

Otay Reed Site

Wetland Habitat Mitigation and Monitoring Plan

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I. INTRODUCTION

This Habitat Mitigation and Monitoring Plan (Plan) provides the conceptual framework for 5.41 acres of wetland habitat creation, restoration, and enhancement at the Otay Reed site. This Plan was prepared to offset impacts resulting from channel maintenance activities within and adjacent to the Otay watershed by the City of San Diego (City) Transportation and Storm Water Department's Master Storm Water Maintenance Program (MMP; City 2011a). The MMP outlines maintenance procedures including periodically clearing out City storm water facilities, allowing them to effectively convey storm water. During this maintenance process, sediment and vegetation is removed, including wetland vegetation. Specifically, this plan is needed as part of anticipated mitigation for wetland impacts (U.S. Army Corps of Engineers [USACE], Regional Water Quality Control Board [RWQCB], California Department of Fish and Wildlife [CDFW], and City jurisdiction) from the maintenance proposed for Nestor Creek channel (MMP Map No. 131) by the City's Storm Water Division, Operations and Maintenance Section (O&M). This plan is also needed to offset impacts from 2015-2016 emergency channel maintenance and future impacts from channel maintenance activities (mitigation for impacts to City wetlands only). Excess wetland mitigation provided by this plan is proposed to satisfy an Advanced Permittee Responsible Mitigation (APRM) requirement for the USACE (USACE 2015a, 2015b). Based on meetings and correspondences, mitigation proposed in this plan is anticipated to fulfill mitigation requirements of several resource agencies, as well as meet requirements of the City, and fulfill the MMP's obligation under the California Environmental Quality Act (CEQA).

The Otay Reed site is owned by the City (Assessor's Parcel Numbers [APNs] 62407026 and 62407022). This plan provides the details for mitigation of impacts to City-designated sensitive upland and wetland habitats, as well as to waters of the U.S. under Section 401 and 404 of the federal Clean Water Act (CWA), and CDFW habitat under Section 1602 of the California Fish and Game Code. Section 404 of the CWA is administered by the USACE and Section 401 of the CWA is administered by the RWQCB. This plan should ultimately be used as a guide to create construction plans and specifications (construction documents) for the mitigation effort. The proposed wetland creation, restoration, and enhancement is in line with the goals and objectives of the City's Multiple Species Conservation Program (MSCP) Subarea Plan (City 1997) and is in accordance with the City's Transportation and Storm Water Department MMP Final Program Environmental Impact Report (PEIR; City 2011b).

Mitigation at the Otay Reed site will be achieved through the creation of wetland habitat in place of disturbed land and eucalyptus woodland (EW); restoration of EW, disturbed wetland (arundo-dominated), and tamarisk scrub; and enhancement of southern willow scrub (SWS) and mule fat scrub (MFS) (HELIX Environmental Planning, Inc. 2017a). The proposed creation, restoration, and enhancement areas are expected to approach the functions and services of early successional habitat within five years. Nomenclature used in this report follows Oberbauer (2008) and the City's Biology Guidelines (City 2012) for vegetation communities, Baldwin et al. (2012) for plants, and American Ornithologists' Union (2016) for birds.

II. PROJECT DESCRIPTION

A. PROJECT PURPOSE

The purpose of this Plan is to provide the framework for compensatory mitigation for biological impacts resulting from O&M channel maintenance projects occurring in Nestor Creek channel (specifically Map 131 of the MMP), which are located within the Otay River watershed and outside the City and State jurisdictional Coastal Overlay Zone, and 2015-2016 emergency channel maintenance that occurred in the adjacent Sweetwater and Pueblo watersheds. The MMP outlines maintenance procedures for the periodic maintenance of City storm water facilities to allow them to function as designed. During this maintenance process sediment and vegetation is removed, including wetland vegetation. Emergency maintenance in 2015-2016 was completed under Regional General Permit 63 and authorized by the USACE and RWQCB.

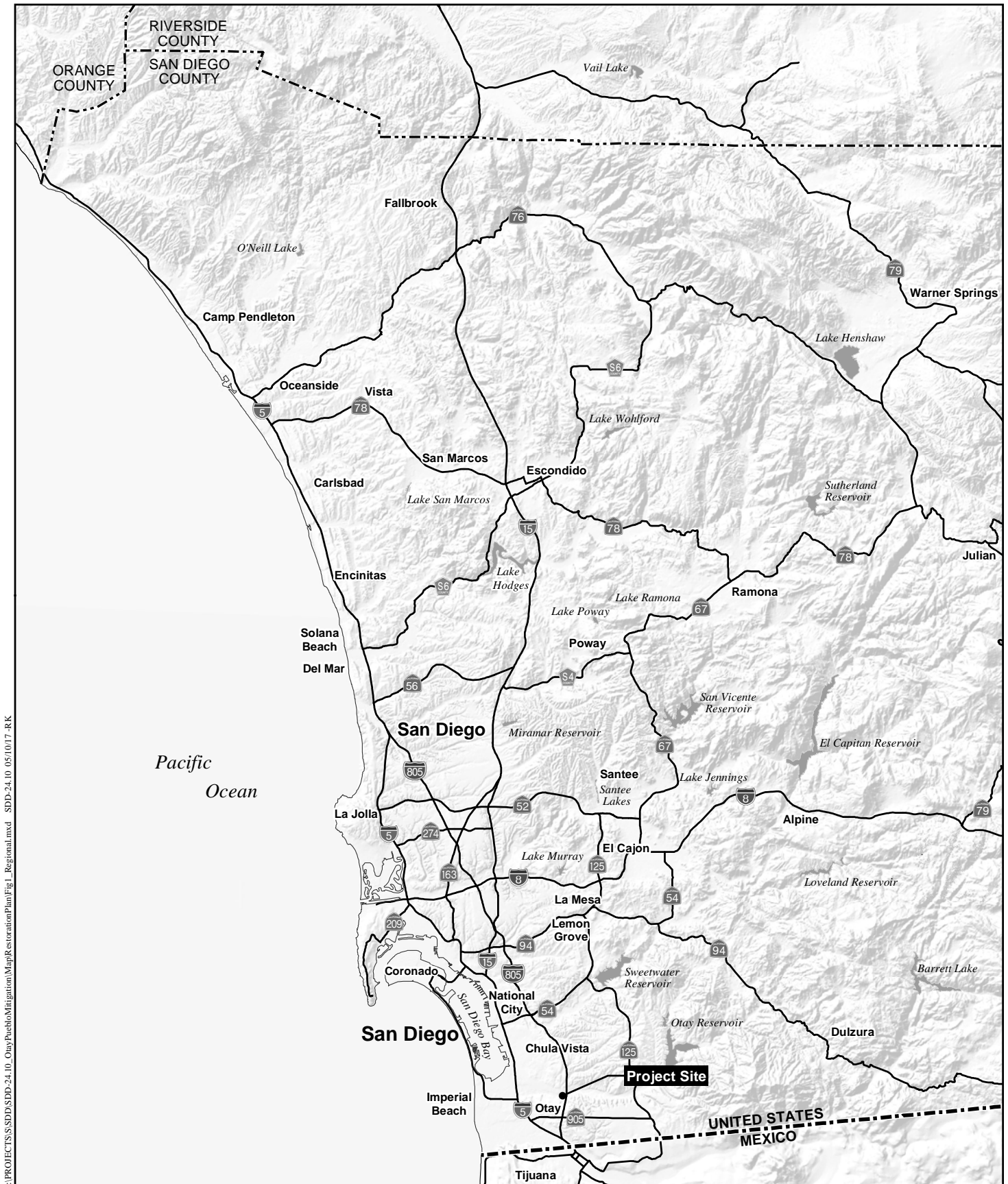
B. PROJECT LOCATION AND SERVICE AREA

The Otay Reed mitigation site is located within the Otay Hydrological Unit (HU) and would provide mitigation for impacts from Nestor Creek Map 131 maintenance, also located within the Otay HU. Both the proposed Nestor Creek impacts and the Otay Reed site are in Township 18S, Range 2W, in the Imperial Beach U.S. Geological Survey 7.5-minute quadrangle map. Nestor Creek channel impacts will occur in the City, within one primarily concrete bottom channel segment. The Map 131 channel segment is located west of 30th Street and north of the 905 freeway. The proposed mitigation site is located 2.25 miles northeast of the Nestor Creek channel facilities, along the Otay River, immediately west of Interstate (I-) 805 and south of Rancho Drive (Figures 1 and 2). The Otay Reed site is owned by the City and is located partially within the Multi-Habitat Planning Area (MHPA) of the City's MSCP Subarea Plan (City 1997; Figure 3). It is also located within the Otay Valley Regional Park (OVRP). A MHPA Boundary Line Adjustment would be needed to allow for the entire Otay Reed site to be included in the MHPA.

The proposed Otay Reed mitigation site would also provide mitigation for impacts from five 2015-2016 emergency maintenance projects located in the Sweetwater and Pueblo watersheds. Emergency maintenance was completed to prevent damage to surrounding areas from flooding during heavy storms forecasted as part of the ongoing El Niño season. Emergency channel maintenance addressed by this Plan occurred within the following MMP channels: Parkside Map 122, Auburn Creek Map 70, Auburn Creek Map 77, Jamacha Map 115, and Washington Map 84.

C. JURISDICTIONAL IMPACTS

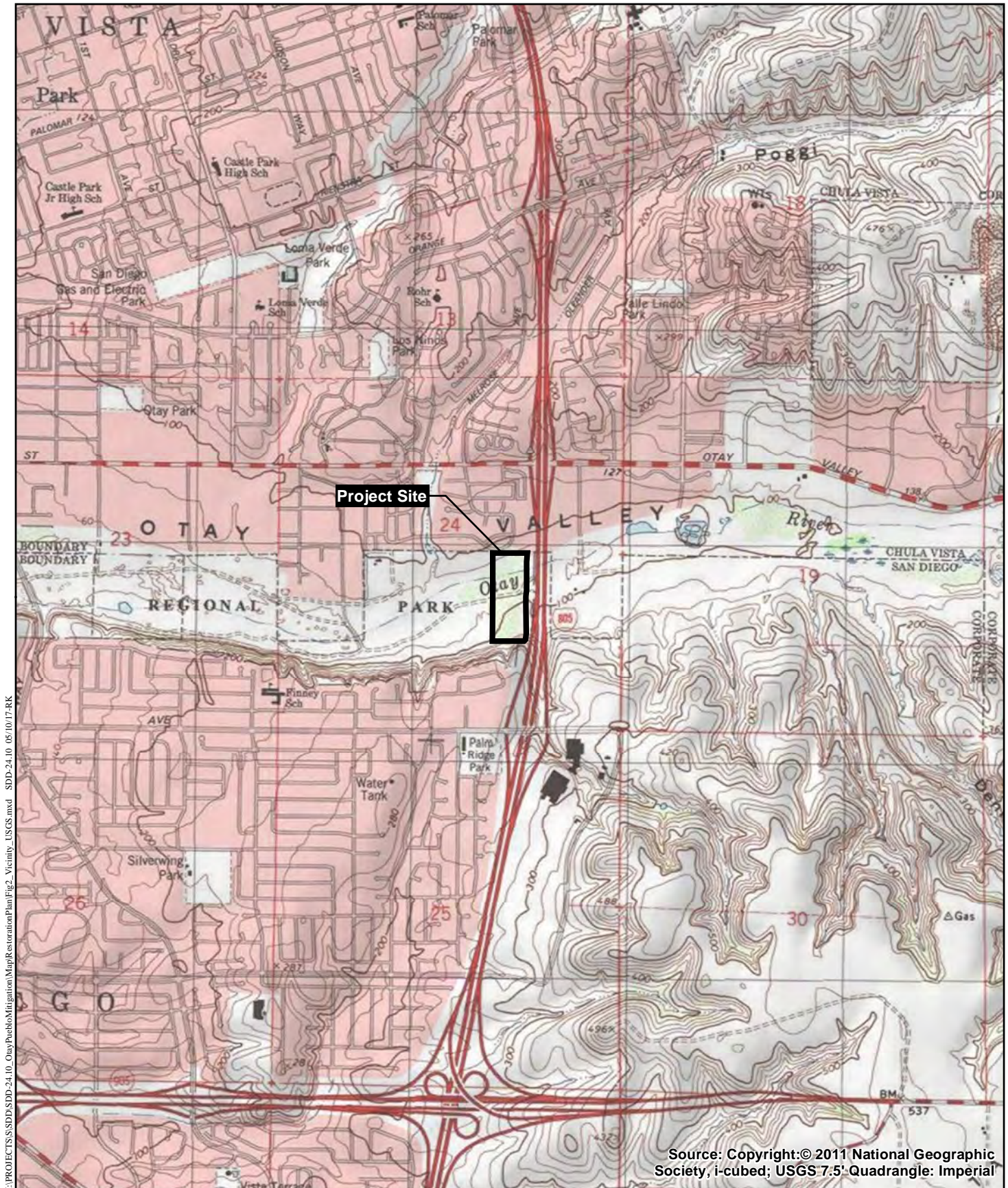
Jurisdictional waters and wetlands within the maintenance areas include waters of the U.S. subject to the regulatory jurisdiction of the USACE pursuant to Section 404 of the federal CWA, the RWQCB pursuant to Section 401 of the CWA, streambed and riparian habitat subject to the regulatory jurisdiction of the CDFW pursuant to Section 1600 of the California Fish and Game Code, and wetlands pursuant to the City's Environmentally Sensitive Lands (ESL) regulations. Jurisdictional impacts requiring mitigation associated with Nestor Creek Channel Map 131 maintenance were identified in the project's Individual Biological Assessment (HELIX 2017b) and include 0.02 acre of impacts to USACE/RWQCB jurisdiction, 0.09 acre of impacts to CDFW



