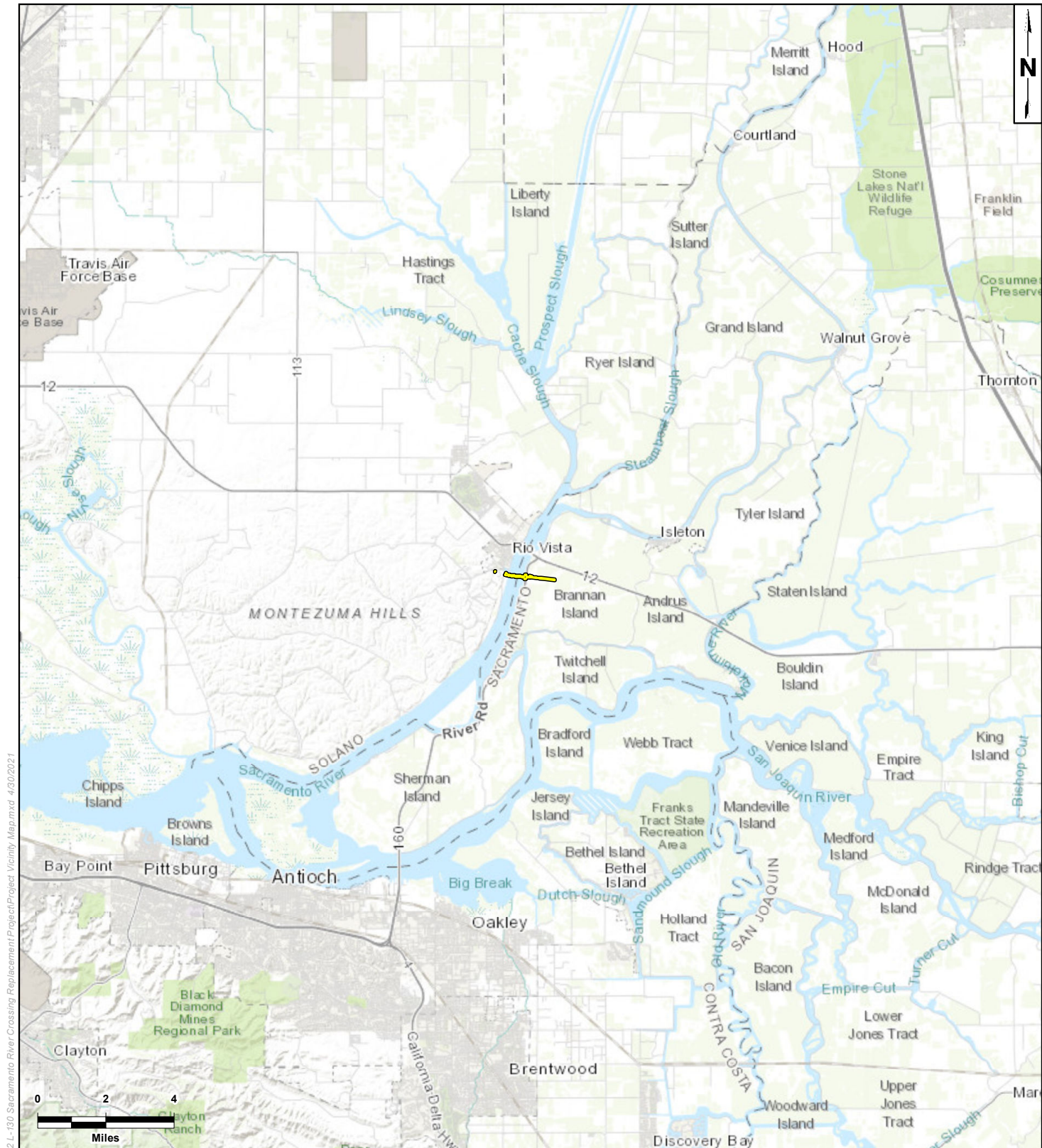
7.0 REFERENCES

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- 2021b. Preliminary Aquatic Resources Delineation and State Aquatic Resources Delineation Report for the PG&E R-1402 L-130 Sacramento River Crossing Pipeline Replacement Project, Solano and Sacramento Counties, California. August 2021.
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Figures