Regional Location Map

OTAY REED

Figure 1

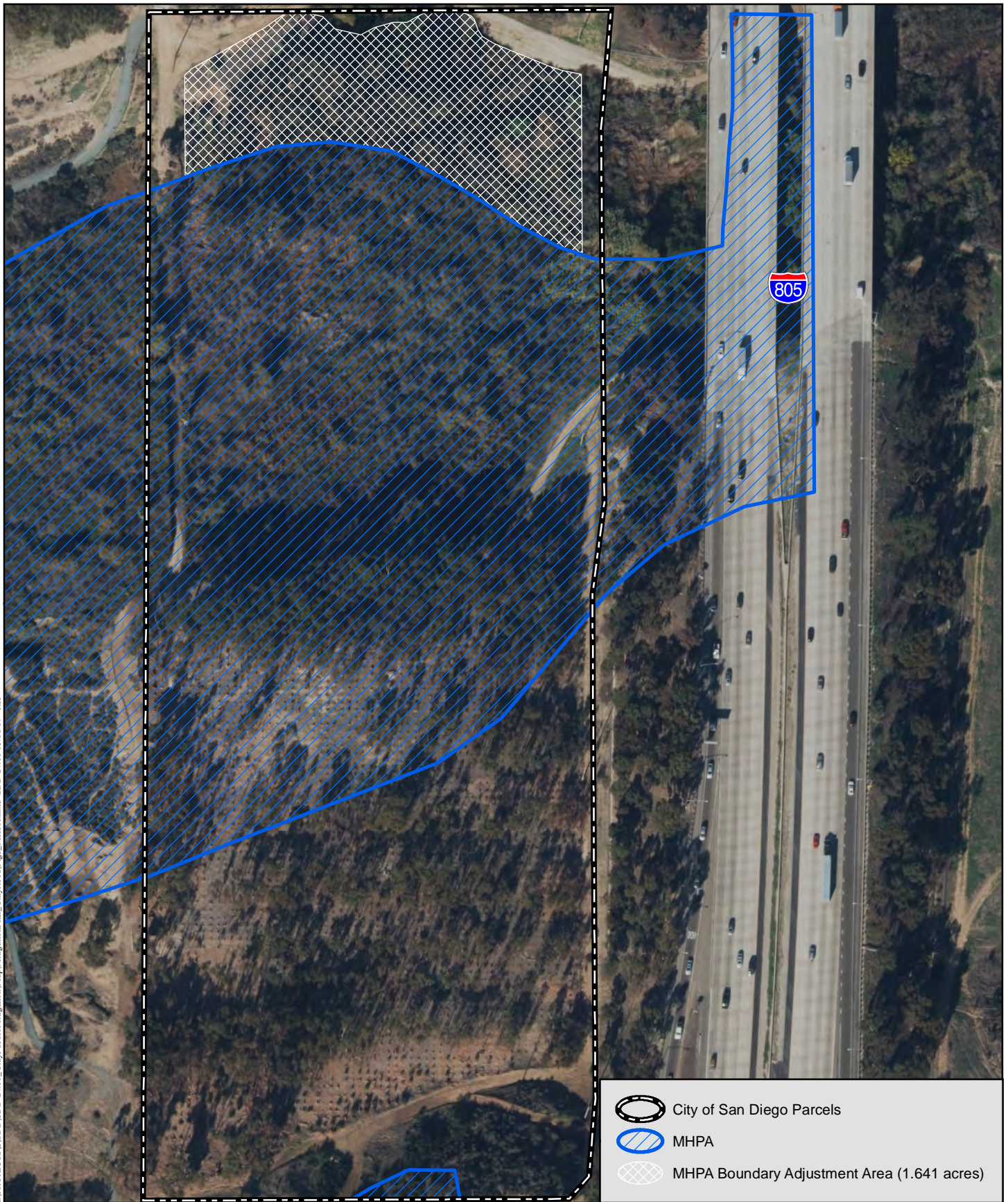


Project Vicinity Map (USGS Topography)

OTAY REED

Figure 2

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MHPA

OTAY REED

Figure 3



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Vegetation and Sensitive Biological Resources, Nestor Creek Channel - Map 131/Reach 11 & 12

jurisdiction, and 0.30 acre of impacts to City jurisdiction. The 2015-2016 emergency channel maintenance resulted in the following impacts to USACE/RWQCB/City jurisdictional habitats: 0.05 acre for Auburn Creek Map 70, 0.03 acre for Auburn Creek Map 77, 0.04 acre for Jamacha Map 115, 0.02 acre for Washington Map 84, and 0.05 acre for Parkside Map 122. A Conceptual Mitigation Plan (Dudek 2017) was prepared to fulfill USACE and RWQCB mitigation requirements associated with the 2015-2016 emergencies. This Plan will fulfill only the remaining City mitigation requirements for the 2015-2016 emergency channel maintenance. Section II.F of this Plan provides further detail on the mitigation requirements for the proposed Nestor Creek Map 131 maintenance and past 2015-2016 emergency maintenance.

D. FUNCTIONS AND SERVICES OF AFFECTED AREAS

Nestor Creek Map 131

Map 131 of Nestor Creek is channelized, trapezoidal, and primarily concrete-lined on the bottom and both banks (Figure 4). The western 302 feet of Map 131 is earthen bottom. Dense marsh grasses and reeds cover the ground within and around the channel; other vegetation includes willows (*Salix* spp.) and castor bean (*Ricinus communis*) (HELIX 2017b).

The storm water channel associated with Map 131 receives storm flows from upstream as well as the surrounding areas. The primary function provided by this channel includes water conveyance and sediment transport. The wetland conditions of this channel aid in nutrient cycling and other biophysical processes. Although wetland plant communities are present, they are isolated and surrounded by development, which lowers the quality of the habitat substantially. The vegetated channel contains potential nesting habitat for common avian species and limited foraging opportunities for wildlife. There is limited potential for groundwater recharge and flood attenuation. The impermeable, concrete-lined nature of most of the channel limits the potential for the hydrology of the system to function naturally.

2015-2016 Emergency Channel Maintenance

The 2015-2016 emergency channel maintenance was conducted on both concrete and earthen bottom channels, with Parkside Map 122 being entirely concrete-lined and Auburn Creek Map 77 and Jamacha Map 155 being entirely earthen bottom. Similar to Nestor Creek Map 131, the primary function provided by the channels impacted during the 2015-2016 emergency maintenance includes water conveyance and sediment transport. Impacted vegetation communities included riparian scrub, freshwater marsh, and disturbed wetland; an unvegetated area mapped as natural flood channel was also impacted (Dudek 2017). These channels are in highly urbanized settings and present little opportunity for use by wildlife due to their location and individual characteristics. Overall, biological functions and services provided by the storm channels are considered low.

E. COMPENSATORY MITIGATION DEFINITIONS

Each permitting agency has its own perspective on how wetland mitigation is defined and credited. Definitions, by agency, are provided below.

U.S. Army Corps of Engineers

The USACE and U.S. Environmental Protection Agency (EPA) jointly provided mitigation definitions for the mitigation of losses to aquatic habitat (USACE and EPA 2008). Each mitigation type has a unique, acknowledged compensatory value for temporary and permanent impacts.

1. **Establishment (creation)** – the manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area and functions.
2. **Restoration** – the manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.
 - a. **Re-establishment** – the manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/ historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.
 - b. **Rehabilitation** – the manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/ historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.
3. **Enhancement** – the manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

Regional Water Quality Control Board

The following list provides the RWQCB operational definitions of the three types of activities that constitute wetland mitigation:

1. **Re-establishment** – the return of natural/historic functions to a site where vegetated or unvegetated waters of the U.S. and/or State previously existed (e.g., removal of fill material to restore a drainage).

2. **Rehabilitation** – the improvement of the general suite of functions of degraded vegetated or unvegetated waters of the U.S. and/or State (e.g., removal of a heavy infestation or monoculture of exotic plant species from jurisdictional areas and replacement with native species).
3. **Enhancement** – the improvement of one or two functions of existing vegetated or unvegetated waters of the U.S. and/or State (e.g., removal of small patches of exotic plant species from an area containing predominantly natural plant species).

The USACE and RWQCB definitions explicitly distinguish rehabilitation from enhancement in two ways: Rehabilitation is the removal of a heavy infestation or monoculture of exotic plant species from jurisdictional areas followed by establishment of native species; and Enhancement is the removal of small patches of exotic plant species from an area containing predominantly natural plant species.

California Department of Fish and Wildlife

The CDFW does not have official definitions of wetland mitigation but has typically followed traditional definitions like those in the City’s Biology Guidelines (City 2012). The CDFW has discretion in evaluating the appropriateness of mitigation proposals considering the project impacts and available mitigation options.

City of San Diego

The following list provides the City operational definitions of the four types of activities that constitute wetland mitigation under “Environmentally Sensitive Lands” in the *Land Development Manual–Biology Guidelines* (City 2012):

1. **Wetland creation** – an activity that results in the formation of new wetlands in an upland area. An example is excavation of uplands adjacent to existing wetlands and the establishment of native wetland vegetation.
2. **Wetland restoration** – an activity that re-establishes the habitat functions of a former wetland. An example is the excavation of agricultural fill from historic wetlands and the re-establishment of native wetland vegetation.
3. **Wetland enhancement** – an activity that improves the self-sustaining habitat functions of an existing wetland. An example is removal of exotic species from existing riparian habitat.
4. **Wetland acquisition** – may be considered in combination with any of the three mitigation activities above, but must be after the 1:1 creation/restoration component.

The Biology Guidelines further state that:

Wetland enhancement and wetland acquisition focus on the preservation or the improvement of existing wetland habitat and function, and do not result in an increase in wetland area; therefore, a net loss of wetland may result. As such, acquisition and/or enhancement of existing wetlands may be considered as partial mitigation only, for any balance of the remaining mitigation requirement after restoration or creation if wetland acreage is provided at a minimum of a 1:1 ratio.

However, the Biology Guidelines acknowledge that:

Wetland mitigation required as part of any federal (404) or state (1601/1603) wetland permit will supersede and will not be in addition to any mitigation identified in the California Environmental Quality Act (CEQA) document for those wetland areas covered under any federal or state wetland permit.

This Plan uses the City's terminology for wetland mitigation types: creation, restoration, and enhancement. Wetland creation using the City's definition includes establishment and re-establishment, and wetland restoration includes rehabilitation. In summary, in this report, creation includes the City's definition for creation, the USACE's definition for restoration (including establishment and re-establishment), and the RWQCB's definition for re-establishment. Restoration includes the City's definition for restoration and the RWQCB's definition of rehabilitation. Enhancement includes the City's definition for enhancement, the USACE's definition for enhancement, and RWQCB's definition for enhancement. Acquisition is the City's definition, but must be after 1:1 creation/restoration component.

F. MITIGATION REQUIREMENTS

After compensatory wetland mitigation has been allocated for Nestor Creek Map 131 (Table 1), excess or remaining mitigation credits available at Otay Reed (Table 2) would be used to fulfill the current need to mitigate for impacts to City wetlands resulting from previous emergency channel maintenance conducted during the winter of 2015 – 2016. Any remaining excess credits would then be assigned to future impacts associated with the City's flood control programs based on each agency's requirements.

Nestor Creek Map 131

The City's mitigation ratios for maintenance activities within Nestor Creek Map 131 must be consistent with those identified in MMP's Site Development Permit (SDP) which incorporates specific conditions from the Settlement Agreement (2013) related to the MMP's Final PEIR. No mitigation is required for impacts relating to the removal of giant reed (*Arundo donax*) or other invasive, non-native vegetation. Mitigation requirements for each agency are described below (Table 1). Mitigation ratios for impacts to USACE, RWQCB, and CDFW are proposed below and in Table 1; however, final mitigation requirements for USACE, RWQCB, and CDFW will be determined during the permitting process.

Table 1
WETLAND MITIGATION REQUIREMENTS
FOR NESTOR CREEK MAP 131 CHANNEL MAINTENANCE
(acres)¹

Habitat	U.S. Army Corps of Engineers /Regional Water Quality Control Board			California Department of Fish and Wildlife			City of San Diego		
	Proposed Impacts	Proposed Ratio	Proposed Mitigation	Proposed Impacts	Proposed Ratio	Proposed Mitigation	Impacts	Ratio	Proposed Mitigation
Southern willow scrub	<0.01 ²	2:1	<0.01	0.07	2:1	0.14	0.10	3:1	0.30
Freshwater marsh	0.01	2:1	0.02	0.01	2:1	0.02	0.07	4:1	0.28
Disturbed wetland	0.01	2:1	0.02	0.01	2:1	0.02	0.07	4:1	0.28
Natural flood channel/ streambed	--	1:1	--	--	1:1	--	0.06	2:1	0.12
TOTAL	0.02	--	0.04	0.09	--	0.18	0.30	--	0.98

¹ Acreages are rounded to the nearest 0.01 acre; thus, totals reflect rounding.

² Impacts to southern willow scrub (earthen bottom channel) total approximately 130 square feet (0.003 acre).

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U.S. Army Corps of Engineers

Mitigation for USACE jurisdictional impacts is dependent upon the composition of the channel. Mitigation ratios are different for earthen and concrete channels. The USACE requires compensatory mitigation for maintenance impacts to wetlands in earthen channels but is not expected to regulate impacts to concrete-lined channels. The proposed mitigation for impacts to USACE regulated areas within Map 131 totals 0.04 acre (Table 1). Impacts to USACE jurisdictional areas in earthen components of Nestor Creek Channel Map 131 include less than 0.01 acre of SWS, 0.01 acre of freshwater marsh, and 0.01 acre of disturbed wetland. Mitigation ratios proposed are 2:1 for vegetated habitats for a total of 0.04 acre, consisting of a minimum of 0.02 acre of creation and the remaining 0.02 acre of creation, restoration, or enhancement.

Regional Water Quality Control Board

Habitat mitigation required by the San Diego RWQCB for previous routine channel maintenance in concrete-lined channels performed under the MMP has been on a case-by-case basis. Mitigation for habitat impacts within the Nestor Creek channel is being proposed at a 2:1 ratio for 0.01 acre of freshwater marsh and 0.01 acre of disturbed wetland habitats in the earthen portion of the channel. The proposed mitigation for impacts to RWQCB regulated areas totals 0.04 acre (Table 1), consisting of a minimum of 0.02 acre of creation and the remaining 0.02 acre of creation, restoration, or enhancement. When connected with existing adjacent riparian habitats, this proposed mitigation will produce a higher-quality contiguous riparian environment by increasing hydrologic and water quality functions, decreasing the prevalence of invasive and exotic species, and allowing native plant communities to thrive and provide habitat for wildlife throughout the Otay River watershed.

California Department of Fish and Wildlife

The CDFW has jurisdiction over the earthen and concrete portions within Nestor Creek channel, but only requires compensatory mitigation for maintenance impacts to wetlands and unvegetated earthen portions of the channel. While CDFW requires notification of activities within concrete-lined channels, it typically does not require compensatory mitigation for these activities. The total proposed mitigation for CDFW is 0.18 acre (Table 1). Impacts to CDFW jurisdictional areas in earthen components of Nestor Creek Channel include 0.14 acre of SWS, 0.01 acre of freshwater marsh, and 0.02 acre of disturbed wetland. Mitigation ratios proposed are 2:1 for vegetated areas for a total of 0.18 acre consisting of a minimum of 0.09 acre of creation or restoration and the remaining 0.09 acre as creation, restoration, or enhancement.

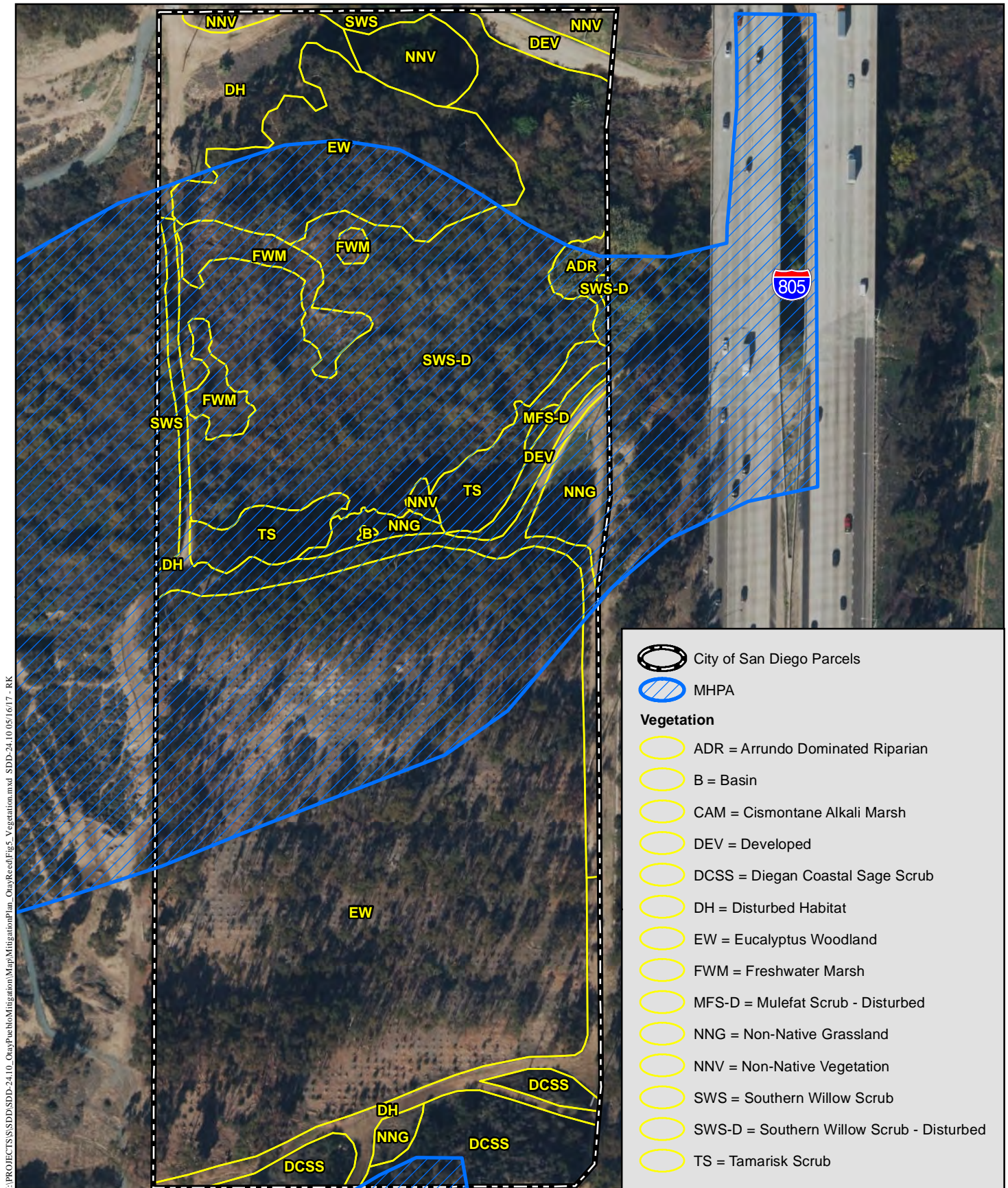
City of San Diego

The City regulates both earthen and concrete-lined channels and requires compensatory mitigation for wetland impacts pursuant to the mitigation ratios specified in the SDP. Impacts to areas under the City's jurisdiction include 0.10 acre of SWS, 0.07 acre of freshwater marsh, 0.07 acre of disturbed wetland, and 0.06 acre of natural flood channel/streambed. Mitigation ratios consist of 3:1 for SWS, 4:1 for freshwater marsh and disturbed wetland, and 2:1 for natural flood channel/streambed. Mitigation requirements would consist of a minimum of 1:1 creation or restoration (0.30 acre) and the remainder (0.68 acre) as creation, restoration, enhancement, or acquisition. The total mitigation requirement for impacts to City wetlands and natural flood channel is 0.98 acre. The City Biology Guidelines (City 2012) stated preference for impacts to be mitigated in-kind with better habitat. Out-of-kind could be considered where it would clearly benefit sensitive species and result in a biologically superior alternative.

The mitigation outlined in this Plan is intended to fully mitigate for all currently planned MMP impacts to Nestor Creek Map Channel (Map 131) located in the Otay watershed and outside the coastal zone. In addition, excess mitigation will be used towards 2015-2016 emergency channel maintenance and any remaining credit will be used as APRM (Table 2).

2015-2016 Emergency Channel Maintenance

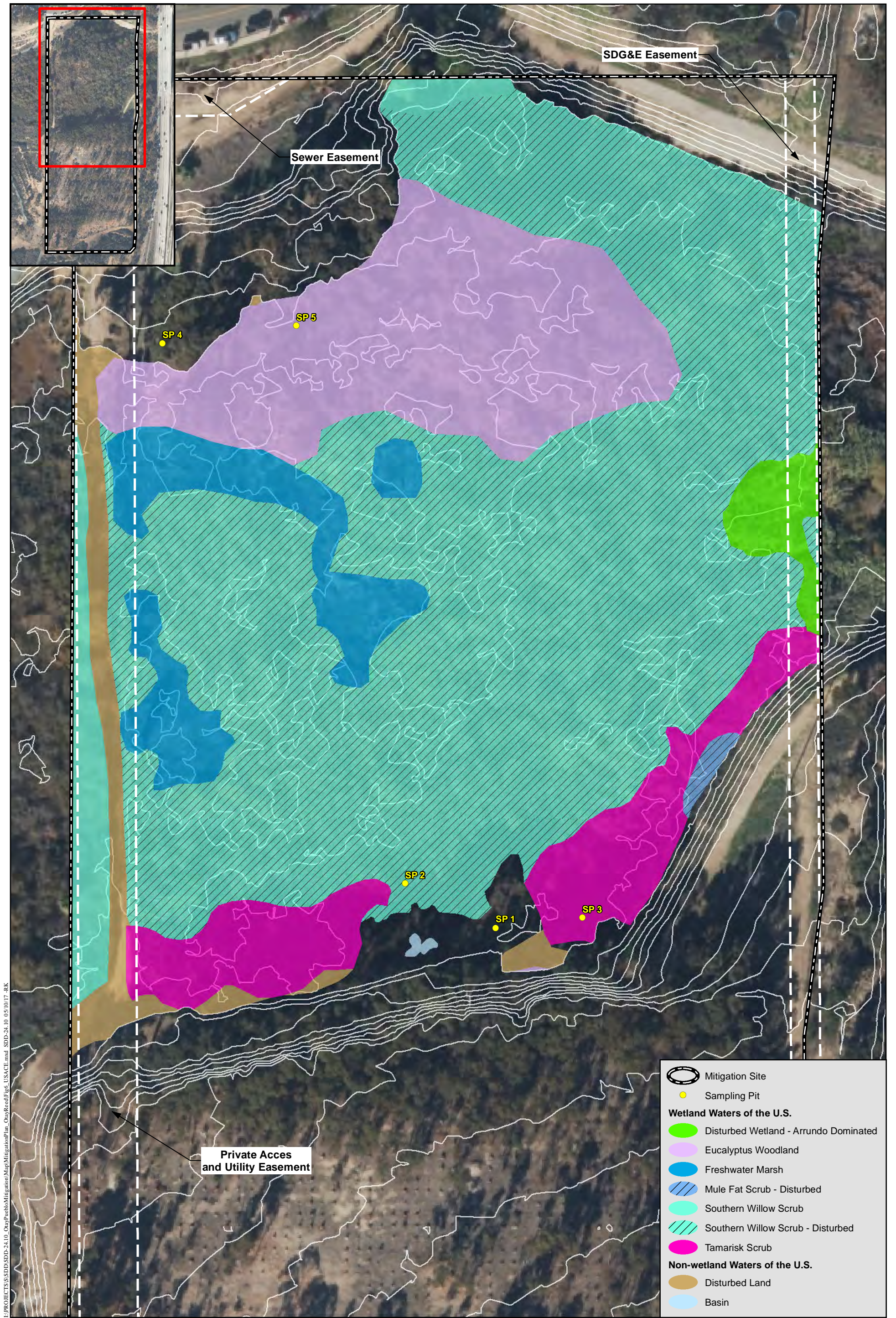
This Plan provides mitigation for five 2015-2016 emergency channel maintenance projects the City completed in the winter of 2015-2016. These include maintenance of Parkside MMP Map 122, Jamacha MMP Map 115, Washington MMP Map 84, and Auburn MMP Maps 70 and 77. These maintenance activities were permitted by the USACE and RWQCB under Regional General Permit 63 for Repair and Protection Activities in Emergency Situations, and the RWQCB required mitigation for impacts. Partial mitigation for the 2015-2016 emergency projects is being considered under a separate mitigation plan (Dudek 2017) being reviewed by the City and RWQCB. However, this enhancement plan does not satisfy all City mitigation obligations. Since Otay Reed will have excess potential creation/restoration (re-establishment) credits available after Nestor Creek Map 131 channel maintenance mitigation requirements have been met, the remaining City mitigation needs for the 2015-2016 emergency channel maintenance projects will be allocated to the Otay Reed site. City mitigation provided at Otay Reed includes 0.10 acre for Parkside, 0.05 acre for Jamacha, 0.04 acre for Washington, and 0.20 acre for Auburn. A summary of City mitigation required for the 2015-2016 emergency channel maintenance projects is outlined in Table 2.