Figure 1 - Project Location Map

Figure 2 - Site Restoration Plan



LEGEND:

 Project Location

Source: Esri Online Topo Basemap
 Coordinate System: NAD 1983 StatePlane California I FIPS 0401 Feet
 Notes: This map was created for informational and display purposes only.

MAP EXTENT:



padre
 associates, inc.
 ENGINEERS, GEOLOGISTS &
 ENVIRONMENTAL SCIENTISTS

PROJECT NAME: PG&E R-1402- L130 SACRAMENTO RIVER CROSSING REPLACEMENT PROJECT SACRAMENTO AND SOLANO COUNTIES, CA	
PROJECT NUMBER: 2002-5361	DATE: April 2021

PROJECT VICINITY MAP

FIGURE

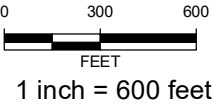
1



LEGEND:

 Restoration Area (10.94 ac)

MAP EXTENT:



Source: Esri Online Imagery Basemap
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
Notes: This map was created for informational and display purposes only.



PROJECT NAME: PG&E L-130 SACRAMENTO RIVER CROSSING REPLACEMENT/DECOMMISSIONING SACRAMENTO AND SOLANO COUNTIES, CA	
PROJECT NUMBER: 2002-5361	DATE: March 2022

**SITE RESTORATION
INDEX MAP**

**FIGURE
2A**

Z:\GIS\Projects\GIS Maps\Map Project\PG&E R-1402 L-130 Sacramento River Crossing Replacement Project\Site Plan Restoration Index Map.mxd 3/14/2022



LEGEND:

- Restoration Site 1 (0.15 ac)
- Excavation Area - L-130 Replacement Activities (0.01 ac)

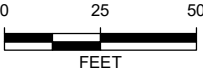
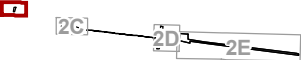
- Restoration Method**
- Restoration Active (2.41 ac)
 - Restoration Passive (0.01 ac)
 - Unvegetated/Agricultural Uses (No Restoration) (8.55 ac)

- Vegetation Communities**
- Agriculture (10.79 ac)
 - Central Coast Riparian Scrub (0.17 ac)
 - Coastal and Valley Freshwater Marsh (0.40 ac)

- Non-Native Grassland (2.40 ac)
- Riverine (12.88 ac)
- Ruderal (4.75 ac)
- Urban Mix (2.31 ac)

- Special-Status Plants**
- Mason's lilaeopsis (Nomad, 2020)
 - Suisun Marsh aster (Nomad, 2020)
 - Suisun Marsh aster (Padre, 2020)

MAP EXTENT:



Source: Sources, Esri Online Imagery Basemap
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
Notes: This map was created for informational and display purposes only.



PROJECT NAME: PG&E L-130 SACRAMENTO RIVER CROSSING REPLACEMENT/DECOMMISSIONING SACRAMENTO AND SOLANO COUNTIES, CA	
PROJECT NUMBER: 2002-5361	DATE: March 2022

SITE RESTORATION PLAN

FIGURE
2B



LEGEND:

- Restoration Site 2 (2.41 ac)
- Excavation Area - L-130 Decommissioning Activities (0.09 ac)
- Excavation Area - L-130 Replacement Activities (0.06 ac)

Restoration Method

- Restoration Active (2.41 ac)
- Restoration Passive (0.01 ac)
- Unvegetated/Agricultural Uses (No Restoration) (8.55 ac)

Vegetation Communities

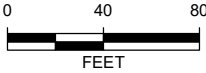
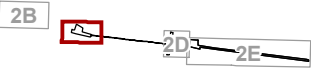
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- Riverine (12.88 ac)
- Ruderal (4.75 ac)
- Urban Mix (2.31 ac)

Special-Status Plants

- Mason's lilaeopsis (Nomad, 2020)
- Suisun Marsh aster (Nomad, 2020)
- Suisun Marsh aster (Padre, 2020)

MAP EXTENT:



Source: Sources, Esri Online Imagery Basemap
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
Notes: This map was created for informational and display purposes only.