Existing Vegetation Communities

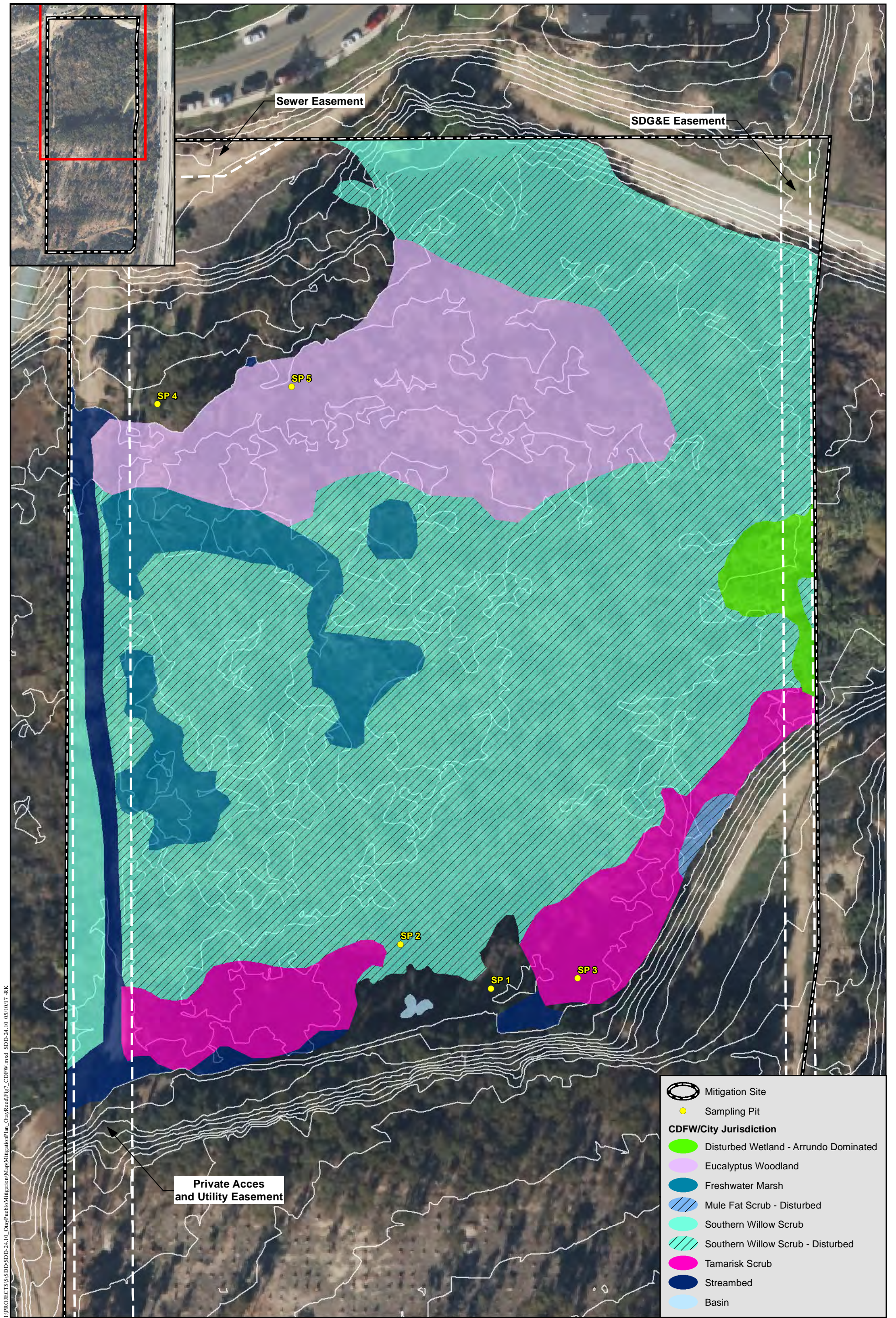
OTAY REED

Figure 5



USACE Jurisdictional Habitats

OTAY REED



CDFW/City Jurisdictional Habitats

OTAY REED

Figure 7

Table 2
CITY WETLAND MITIGATION ALLOCATIONS AT OTAY REED
FOR 2015-2016 EMERGENCY CHANNEL MAINTENANCE

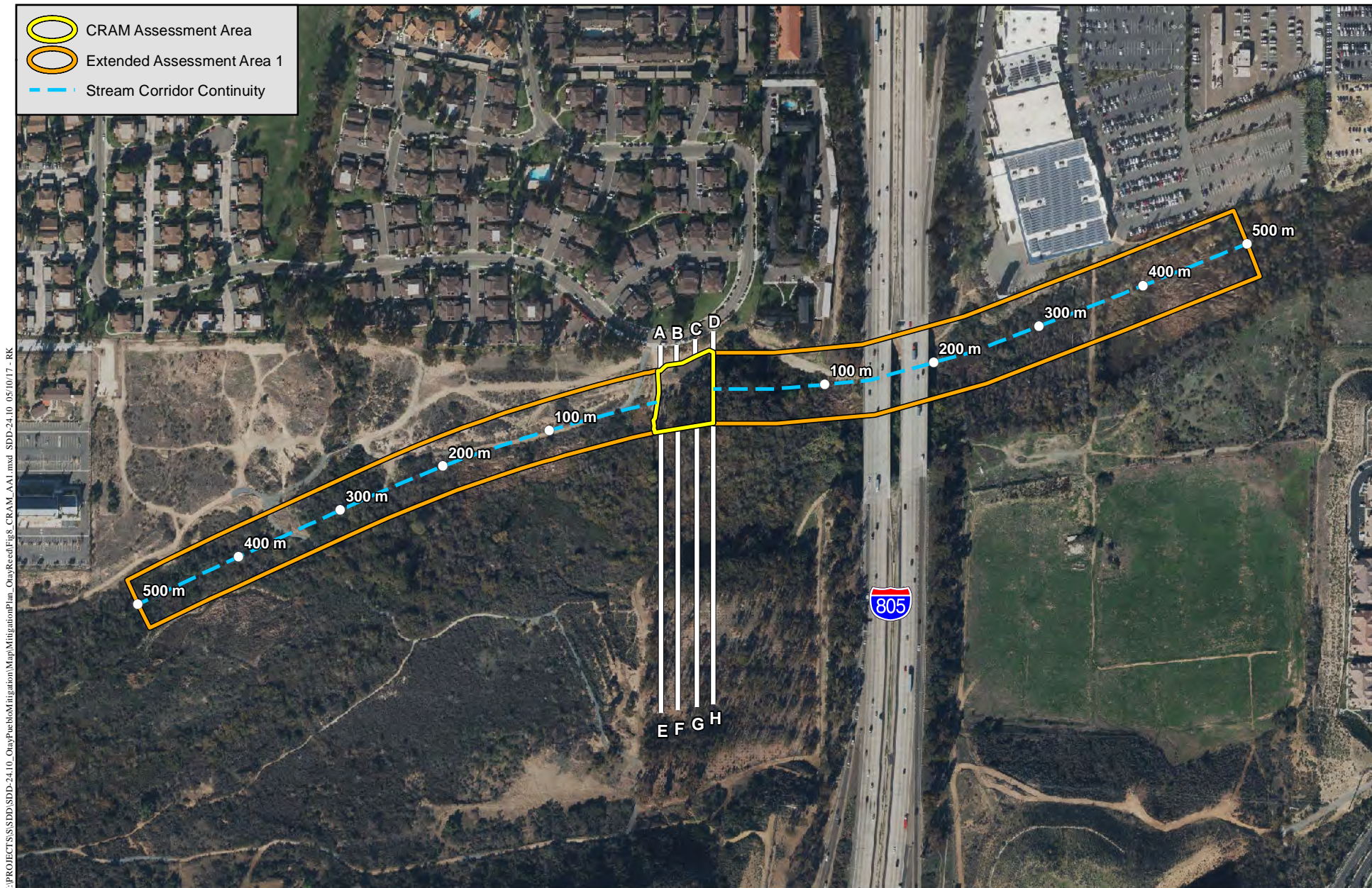
Facility	Watershed ¹	Habitat Type	MMP Mitigation Ratio ²	City Mitigation Needs		Proposed Mitigation at Otay Reed
				Creation/ Restoration (ac)	Enhancement (ac)	Creation/ Restoration (ac) ³
Parkside MMP Map 122	Sweetwater	Freshwater marsh	4:1	0.02	0.02	0.04
		Disturbed freshwater marsh	4:1	0.03	0.03	0.06
Jamacha MMP Map 115	Pueblo	Natural flood channel	2:1	0.04	--	0.04
		Disturbed wetland	4:1	0.01	--	0.01
Washington MMP Map 84	Pueblo	Freshwater marsh	4:1	0.02	0.02	0.04
Auburn MMP Map 77	Pueblo	Disturbed southern willow scrub	3:1	0.03	--	0.03
Auburn MMP Map 70	Pueblo	Natural flood channel	2:1	0.04	0.04	0.08
		Disturbed mule fat scrub	3:1	0.01	0.03	0.04
		Southern willow scrub	3:1	0.05	--	0.05
TOTAL				0.25	0.14	0.39

¹ The wetland habitat type impacted in the Sweetwater and Pueblo watersheds (i.e. hydrologic unit) are similar to those proposed at the Otay Reed site in the Otay watershed; and in some instances, better quality and higher in value. Mitigation opportunities in the Sweetwater and Pueblo watersheds are primarily constrained by 1) the availability of City-owned land already reserved for open space, park sites, utilities or flood control channels; 2) lands not within the City's jurisdiction; or 3) private development. Mitigation in-watershed was determined to be infeasible either because of the lack of MHPA or Open Space lands or due to projected availability. The Sweetwater, Pueblo and Otay hydrologic units are also grouped under the San Diego Bay Watershed Management Area (WMA) as identified in the City's Water Quality Improvement Plans adopted by the Regional Water Quality Control Board.

² Higher mitigation ratios were not assessed for impacts out-of-kind and/or out-of-watershed. Mitigation required under the Master Maintenance Program (MMP) already increases the mitigation ratios to 4:1 for freshwater marsh, 3:1 for southern willow scrub, and 3:1 for mule fat scrub compared to the City's Biology Guidelines, which requires ratios at a 2:1 for Freshwater marsh, 2:1 for southern willow scrub, and 2:1 for mule fat scrub. Although the 2:1 ratio for natural flood channel impacts are the same for both

the MMP and City Biology Guidelines, there is still a net gain of wetland habitat since the natural flood channel impacted by emergency maintenance remains a natural flood channel.

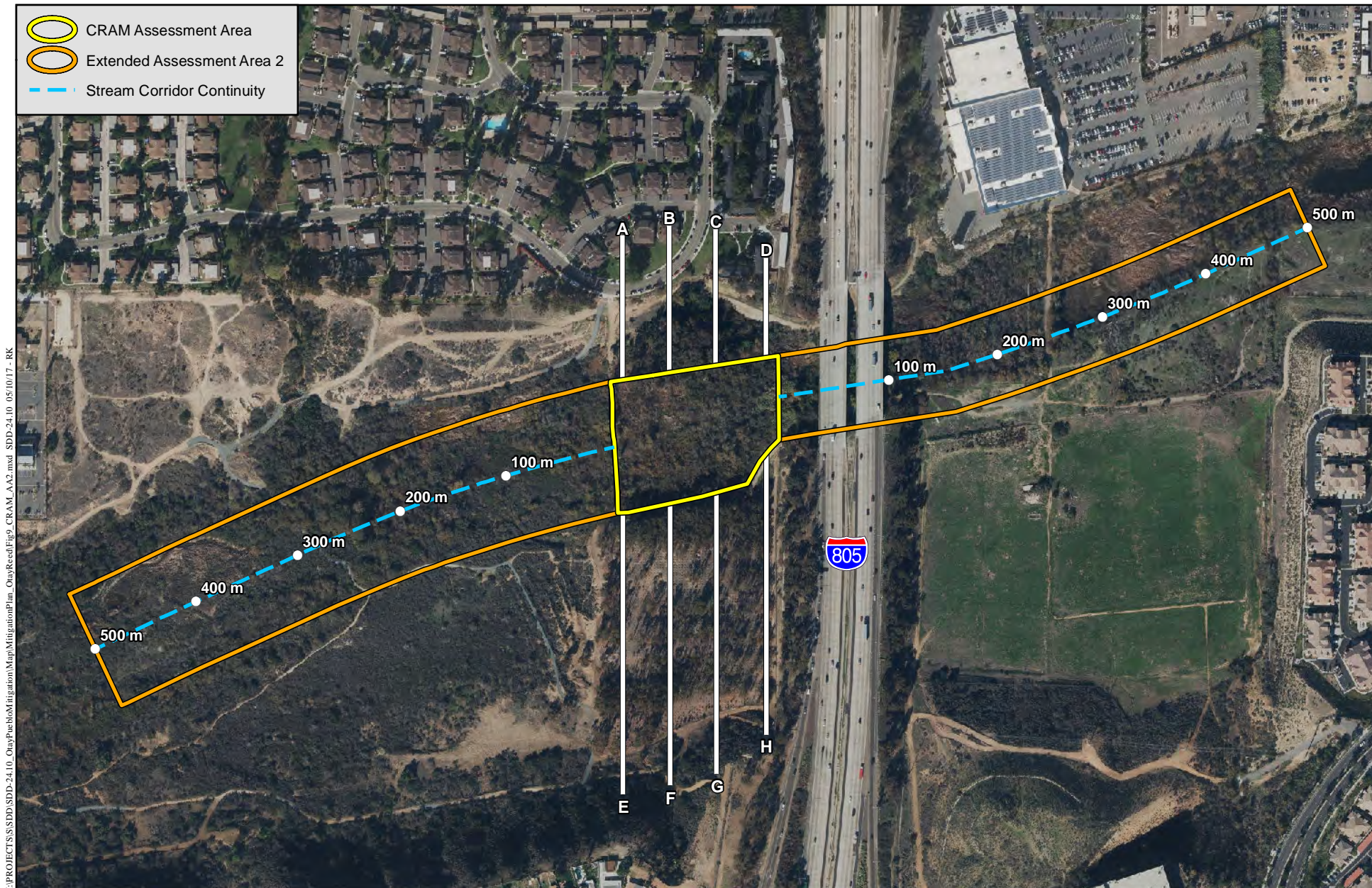
³ Required Enhancement needs are mitigated using Creation/Restoration credits.



CRAM Assessment Area 1

OTAY REED

Figure 8

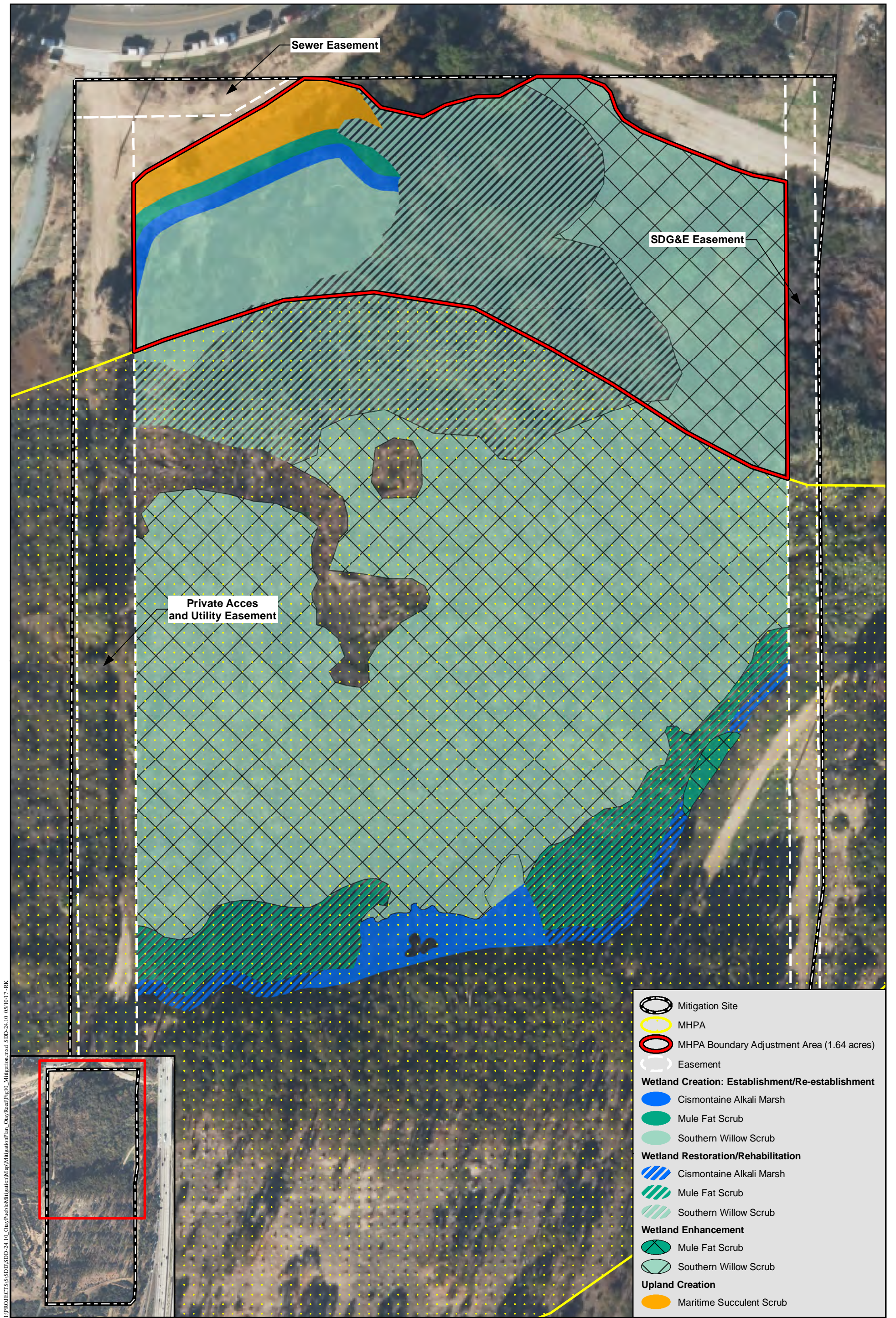


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CRAM Assessment Area 2

OTAY REED

Figure 9



Conceptual Mitigation Plan

OTAY REED

Figure 10

III. MITIGATION SITE DESCRIPTION

A. MITIGATION LOCATION

Wetland mitigation specified by this Plan will occur on City-owned parcels (APNs 62407026 and 62407022) along the Otay River, which are located immediately west of Interstate 805 and south of Rancho Drive. Wetland creation (establishment/re-establishment), restoration (rehabilitation), and enhancement proposed by this Plan will occur within areas currently supporting EW, disturbed land, disturbed wetland (Arundo-dominated), tamarisk scrub, MFS (disturbed), and SWS (disturbed) (Figure 5).

B. MITIGATION AREA SELECTION

HELIX biologist Jasmine Bakker conducted an initial assessment of the property on October 24, 2016 with City's O&M and Parks and Recreation staff to determine if there were potential wetland mitigation opportunities present. Ms. Bakker and HELIX biologist Amy Mattson conducted a follow-up assessment on November 18, 2016 to map existing vegetation communities and habitat types, assess suitability for sensitive plant and animal species, and map potential wetland mitigation areas. Physical parameters assessed included soil conditions, presence of indicator plant and animal species, slope, aspect, and hydrology. HELIX identified an area for wetland creation that could be constructed by lowering the elevation of uplands (EW and disturbed land) adjacent to the existing riverbed to expand the area capable of supporting wetland hydrology and vegetation. A third inspection was conducted by Michael Maryniewski, Director of Operations at HELIX Construction Group, and Larry Sward, Principal Biologist at HELIX. The third inspection focused on the northwest corner of the site to further evaluate wetland creation credit potential and associated grading costs.