PROJECT NAME: PG&E L-130 SACRAMENTO RIVER CROSSING REPLACEMENT/DECOMMISSIONING SACRAMENTO AND SOLANO COUNTIES, CA	
PROJECT NUMBER: 2002-5361	DATE: March 2022

SITE RESTORATION PLAN

FIGURE
2C



LEGEND:

Restoration Site 3 (2.09 ac)

Restoration Site 4 (0.14 ac)

Restoration Site 5 (5.88 ac)

Excavation Area - L-130 Decommissioning Activities (0.14 ac)

Restoration Method

Restoration Active (2.41 ac)

Restoration Passive (0.01 ac)

Unvegetated/Agricultural Uses (No Restoration) (8.55 ac)

Vegetation Communities

Agriculture (10.79 ac)

Central Coast Riparian Scrub (0.17 ac)

Coastal and Valley Freshwater Marsh (0.40 ac)

Non-Native Grassland (2.40 ac)

Riverine (12.88 ac)

Ruderal (4.75 ac)

Urban Mix (2.31 ac)

Special-Status Plants

Mason's lilaeopsis (Nomad, 2020)

Suisun Marsh aster (Nomad, 2020)

Suisun Marsh aster (Padre, 2020)

MAP EXTENT:

2B 2C 2D 2E

0 50 100

FEET

Source: Sources, Esri Online Imagery Basemap
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
Notes: This map was created for informational and display purposes only.

padre
associates, inc.
ENGINEERS, GEOLOGISTS &
ENVIRONMENTAL SCIENTISTS

PROJECT NAME:
PG&E L-130 SACRAMENTO RIVER CROSSING
REPLACEMENT/DECOMMISSIONING
SACRAMENTO AND SOLANO COUNTIES, CA

PROJECT NUMBER:
2002-5361

DATE:
March 2022

SITE RESTORATION PLAN

FIGURE
2D



LEGEND:

- Restoration Site 5 (5.88 ac)
- Excavation Area - L-130 Replacement Activities (0.06 ac)

Restoration Method

- Restoration Active (2.41 ac)
- Restoration Passive (0.01 ac)
- Unvegetated/Agricultural Uses (No Restoration) (8.55 ac)

Vegetation Communities

- Agriculture (10.79 ac)
- Central Coast Riparian Scrub (0.17 ac)
- Coastal and Valley Freshwater Marsh (0.40 ac)

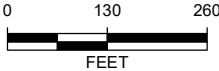
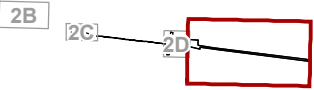
Non-Native Grassland (2.40 ac)

- Riverine (12.88 ac)
- Ruderal (4.75 ac)
- Urban Mix (2.31 ac)

Special-Status Plants

- Mason's lilaeopsis (Nomad, 2020)
- Suisun Marsh aster (Nomad, 2020)
- Suisun Marsh aster (Padre, 2020)

MAP EXTENT:



Source: Sources, Esri Online Imagery Basemap
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
Notes: This map was created for informational and display purposes only.



PROJECT NAME: PG&E L-130 SACRAMENTO RIVER CROSSING REPLACEMENT/DECOMMISSIONING SACRAMENTO AND SOLANO COUNTIES, CA	
PROJECT NUMBER: 2002-5361	DATE: March 2022

SITE RESTORATION PLAN

FIGURE
2E