C. MITIGATION SITE SUITABILITY

The area proposed for mitigation is considered suitable for wetland habitat creation, restoration, and enhancement due to the location of the site along an existing riparian corridor and the presence of existing riparian habitat both within the Otay Reed site as well as upstream and downstream of the site. Suitable wetland mitigation areas were selected by mapping areas dominated by eucalyptus (*Eucalyptus* spp.), giant reed (*Arundo donax*), and other invasive species. The vertical and horizontal proximity to existing wetland habitats also figured into the identification of wetland creation areas. HELIX conducted a jurisdictional wetland delineation and California Rapid Assessment Method (CRAM) assessment on April 12, 2017 to document pre-mitigation wetland status of the area and aid in identifying suitable wetland mitigation areas (Figures 6 and 7; Appendix A). The existing riparian corridor was confirmed to be under the jurisdiction of both the CDFW and City, and included freshwater marsh, SWS, MFS, disturbed wetland (Arundo-dominated), and portions of EW. Areas under the jurisdiction of the USACE and RWQCB were similar, albeit slightly narrower than the City and CDFW areas. In addition, a Compensatory Mitigation Site Evaluation Checklist was prepared for the site (Appendix B).

D. EXISTING CONDITIONS AND ENVIRONMENTAL SETTING

Vegetation within the Otay Reed site consists of native and disturbed lands (Figure 5). Vegetation communities and land types identified included freshwater marsh, SWS (disturbed), MFS (disturbed), disturbed wetland (Arundo-dominated), EW, tamarisk scrub, non-native grassland, and disturbed land. Dominant native species observed on site included mule fat (*Baccharis salicifolia*), Goodding's willow (*Salix gooddingii*), arroyo willow (*Salix lasiolepis*), and cattails (*Typha* sp.). Dominant non-native species observed on site included river red gum (*Eucalyptus camaldulensis*), tamarisk (*Tamarix* sp.), giant reed, and Brazilian pepper (*Schinus terebinthifolius*).

Wetland communities within the proposed site are predominantly composed of disturbed SWS and EW. The SWS primarily comprises a dense canopy of tree-sized willows (*Salix* spp.) with non-native species interspersed, and the EW areas have minimal native vegetation in the understory. A small patch of MFS occurs to the south adjacent to the larger stands of giant reed; it also occurs along the eastern bank of the riverbed before transitioning to tamarisk scrub. Freshwater marsh occurs at the west edge of the site and is dominated by cattails. This habitat will not be included in the mitigation effort. Upland communities on site consist primarily of non-native grassland, EW, and disturbed land. Developed land includes the unpaved pedestrian and bike path that occurs along the north, west, and south sides of the site.

Two sensitive plant species (California Native Plant Society [CNPS]-listed) were observed on site including San Diego marsh elder (*Iva hayesiana*) and southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*). The federally endangered least Bell's vireo (*Vireo bellii pusillus*) was heard calling on site during the jurisdictional delineation and CRAM assessment conducted on April 12, 2017.

Soils within the Otay Reed site are mapped as gravel pits along the Otay River in the northern half of the site, and riverwash in the southern portion of the site (Natural Resource Conservation Service 2016). Elevations on site range between 76 feet above mean sea level (AMSL) along the riverbed to 96 feet AMSL in the northwest portion of the site.

Review of record information and easement documents for this parcel (Appendix C) revealed the presence of three easements that overlap the Otay Reed site: 1) 40-ft. private access and utility easement borders the western edge, overlapping the existing unpaved trail; 2) 20-ft. SDG&E easement borders the eastern edge; and 3) a 20-ft. sewer easement overlaps the northwestern corner.

E. EXISTING FUNCTIONS AND SERVICES

The Otay River functions include watershed recharge, water purification, and flood control. In addition, the existing wetland and upland habitats are used by a variety of wildlife as a corridor between important habitat areas and for foraging, nesting, and roosting. Wildlife use of the areas proposed for wetland creation area is lower due to the prevalence of non-native species. Furthermore, the presence of non-native vegetation provides a constant weed seed source for the downstream habitat along the Otay River. Creation, restoration, and enhancement of the Otay Reed site will increase the value of the area to native flora and fauna. The functions and services of the

site will be improved with the removal of invasive non-native species and their replacement by native species. For example, removal of eucalyptus trees and leaf litter will improve soil conditions and promote development of an understory. In addition, removal of the eucalyptus trees, tamarisk, giant reed, and other invasive species and replacement with native riparian and wetland species will improve water quality and hydrological conditions.

The existing ecological function of the proposed wetland mitigation of Otay River was assessed using CRAM. Results of this pre-mitigation CRAM will be used for later comparison with post-mitigation CRAM scores to determine how functions and services were improved or replaced by the mitigation effort. HELIX biologists W. Larry Sward and Laura Moreton conducted a CRAM assessment on April 12, 2017 according to the User's Manual: *California Rapid Assessment Method for Wetlands and Riparian Areas v. 6.1* (California Wetlands Monitoring Workgroup [CWMW] 2013a). Given that the Otay River is a riparian system, the Riverine Wetlands Field book version 6.1 (CWMW January 2013b) and related worksheets were used (Appendix D). Two assessment areas (AAs; Figures 8 and 9) were established to encompass the two proposed wetland creation areas: AA1 includes the northwestern wetland creation area and AA2 includes the southern wetland creation area.

Data forms for the AAs are included in Appendix C, along with figures showing the location of the AA and analyses relating to the Buffer and Landscape Context attribute. Overall CRAM scores are calculated by averaging the scores for each of the four CRAM Attributes. The CRAM scores represent the percent of best achievable wetland conditions, and the overall CRAM score depends more on the diversity and levels of all its services than the level of any one service. The diversity and levels of services of a wetland increase with its structural complexity and size. The overall CRAM score for AA1 was 52 and the overall CRAM score for AA2 was 56 (Table 3).

CRAM also was conducted for the Maintenance Area (HELIX 2017c). The AA on Map 131 received a score of 38. The score is lower than the score received by the site prior to mitigation occurring. This indicates that the Otay Reed site will provide better functions and values than the impact site.

Table 3
CALIFORNIA RAPID ASSESSMENT METHOD (CRAM) DATA SUMMARY

CRAM Attributes	Metrics		Baseline Scores ¹		Year 5 Target Scores		
			AA1	AA2	AA1	AA2	
Buffer and Landscape Context	Stream Corridor Continuity		12	12	12	12	
	Buffer Sub-metrics:						
	– Percent of Assessment Area with Buffer		12	12	12	12	
	– Average Buffer Width		3	12	3	12	
	– Buffer Condition		3	6	3	6	
	Attribute Score (Raw/Final)		16/66	20/85	16/66	20/85	
Hydrology	Water Source		6	6	6	6	
	Channel Stability		9	9	9	9	
	Hydrologic Connectivity		6	6	6	6	
	Attribute Score (Raw/Final)		21/58	21/58	21/58	21/58	
Structure	Physical	Structural Patch Richness	6	3	6	3	
		Topographic Complexity	3	3	3	3	
	Attribute Score (Raw/Final)		9/37	6/25	9/37	6/25	
	Biotic	Plant Community Sub-metrics:					
		– Number of Plant Layers Present		12	12	12	12
		– Number of Co-Dominant Species		9	9	12	12
		– Percent Invasion		3	6	12	12
		Horizontal Interspersion		3	6	6	9
		Vertical Biotic Structure		6	6	9	9
	Attribute Score (Raw/Final)		17/47	21/58	27/5	30/83	
Overall AA Score			52	56	59	63	

¹Based on CRAM completed at the Otay Reed site prior to mitigation activities.

F. MITIGATION SUMMARY AND CONCEPT

This Plan includes the creation (establishment/re-establishment), restoration (rehabilitation), and enhancement of SWS, MFS, and cismontane alkali marsh (CAM) habitats. The proposed wetland creation would occur in areas that are currently in an upland setting, adjacent to the northern bank of the existing SWS and EW and encompassing the non-native grassland along the southern bank (Figure 10). The northern area currently consists of EW and disturbed land and will be converted to SWS and MFS by lowering the elevation to match that of downstream CDFW/City SWS habitat. The southern non-native grassland area will be converted to MFS by slightly lowering the elevation to match that of the adjacent MFS and SWS. Patches of wetland restoration and enhancement (areas that will not be lowered and thus are not considered creation) will occur along the Otay River in wetland areas that currently support EW and giant reed; these areas will be converted to SWS habitat. Tamarisk scrub, along the southern boundary of the project site, will be restored to MFS. Areas of EW removal that are outside the current boundary of existing SWS

cannot be restored with wetland hydrology and thus cannot be used as wetland mitigation; however, the removal of all EW adjacent to or near wetland habitat will be considered restoration and help the overall mitigation effort by aiding in the prevention of the future spread of non-native vegetation to the wetland creation, restoration, and enhancement areas.

This Plan provides 0.60 acre of wetland creation (establishment/ re-establishment), 1.63 acres of wetland restoration (rehabilitation), and 3.18 acres of wetland enhancement (Table 4). Excess mitigation will be used as APRM, and includes 0.11 acre of upland restoration (Tier 1 – maritime succulent scrub). Mitigation provided by this Plan is summarized by jurisdiction below.

Table 4
OTAY REED PROPOSED MITIGATION¹

Jurisdictional Resource/ Habitat	Creation (establishment/re- establishment)	Restoration (rehabilitation)	Enhancement	Total
USACE/RWQCB				
Southern willow scrub	0.39	1.17	3.16	4.72
Mule fat scrub	--	0.36	0.02	0.38
Cismontane alkali marsh	0.16	0.08	--	0.24
Total USACE/RWQCB Credit	0.55	1.61	3.18	5.34
CDFW				
Southern willow scrub	0.39	1.19	3.16	4.74
Mule fat scrub	0.05	0.36	0.02	0.43
Cismontane alkali marsh	0.16	0.08	--	0.24
Total CDFW Credit	0.60	1.63	3.18	5.41
City				
Southern willow scrub	0.39	1.19	3.16	4.74
Mule fat scrub	0.05	0.36	0.02	0.43
Cismontane alkali marsh	0.16	0.08	--	0.24
Maritime Succulent Scrub	--	0.11	--	0.11
Total City Credit	0.60	1.74²	3.18	5.52²

¹ Rounded to the nearest 0.01 acre.

² Includes 0.11 acre of upland credit

U.S. Army Corps of Engineers

Wetland mitigation provided by this Plan for Nestor Creek Map 131 channel maintenance impacts to USACE regulated areas totals 0.04 acre, consisting of 0.02 acre of cismontane alkali marsh (0.01 acre of creation and 0.01 acre of restoration) and 0.02 acre of mule fat scrub (0.01 acre of creation and 0.01 acre of enhancement) (Table 4a). Support for the proposed out-of-kind mitigation is presented in the City of San Diego mitigation summary, below.

Regional Water Quality Control Board

Wetland mitigation provided by this Plan for Nestor Creek Map 131 channel maintenance impacts to RWQCB regulated areas totals 0.04 acre, consisting of 0.02 acre of cismontane alkali marsh

(0.01 acre of creation and 0.01 acre of restoration) and 0.02 acre of mule fat scrub (0.01 acre of creation and 0.01 acre of enhancement) (Table 4a). Support for the proposed out-of-kind mitigation is presented in the City of San Diego mitigation summary, below. This Plan does not provide RWQCB mitigation for the 2015-2016 emergency channel maintenance because mitigation is being provided under a separate plan (Dudek 2017).

Table 4a
PROPOSED USACE/RWQCB MITIGATION FOR NESTOR CREEK MAP 131

Habitat Type	Impacts to Natural Bottom Channel	Mitigation Required		Mitigation Provided	
		Creation (Establishment)	Restoration/ Enhancement (Rehabilitation/ Enhancement)	Creation (Establishment)	Restoration (Rehabilitation)
Southern willow scrub	<0.01 ²	<0.01	<0.01	--	--
Freshwater marsh	0.01	0.01	0.01	--	--
Disturbed wetland	0.01	0.01	0.01	--	--
Mule fat scrub	--	--	--	0.01	0.01
Cismontane alkali marsh	--	--	--	0.01 ¹	0.01 ¹
TOTAL	0.02	0.02	0.02	0.02	0.02

¹ Out-of-kind mitigation to satisfy FWM and disturbed wetland creation (establishment) and restoration/enhancement (rehabilitation/ enhancement).

² Impacts to southern willow scrub (earthen bottom channel) total approximately 130 square feet (0.003 acre).

California Department of Fish and Wildlife

Wetland mitigation provided by this Plan for Nestor Creek Map 131 channel maintenance impacts to CDFW regulated areas totals 0.18 acre, consisting of 0.14 acre of southern willow scrub (0.07 acre of creation and 0.07 acre of enhancement), 0.02 acre of cismontane alkali marsh (0.01 acre of creation and 0.01 acre of restoration), and 0.02 acre of mule fat scrub (0.01 acre of creation and 0.01 acre of enhancement) (Table 4b).

Table 4b
PROPOSED CDFW MITIGATION FOR NESTOR CREEK MAP 131

Habitat Type	Impacts to Natural Bottom Channel	Mitigation Required		Mitigation Provided	
		Creation/Restoration	Enhancement	Creation/Restoration	Enhancement
Southern willow scrub	0.07	0.07	0.07	0.07	0.07
Freshwater marsh	0.01	0.01	0.01	--	--
Disturbed wetland	0.01	0.01	0.01	--	--
Mule fat scrub	--	--	--	0.01 ¹	0.01 ¹
Cismontane alkali marsh	--	--	--	0.01 ¹	0.01 ¹
TOTAL	0.09	0.09	0.09	0.09	0.09

¹ Out-of-kind mitigation to satisfy FWM and disturbed wetland creation and restoration/enhancement.

City of San Diego

Wetland mitigation provided by this Plan for Nestor Creek Map 131 channel maintenance impacts consists of 0.76 acre of southern willow scrub (0.10 acre of creation and 0.66 acre of enhancement), 0.13 acre of cismontane alkali marsh (0.13 acre of creation), and 0.09 acre of mule fat scrub (0.05 acre of creation, 0.02 acre of restoration, and 0.02 acre of enhancement) (Table 4c). Wetland mitigation provided by this Plan for the 2015-2016 emergency channel maintenance impacts consists of 0.26 acre of southern willow scrub (0.12 acre of restoration and 0.14 acre of enhancement), 0.11 acre of cismontane alkali marsh (0.03 acre of creation and 0.08 acre of restoration), and 0.02 acre of mule fat scrub (0.02 acre of restoration).

The City requires mitigation for impacts to SWS, MFS, freshwater marsh, disturbed wetland, and natural flood channel (streambed). The City Biology Guidelines (City 2012) preference for these habitats is in-kind mitigation with better habitat. Out-of-kind could be considered where it would clearly benefit sensitive species and result in a biologically superior alternative. This Plan provides both in-kind (SWS) and out-of-kind (CAM and MFS) habitats. These vegetation communities have been carefully selected on the basis that they can successfully establish within existing conditions and hydrology on, and adjacent, to the mitigation site. The proposed vegetation communities will provide better quality habitat and be of greater value to wildlife than the impacted freshwater marsh, disturbed wetland, and natural flood channel.

The following reasons have been used to determine that the out-of-kind the mitigation on the Otay Reed site will provide a biologically superior alternative to the impacted site:

- Disturbed wetland, which was mapped in Nestor Creek Map 131 and Jamacha Map 115, contains a high concentration of non-native species. The out-of-kind created habitat (MFS and CAM) will be an improvement over the existing disturbed wetland as the plant pallet will only contain native species.

- CAM is a type of marsh habitat, so although different from the impact site, it will provide similar functions and values as freshwater marsh.
- Least Bell's vireo (*Vireo bellii pusillus*) is known to occur adjacent to the proposed mitigation site. The mitigation will increase the total area of habitat available for this federally endangered species as well as increase the value of the disturbed habitat currently on the site, by removing the non-native component. The impacted location does not support least Bell's vireo.
- Diversity is a critical component of conservation. The creation of diverse communities will help to ensure long term sustainability of the mitigation site. By creating three vegetation communities, using a variety of plant species (25 wetland and 21 upland native species are included in the plant pallet) long term viability of the site will be augmented. Approximately 10 species (including non-natives) were noted in the wetland communities in Map 131.
- The impacted location is generally isolated on a landscape scale, and surrounded by development, whereas the proposed mitigation site is part of the Otay Valley Regional Park. The mitigation site will be more valuable as part of a large area of habitat, rather than as isolated pockets of wetland, which were mapped in the impact area.

Table 4c
PROPOSED CITY MITIGATION FOR NESTOR CREEK MAP 131
AND 2015-2016 EMERGENCY CHANNEL MAINTENANCE

Habitat Type	Impacts to Natural Bottom Channel	Mitigation Required		Mitigation Provided	
		Creation/ Restoration	Creation/ Restoration/ Enhancement/ Acquisition	Creation/ Restoration	Enhancement
Nestor Creek Map 131					
Southern willow scrub	0.10	0.10	0.21	0.10	0.66 ¹
Freshwater marsh	0.07	0.07	0.19	--	--
Disturbed wetland	0.07	0.07	0.22	--	--
Natural flood channel/Streambed	0.06	0.06	0.06	--	--
Mule fat scrub	--	--	--	0.07 ¹	0.02 ¹
Cismontane alkali marsh	--	--	--	0.13 ¹	--
Subtotal	0.30	0.30	0.68	0.30	0.68
2015-2016 Emergency Channel Maintenance ²					
Southern willow scrub (including disturbed)		0.08	--	0.12	0.14
Disturbed mule fat scrub		0.01	0.03	0.02	--
Freshwater marsh (including disturbed)		0.07	0.07	--	--
Disturbed wetland		0.01		--	--
Natural flood channel		0.08	0.04	--	--
Cismontane alkali marsh	--	--	--	0.11 ¹	--
Subtotal		0.25	0.14	0.25	0.14
TOTAL	0.30	0.25	0.79	0.55	0.82

¹ Out-of-kind mitigation to satisfy freshwater marsh, disturbed wetland, and natural flood channel/streambed creation/restoration/enhancement.

² Mitigation is partially fulfilled by RWQCB mitigation requirements addressed under a separate plan (Dudek 2017); mitigation acreages listed in this table include remaining mitigation needs as required by the City.

Advanced Permittee Responsible Mitigation

Mitigation provided by this Plan includes an excess of wetland creation or restoration and an excess of creation, restoration, enhancement, or acquisition requirements. As described in the introduction, this Plan is being prepared in part, to satisfy an APRM requirement for the USACE (USACE 2015a, USACE 2015b), which allows the City to provide compensatory mitigation for the USACE in advance of impacts associated with Essential Public Projects. These projects include City Transportation & Storm Water Department projects, including storm channel maintenance, culvert replacement, repair, and installation, and flood control activities. To comply with the APRM, the City must first demonstrate that aquatic resources have been avoided to the maximum extent practicable, then that they have minimized aquatic resources impacts to fullest extent appropriate and practicable, and finally that they are providing adequate compensatory mitigation for the remaining unavoidable aquatic resources impacts. The APRM process includes preparation of a detailed compensatory mitigation plan (i.e., the City's Land Development Code and Manual); development of a detailed habitat mitigation and monitoring plan; providing financial assurances to ensure successful compensatory mitigation implementation; and providing a long-term management plan with a site protection instrument, long-term management entity, and perpetual funding mechanism.

Of the 5.41 acres of wetland mitigation proposed by this plan, 0.98 acre will be used to mitigate for Nestor Creek Map 131 channel maintenance and 0.39 acre will be used to fulfill City mitigation requirements for the 2015-2016 emergency maintenance projects. The excess or remaining mitigation, as shown in Table 5a, would be used to mitigate for future impacts associated with the City's flood control programs (in coordination with the resource agencies and the City), such as future maintenance activities within other Nestor Creek Channel MMP Map Nos.

Table 5a OTAY REED WETLAND MITIGATION CREDIT SUMMARY¹									
	Creation ²			Restoration ²			Enhancement ²		Total
	SWS	MFS	CAM	SWS	MFS	CAM	SWS	MFS	
Total Credits	0.39	0.05	0.16	1.19	0.36	0.08	3.16	0.02	5.41
Estimated Deduction for Nestor Map 131	0.10	0.05	0.13	--	0.02	--	0.66	0.02	0.98
Estimated Deduction for 2015/16 emergency channel maintenance	--	--	0.03	0.12	0.02	0.08	0.14	--	0.39
<i>Subtotal</i>	<i>0.10</i>	<i>0.05</i>	<i>0.16</i>	<i>0.12</i>	<i>0.04</i>	<i>0.08</i>	<i>0.80</i>	<i>0.02</i>	<i>1.37</i>
Remaining Credits	0.29	0	0	1.07	0.32	0	2.36	0	4.04

¹ Acreages are rounded to the nearest 0.01 acre.

² Habitat acronyms: SWS=southern willow scrub, MFS=mulefat scrub, CAM=cismontane alkali marsh

In addition, this Plan proposes the restoration of 0.11 acre of maritime succulent scrub, categorized in the City's Biology Guidelines as a Tier 1 (rare) upland habitat type. The 0.11 acre of Tier 1 credit will be available as mitigation for future City projects, if needed.

Table 5b provides the remaining mitigation available by jurisdiction for APRM.

Table 5b
OTAY REED EXCESS MITIGATION CREDIT BY JURISDICTION ¹

Jurisdictional Resource/ Habitat	Creation (establishment/re- establishment)	Restoration (rehabilitation)	Enhancement	Total
USACE/RWQCB				
Southern willow scrub	0.29	1.05	2.36	3.70
Mule fat scrub	--	0.32	--	0.32
Cismontane alkali marsh	--	--	--	--
Total USACE/RWQCB Credit	0.29	1.37	3.18	4.02
CDFW				
Southern willow scrub	0.29	1.07	2.36	3.72
Mule fat scrub	--	0.32	--	0.32
Cismontane alkali marsh	--	--	--	--
Total CDFW Credit	0.29	1.39	3.18	4.04
City				
Southern willow scrub	0.29	1.07	2.36	3.72
Mule fat scrub	--	0.32	--	0.32
Cismontane alkali marsh	--	--	--	--
Maritime Succulent Scrub	--	0.11	--	0.11
Total City Credit	0.29	1.50	2.36	4.15

¹ Rounded to the nearest 0.01 acre.

G. TARGET FUNCTIONS AND SERVICES

The goal of wetland mitigation within the Otay Reed site is to create, restore, and enhance habitat with similar or better functions and services (flood control, water filtration, wildlife habitat, etc.) than those that occur in the Maintenance Areas. Once successful, the habitat mitigation will increase the target functions and services of existing habitat by creating larger, contiguous blocks of habitat. The target hydrologic regime of the Otay Reed site is a riverine wetland area that supports flows seasonally but has an inundated or saturated soil surface most of the year, fed both by groundwater and overland flow. At the end of five years of maintenance and monitoring, the created, restored, and enhanced habitats are expected to be in relatively early stages of habitat development. However, all site habitat is expected to contain sufficient amounts of viable native vegetation to allow for the development of mature and permanent target vegetation types.

For the post-mitigation CRAM assessment, the attributes for Buffer and Landscape Context and Hydrology are not expected to change. However, the Biotic Structure attribute is expected to increase due to the removal of invasive species and the increase in native species. At the end of five years, the overall post-mitigation CRAM score of AA1 is expected to increase from 52 to 59 and the score of AA2 is expected to increase from 56 to 63.

To summarize, site-specific goals include:

- Creation (establishment/re-establishment), restoration (rehabilitation), and enhancement of 5.41 acres of native wetland and riparian habitat including 4.74 acres of SWS, 0.24 acre of CAM, and 0.43 acre of MFS.
- Creation (establishment/re-establishment) of 0.60 acre of USACE wetlands as required by compensatory mitigation for permitted impacts.
- Wetland and riparian habitat that will provide increased hydrologic, biogeochemical, and habitat functions as well as recreational values.

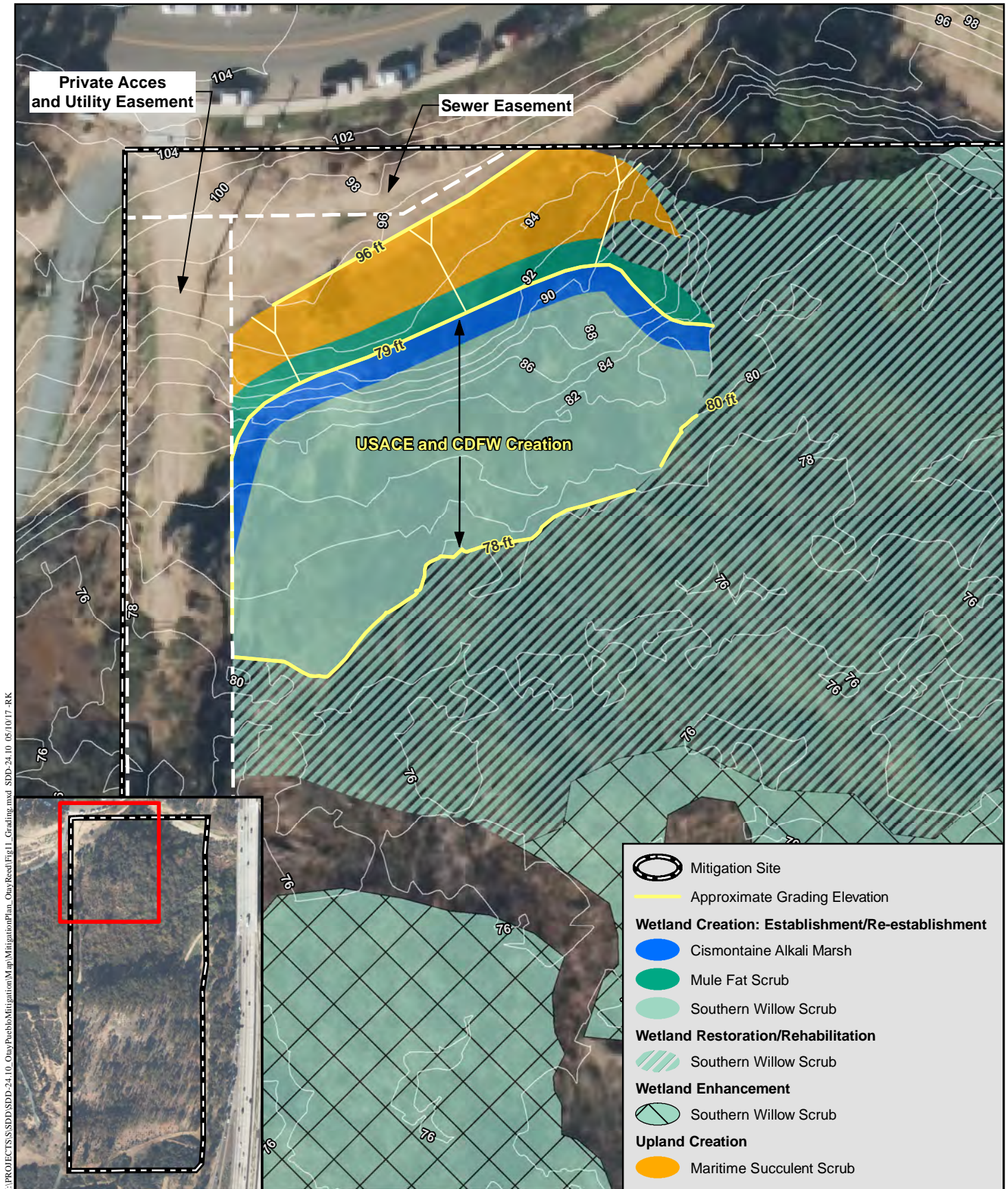
These goals will be achieved by implementation of the following objectives:

- Vegetation types to be established are expected to include SWS, CAM, and MFS that will mature and become contiguous with adjacent riparian habitats.
- Site grading will allow water from the Otay River to more readily access the creation areas within the site, which will contribute to increased hydrologic and water quality functions.
- Maintenance of the site will keep it free of invasive exotic species and allow native plant communities to thrive and provide habitat for wildlife.

H. MULTIPLE SPECIES CONSERVATION PROGRAM LAND USE CONSISTENCY ANALYSIS

Although the Otay Reed site is located within the MHPA, the Nestor Channel maintenance activities and 2015-2016 emergency channel maintenance being mitigated for are not. Therefore, the discussion in this section is only relevant to the Otay Reed site. Special development guidelines apply to lands in and adjacent to the MHPA to preserve the value of the MHPA as habitat for covered species. The City's MSCP includes Land Use Adjacency Guidelines designed to minimize indirect impacts to sensitive resources contained in the MHPA and thus maintain the value of the preserve. These adjacency guidelines govern indirect impacts. Both the land use adjacency and compatible land use guidelines were implemented to minimize impacts and maintain the function of the MHPA. Land use adjacency guidelines consist of drainage, toxins, lighting, noise, barriers to incursion, invasive species, brush management, and grading/land development. Compatible land use guidelines consist of roads and utilities, fencing and lighting, materials storage, mining, extraction, and processing facilities, and flood control. Specific measures to conform to compatible land use included storing materials within designated areas and using appropriate containment, using approved erosion and sediment controls during and after maintenance, and restoring unavoidable temporary impacts to native habitat as proposed by this plan.

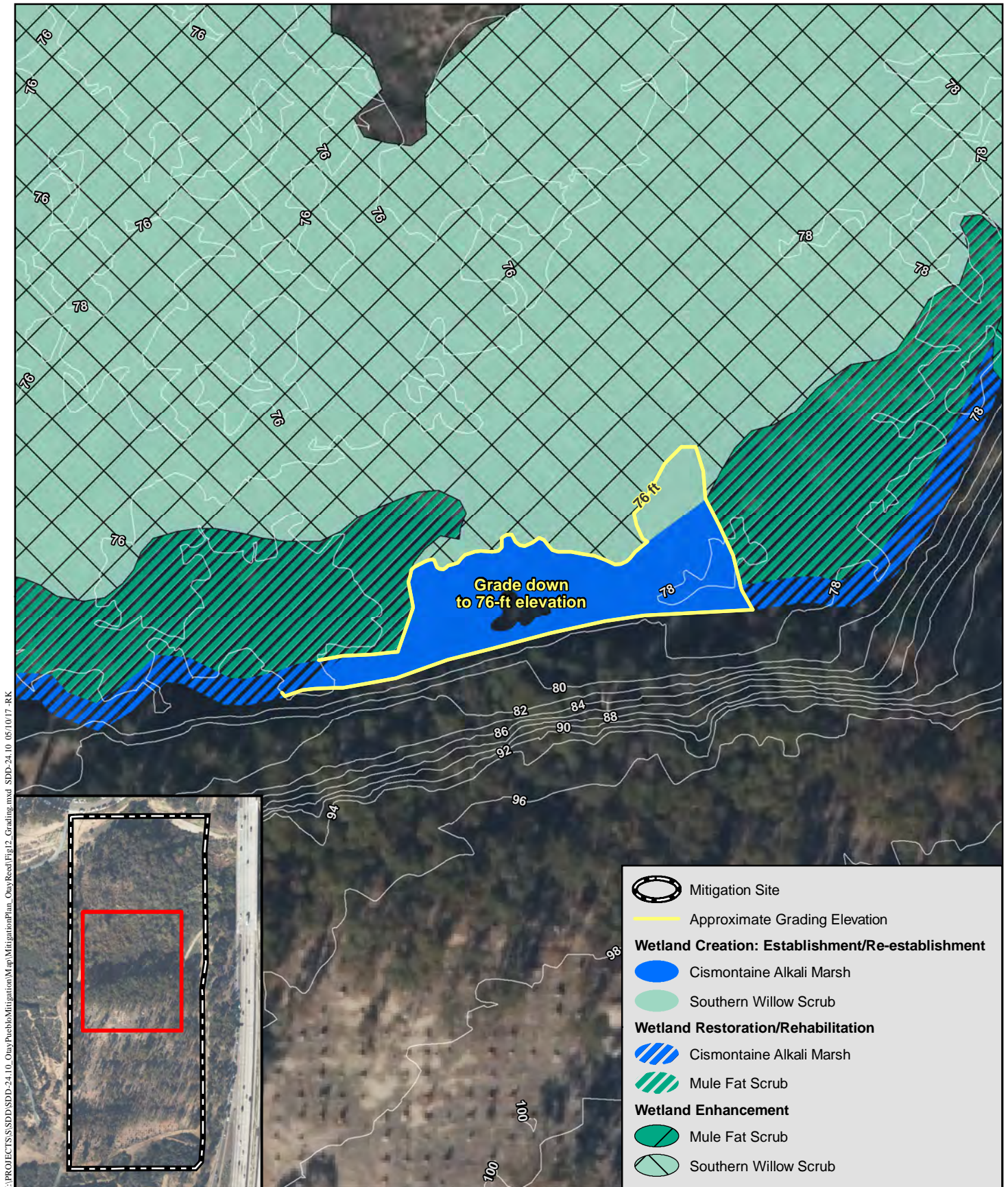
Project consistency with the land use adjacency guidelines is detailed below. The project will not affect current drainage patterns or create any new, impermeable surfaces within the project footprint. No toxins will be introduced as the project will only use herbicides appropriate for aquatic environments. No night lighting will be used for the project. To comply with the noise guideline, construction activities will be conducted outside the bird breeding season and/or noise resulting from construction activities will be kept below the level of significance by utilizing sound attenuation measures, as needed. No barriers will be constructed as part of the project. Invasive plants will be removed from the site, and will not be included in the plant palette for the project. Brush management does not apply as no new residential structures are being constructed as part



Conceptual Grading Plan

OTAY REED

Figure 11



Conceptual Grading Plan

OTAY REED

of the project. And finally, the project is consistent with the land use adjacency guideline concerning grading/land development as the graded slope is within the project footprint.

The mitigation specifically conforms to the MSCP because its current disturbed and lower quality state will be restored into native habitat thereby increasing and improving existing functions and services. Specifically, invasive species will be removed and replaced with native vegetation, creating habitat for native flora and fauna. No invasive non-native plant species will be introduced into areas within or adjacent to the MHPA.

The proposed wetland mitigation and subsequent maintenance and monitoring will be consistent with the San Diego MSCP and the OVRP Conceptual Plan (CP) (County et al. 2001). The mitigation specifically conforms to the MSCP because its current disturbed and low habitat quality state will be converted into wetland habitat, thereby increasing and improving existing functions and services.

IV. PROJECT RESPONSIBILITY

A. FINANCIAL RESPONSIBILITY

The City will be financially responsible for the planning and implementation of this wetland mitigation plan, as well as for its maintenance and monitoring.

B. PROJECT TEAM

1. Project Proponent

The City will be responsible for retaining a qualified restoration specialist with over five years of experience monitoring wetland/riparian mitigation and habitat restoration to oversee the entire installation and monitoring of the mitigation program in coordination with City staff. The City will also be responsible for retaining qualified installation and maintenance contractors with documented successful experience installing and maintaining habitat restoration. Contact information for the project proponent is:

Travis Whitney, Associate Planner
City of San Diego
2781 Caminito Chollas, MS 46
San Diego, CA 92105
Phone: (619) 527-7545

2. Responsible Agencies

The USACE, CDFW, RWQCB, and City's Development Services Department will be responsible for issuing any necessary permits, reviewing and approving this plan, and overseeing the establishment and development of habitat within the Otay Reed site. The primary avenue for their participation is through the permitting process; reviewing and commenting on this plan, the construction documents, and subsequent annual reports; and through inspection and comment on significant milestones for the implementation of this plan.

3. Restoration Specialist

Overall supervision of the installation, maintenance, and monitoring of this Project will be the responsibility of a restoration specialist, hired by the City, experienced with wetland and upland habitat restoration. The restoration specialist will oversee the efforts of the installation and maintenance contractor(s) for the life of the project. Specific tasks of the restoration specialist include educating all participants about mitigation goals and requirements; directly overseeing planting, seeding, weeding, and other maintenance activities; and conducting annual assessments of the creation and restoration effort. Although a conceptual plan is provided in this document, the restoration specialist will oversee the preparation of the final construction documents prepared by the landscape architect and explain to the contractor(s) how to avoid impacts to existing sensitive habitat and sensitive species. The restoration specialist will also be responsible for preparing site observation reports, interim reports, and annual reports.

4. Landscape Architect

Although conceptual level plans are provided in this document, a licensed landscape architect will prepare the final construction documents, including grading and planting plans.

5. Installation/Maintenance Contractor(s)

The installation and maintenance contractor(s) will have experience in wetland and upland habitat mitigation and be under the direction of the restoration specialist who will assist the contractor(s) with the installation and maintenance of the target vegetation communities.

The installation contractor will be responsible for the removal of targeted invasive plants within the river, installation of container plants and seed, and maintenance of all creation/restoration areas during the 120-day installation period. The restoration specialist must recommend sign-off, and the City must approve and sign off on all criteria to end the installation period.

The City will hire a maintenance contractor for the duration of the five-year monitoring period. The maintenance contractor and the installation contractor may be the same entity. Using the same contractor for installation and maintenance, or changing maintenance contractors is at the discretion of the City. The maintenance contractor should be knowledgeable as to the maintenance of native plant habitat and the difference between native and non-native plants. The maintenance contractor will service the entire Otay Reed site at least once per month, or as needed. Service will include, but not be limited to: weed control, trash removal, watering, dead plant replacement,

maintaining a weed free buffer, and re-seeding. All activities conducted will be seasonally appropriate and approved by the restoration specialist. The maintenance contractor will meet the restoration specialist at the site when requested and will perform all checklist items in a timely manner as directed.

6. Nursery (Seed/Plant Procurement)

Native plant nurseries are generally capable of conducting seed collection and contract growing services for the required plant material. All plant nurseries providing seed/plant materials will possess a valid California Nursery License. Seed shall have been tested for purity and germination not more than one year prior to application of seed.

C. PRE-CONSTRUCTION MEETING

Implementation of this mitigation plan will begin with project approval. The implementation schedule is provided in Section V.B of this mitigation plan. Prior to the initiation of wetland mitigation activities, an on-site meeting will be held with the project proponent, installation contractor, and restoration specialist. Topics that will be addressed at this meeting include but are not limited to: (1) timing constraints for non-native plant removal/clearing; (2) identification of sensitive areas and a strategy for avoidance; (3) defining site access routes and restrictions; (4) locating staging areas; and (5) the overall project goal.

A summary of all major tasks related to the project, starting with the pre-construction phase, and ending with the end of the minimum five-year maintenance and monitoring period, is provided in Table 6.

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Table 6
WETLAND MITIGATION PLAN CHECKLIST

Construction Phase	Restoration Task	Applicable Parties					
		Project Proponent ¹	Landscape Architect	Installation Contractor	Maintenance Contractor	Restoration Specialist	Resource Agencies ²
Pre-Construction	Order container plantings and seed ³			X		X*	
	Prepare Landscape Plans		X			X	X*
	Attend pre-construction meeting	X		X		X	
	10-day notification to resource agencies	X				X	
	Install perimeter fencing			X		X*	
	Install erosion control to protect existing habitat			X		X*	
	Document pre-installation site conditions	X*				X	
Site Preparation	Grading			X		X*	
	Grading inspection/potential modifications			X		X*	
	Non-native plant removal			X		X*	
Installation	Install container plantings, cuttings, and seed			X		X*	
	Submit as-built mark-ups			X			
	Document as-built conditions					X	
	Prepare/submit as-built report	X*				X	
120-Day Establishment Period	Maintain site for 120 days, or until sign off by the restoration specialist	X*		X		X*	X*
	Replace dead container plantings			X		X*	
Five-Year Maintenance & Monitoring Period	Maintain site for minimum of five years until signed off by resource agencies	X*			X	X*	X*

¹ City

² USACE, CDFW, RWQCB, and City's Development Services Department

³ Must provide all source locations and receive authorization of final seed and plant lists prior to ordering.

* Inspection of work related to this task.

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V. IMPLEMENTATION PLAN

A. RATIONALE FOR EXPECTING IMPLEMENTATION SUCCESS

Wetland habitat creation, restoration, and enhancement areas are anticipated to be successful due to their location along an existing riparian corridor, with native riparian habitat located both within the Otay Reed site as well as upstream and downstream of the site. Further increasing the potential for successful mitigation will be the installation of the same native species observed in existing, less-disturbed habitat on and adjacent to the site. The upland area selected for wetland creation will involve soil removal and grading to bring the habitat down to the elevation of the adjacent wetland habitat along the Otay River. The creation areas will also be subject to soil and depth to ground water testing to verify and adjust the areas that will support wetland creation.

The areas designated for wetland restoration currently support EW and other non-native species. Restoration of these areas will involve removing these invasive non-native species, including trash and debris, and installing native container plants and seed, thereby improving the overall quality of the habitat. The removal of non-native species within the restoration and enhancement areas is expected to provide an overall benefit to the Otay River watershed by decreasing the dispersal of weeds to other areas downstream areas of the Otay Reed site.

B. IMPLEMENTATION SCHEDULE

Implementation of this mitigation plan will begin with project approval; however, no grading will occur during the least Bell's vireo breeding season (March 15-August 31). Grading will occur between September 16 and January 14 to avoid impact to avian species protected by the Migratory Bird Treaty Act and California Department of Fish and Game Code. Wetland enhancement activities, such as removal or clearing non-native vegetation, should also occur between September 16 and January 14 to avoid impact to avian species. If wetland enhancement activities involving the removal of eucalyptus trees are proposed during the nesting bird and raptor breeding season (January 15 through September 15), which includes the least Bell's vireo breeding season (March 15-August 31), a pre-construction survey shall be conducted within 500 feet of the project limits to look for active nests. If no active nest is found, activities can commence. If an active nest is found, no work can occur within 100 feet of an active nest until it has been determined by the project biologist that the nestlings have fledged and are no longer dependent on the nest site.

All other activities, such as planting and including work during the 5-year monitoring and maintenance period, can begin at any time. Ideally, planting, seeding, and cutting installation should occur between October and December so that these activities coincide with the beginning of the rainy season.

The maintenance and monitoring program will begin following sign-off of the 120-day establishment period and extend for a five-year period (or until all success criteria have been met) following completion of the installation. Maintenance will be conducted monthly during the first year, eight times per year during the second and third year, and quarterly thereafter (refer to Section VI.A). Regular monitoring visits will be conducted to coincide with maintenance visits (refer to Section VII.A). Annual monitoring will occur in August or September to coincide with the peak

growing season of wetland plant species, with an annual report distributed by the end of each monitoring year.

C. SITE PREPARATION

1. Site Access

A Right-of-Entry permit will be obtained by the contractor from the City prior to any disturbance activities. Equipment access (e.g., crane, excavator, front end loader, small bulldozer, dump truck, and backhoe) will be required for eucalyptus tree removal within the wetland creation areas and adjacent restoration/enhancement areas. The types of equipment used for the site preparation and installation of this project will be at the discretion of the installation contractor. Staging for the grading and tree removal will be along Rancho Drive, in disturbed land northeast of Murrieta Circle, or along existing access roads adjacent to the Otay Reed site. All vehicles and construction equipment will be restricted to the staging area(s) when not required for mitigation activities. Temporary impacts to native habitats from construction equipment access will be restored. The contractor will be responsible for determining the location of any buried utilities prior to any earth disturbance.

Access to the Otay Reed site will occur along existing dirt paths, roads, and disturbed land to the maximum extent possible. Access along established paths and roads must be maintained for public use. Any equipment used to remove non-native vegetation will not block existing access roads, except for when they are traveling between the staging and work areas. Materials cannot be stored along dirt paths, as it could block pedestrian or bicycle access.

Access to the separate wetland mitigation areas within the Otay Reed site will be approved by the restoration specialist prior to the equipment being used. Where access is only possible over habitat, the access will be chosen to minimize the impacts to native habitats and will be flagged to ensure impacts to native habitats are restricted to what is minimally necessary. Mitigation of habitat used for access may include decompaction, seeding, and subsequent maintenance. Minimal temporary impacts may be allowed in some areas (consisting of vegetation trimming) to allow construction vehicle access to the separate wetland mitigation areas, at the direction of the restoration specialist. Any vegetation removal conducted for access will be monitored by the restoration specialist, and all temporarily impacted areas will be monitored and maintained for the full five-year maintenance and monitoring period to ensure that non-native species do not encroach into these areas.

2. Temporary Signage

Temporary signs will provide an explanation of the project and a contact number for public inquiries. Signs will be installed at all entrances to the project site. Sign language and location will be approved by the City.

3. Delineating Limits of Work

Prior to any mitigation activities, each work area will be staked, roped off, or otherwise demarcated to conspicuously mark the limits. This is to avoid impacts to native habitats and sensitive plant

species, as well as to ensure that construction personnel and equipment do not inadvertently affect native habitats or sensitive plant species by undertaking activities outside the authorized areas. Project boundaries will be marked by the restoration specialist, and staking/fencing will be installed by the installation contractor.

4. Grading

Grading will involve soil removal to expand the zone of riparian vegetation into adjacent uplands and will occur along the northern and southern banks of the Otay River (Figures 11 and 12). The wetland creation/re-establishment location along the northern bank is currently characterized by a gentle slope that supports non-natives and is currently dominated by garland daisy. Grading will involve lowering existing elevations between 0.5 ft. and 18 ft. below the existing ground level. This will result in a pad at the elevation of the surrounding riparian habitat, and an approximately 2:1 slope extending from the existing road at the top of the slope down to the wetland creation site at the toe of slope. The slope will be designed to decrease the potential for erosion. Care will be taken to reduce sedimentation of the existing riparian community and potential waters through the installation of silt fencing along the graded edge and other BMPs as necessary.

Additional grading will occur in the southern portion of the site. Wetland creation/re-establishment will occur in an area currently characterized by non-native grassland. Minimal grading will occur in the area to lower the elevation, by one to two ft., to the elevation of the surrounding wetlands, and MFS and CAM habitat will be installed. Soil contamination is common within the Otay HU and, thus, no exportation of soils from the general area will be allowed. Spoils from this grading will be placed in a low spot on the existing road in an upland position on the southern edge of the restoration area. Grading must avoid an existing utility pole guy wire. The City will work with San Diego Gas & Electric to have this moved out of the Otay Reed site.

Grading will occur with front end loaders, back hoes, excavators, small bulldozers, and/or dump trucks, at the discretion of the installation contractor. Grading associated with installation will be done outside the avian breeding season and, if feasible, should also be completed prior to the onset of significant rain events (dates vary year to year in Southern California and are more common in the winter and early spring months). This is necessary to avoid impacts to nesting bird species and, by not grading when precipitation is most likely, to minimize erosion. If grading is necessary during the breeding season, a pre-construction survey for nesting birds and raptors must be completed in accordance with the mitigation measures included in the MMP.

The installation contractor, under the direct supervision of the restoration specialist, will conduct grading at the Otay Reed site. Grading may be done concurrently with or after non-native plant removal (see Section V.D., below).

The soil texture must be suitable for the riparian habitat. To that end, excavated areas shall have at least a two-foot depth (as measured from the surface) of silt loam, loam, sandy loam, or sand. If necessary, over-excavation and backfilling the Otay Reed site with suitable salvaged soils will occur. Alluvial material and topsoil should be salvaged and reused to the extent practicable.

5. Erosion Control

Straw wattles, compost sox, silt fencing, or similar materials will be installed on the down slope portions of creation areas, as needed, to restrict sediment movement. These will be removed after sufficient vegetation has established to control erosion.

D. NON-NATIVE PLANT REMOVAL

Wetland enhancement will consist of removing non-native species within USACE and CDFW/City jurisdictional areas. The success of this restoration will be measured by the successful removal of the targeted invasive plants, which will require substantial effort. Targeted removal of invasive non-native species, including tree species, must occur within the entire Otay Reed site. Non-native plant material removal may occur prior to or during grading (see Section V.C.4, above). Prior to installation of plantings and seed, all non-native vegetation must be removed within each separate wetland mitigation area and nearby adjacent uplands (to limit potential re-invasion by these species). Appropriate herbicide (e.g., wetland-approved herbicides) may be used during non-native plant control, if necessary. Perennial species that re-sprout from the below ground portion of the plant should be cut and herbicide applied to the re-sprouts. Most large woody exotics will be cut to ground level with all above-ground portions removed from the site. All non-native plant material, as well as any trash and other debris removed from the Otay Reed site, will be disposed of in a licensed landfill. At the approval of the restoration specialist, the City, and the Responsible Agencies, large non-native trees that are too difficult to remove will be killed and left on site.

1. Non-native Tree Removal/Treatment

Eucalyptus, Brazilian pepper, tamarisk, shamel ash (*Fraxinus uhdei*), and Canary Island date palm trees (*Phoenix canariensis*) will be cut down, loaded in a truck with a mid-sized excavator, and hauled off site to an approved landfill. Once debris is removed from around the trunk, a fresh cut will be made before applying an approved herbicide (i.e., Triclopyr/surfactant mix) at 20 to 25 percent solution to the cut surface. All tree trunks within the proposed grading footprint will be removed via an excavator and disposed of off-site. Some native trees within the wetland mitigation area may be trimmed and/or removed during the non-native tree eradication process.

2. Giant Reed Removal

Giant reed should be treated in late October to early November with a two to 10 percent solution of an approved herbicide (i.e., Aquatic Glyphosate) in accordance with the herbicide label. The giant reed should be removed after approximately three weeks. All generated material will be removed from site and disposed at an approved landfill.

The California Department of Transportation (Caltrans) will be consulted about the removal of giant reed, on their property, directly upstream (east) of the Otay Reed site. Removal of this invasive species from the border of the site will help ensure eradication within the area being utilized for mitigation.

E. PLANTING PLAN AND SPECIFICATIONS

Once non-native species removal has been completed in the mitigation areas, a mixture of container plantings, cuttings, and seed will be installed in the wetland creation, restoration, and enhancement areas. Plant species characteristic of SWS will be installed within the river bed and on the adjacent wetland creation and restoration areas. Plant palettes and seed mixes for creation and restoration of SWS vegetation communities are presented in Table 7. Table 8 describes species to be planted in those areas selected for CAM creation. In addition, Table 9 provides a species list for maritime succulent scrub, which will be installed in the upland slope that will be created by grading activities for the wetland creation portion of the site.

1. Plant/Seed Orders

The plant species selected for installation within the Otay Reed site occur on site or are common in the region and are known from the Otay watershed. Seed and plant material for this project will be collected or propagated from local plant populations occurring in coastal San Diego County within 25 miles of the watershed. The restoration specialist must approve all seed and container stock orders, including specific species and source locations, prior to finalizing. Substitutions, other donor sites, or use of commercial material may be allowed if materials are unavailable, at the discretion of the City and restoration specialist. The restoration specialist will review and approve the seed mix before it is ordered. The restoration specialist will have the discretion to make changes to the seed mix before it is ordered.

2. Container Plants

Most container stock will be installed as one-gallon specimens, with the remainder consisting of plugs. All plantings should be installed in a way that mimics natural plant distribution and not in rows. Container stock should be installed in holes that are just large enough to accommodate the root ball of the plant. Holes may be dug with mechanical augers or by hand, at the discretion of the installation contractor. Each hole shall be filled with water twice and allowed to drain before installing the plant, unless soil saturation is present, in which case, no pre-watering will be necessary. A well will be constructed around each plant with a minimum inner diameter of two feet and a minimum ponding depth of three to four inches. This well will be filled with water and allowed to drain three times in the three days following installation. Ideally, planting will occur during the fall (or spring depending on the timing of project implementation) to maximize survival of container stock.

Plant protectors may be used to minimize herbivory, as needed, at the restoration specialist's direction. The installation quantities provided by this Plan include 15 percent more plants than prudent design will otherwise dictate to ensure adequate establishment success.

3. Cuttings

Willows and mule fat cuttings will be planted in SWS creation and restoration areas to the maximum extent practicable in lieu of container plants as cuttings can be sourced from existing plant material on site. Source material will be mature shrubs and trees found on site or adjacent to

the project site. Specific cutting procedures would include taking cuttings that are straight or nearly so and at least 20 inches long and 0.5 to one inch in diameter. However, cuttings placed in or near the groundwater table should be sufficiently long enough to reach the water table. To help ensure genetic diversity within the mitigation area and limit damage to existing vegetation, no more than 10 cuttings will be collected per individual tree or shrub. The stems will be cut so that the bottom end is at an angle, to identify which end to install in the ground. All cuttings will be stripped of leaves to allow roots to develop prior to above-ground vegetation and keep the cutting from drying out, while tops will be cut flat to distinguish the top from the bottom end. Cuttings will be installed so that 50 to 60 percent of their total length is below grade. The ground should be saturated prior to installation, and cuttings should be installed immediately or stored properly to avoid desiccation. Ideally planting will occur during the fall (or spring if necessary) to maximize survival of container stock.

4. Seeding

Hydroseed will be installed containing the following seed mixes after container stock has been installed.

Table 7 SOUTHERN WILLOW SCRUB PLANT PALETTE¹				
Seed Mix (1.58 acres)				
Scientific Name	Common Name	Min. % Purity/ Germination	Lbs./ Acre	Lbs. Required
<i>Anemopsis californica</i>	yerba mansa	85/70	2	3
<i>Ambrosia psilostachya</i>	western ragweed	20/30	4	6
<i>Artemisia douglasiana</i>	Douglas' mugwort	15/50	5	8
<i>Cyperus eragrostis</i>	tall flatsedge	70/78	2	3
<i>Eleocharis macrostachya</i>	pale spike-rush	95/60	2	3
<i>Pluchea odorata</i>	salt marsh fleabane	30/40	4	6
<i>Typha domingensis</i>	southern cattail	90/60	1	2
TOTAL			20	31

**Table 7 (cont.)
SOUTHERN WILLOW SCRUB PLANT PALETTE**

Container Stock (1.58 acre) ¹					
Scientific Name	Common Name	Grouping Size	Spacing (feet on center)	Number Per Acre	Quantity Required
<i>Baccharis salicifolia</i>	mule fat	13	6	260	411
<i>Distichlis spicata</i> †	salt grass	12	3	240	379
<i>Iva hayesiana</i>	San Diego marsh elder	13	4	260	411
<i>Juncus mexicanus</i> ²	Mexican rush	12	3	240	379
<i>Platanus racemosa</i>	western sycamore	2	15	20	32
<i>Populus fremontii</i>	Fremont cottonwood	3	15	30	47
<i>Salix exigua</i>	sandbar willow	7	8	140	221
<i>Salix gooddingii</i>	Goodding's willow	3	15	30	47
<i>Salix lasiolepis</i>	arroyo willow	5	12	100	158
TOTAL				1,320	2,085

¹ All container stock is one-gallon size, except where noted.

² Plugs instead of one-gallon container stock.

**Table 8
CISMONTANE ALKALI MARSH PLANT PALETTE**

Seed Mix (0.24 acre)				
Scientific Name	Common Name	Min. % Purity/ Germination	Lbs./ Acre	Lbs. Required
<i>Bolboschoenus maritimus</i>	prairie bulrush	77/74	2	0.48
<i>Frankenia salina</i>	alkali-heath	40/78	4	0.96
<i>Heliotropium curassavicum</i>	salt heliotrope	15/50	2	0.48
<i>Juncus acutus</i> ssp. <i>leopoldii</i>	southwestern spiny rush	95/80	3	0.72
<i>Pluchea odorata</i>	salt marsh fleabane	30/40	2	0.48
<i>Salicornia pacifica</i>	Pacific pickleweed	8/72	3	0.72
<i>Sesuvium verrucosum</i>	salt marsh purslane	8/74	3	0.72
<i>Suaeda nigra</i>	bush seepweed	47/18	1	0.24
TOTAL			20	4.8

Table 8 (cont.) CISMONTANE ALKALI MARSH PLANT PALETTE					
Container Stock (0.16 acre) ¹					
Scientific Name	Common Name	Grouping Size	Spacing (feet on center)	Number Per Acre	Quantity Required
<i>Anemopsis californica</i>	yerba mansa	24	3	480	77
<i>Distichlis spicata</i> †	saltgrass	24	3	480	77
<i>Juncus acutus</i> ssp. <i>leopoldii</i>	southwestern spiny rush	22	6	440	70
<i>Frankenia salina</i>	alkali-heath	22	5	440	70
<i>Pluchea sericea</i>	arrow weed	6	6	120	19
<i>Salicornia pacifica</i>	Pacific pickleweed	14	4	280	45
TOTAL				2,240	358

¹ Container stock planting will only be installed in creation (establishment/re-establishment) areas.

Table 9 MARITIME SUCCULENT SCRUB PLANT PALETTE (0.11 acre)				
Seed Mix				
Scientific Name	Common Name	Min. % Purity/ Germination	Lbs./ Acre	Lbs. Required
<i>Acmispon micranthus</i>	grab lotus	98/80	2	0.22
<i>Camissoniopsis bistorta</i>	California sun cup	95/90	1	0.11
<i>Calystegia macrostegia</i> ssp. <i>arida</i>	southern California morning-glory	90/80	4	0.44
<i>Stephanomeria virgata</i>	virgate wreath-plant	90/55	1.5	0.17
<i>Plantago erecta</i>	dot-seed plantain	30/45	3	0.33
<i>Eriogonum fasciculatum</i>	buckwheat	55/20	4	0.44
<i>Peritoma arborea</i>	bladderpod	98/45	1.5	0.17
<i>Stipa diegoensis</i>	San Diego County needle grass	85/50	2	0.22
<i>Eschscholzia californica</i>	California poppy	98/80	2	0.22
<i>Lupinus succulentus</i>	arroyo lupine	98/85	3	0.33
<i>Melica imperfecta</i>	Melic	90/67	3	0.33
TOTAL			29	2.98

Table 9 (cont.) MARITIME SUCCULENT SCRUB PLANT PALETTE (0.11 acre)					
Container Stock					
Scientific Name	Common Name	Grouping Size	Spacing (feet on center)	Number Per Acre	Quantity Required
<i>Artemisia californica</i>	California sagebrush	9	5	180	20
<i>Atriplex lentiformes</i>	quail brush	3	6	60	7
<i>Bahiopsis laciniata</i>	San Diego sunflower	9	5	180	20
<i>Cylindropuntia prolifera</i>	coast cholla	7	4	140	15
<i>Eriogonum fasciculatum</i>	California buckwheat	9	5	180	20
<i>Euphorbia misera</i>	cliff spurge	5	5	100	11
<i>Ferocactus viridescens</i>	San Diego barrel cactus	27	2	540	59
<i>Lycium californicum</i>	California box-thorn	8	5	160	18
<i>Opuntia littoralis</i>	coastal prickly pear	5	5	100	11
<i>Rhus integrifolia</i>	lemonadeberry	6	6	120	13
TOTAL				1,760	194

Areas that are dominated by tamarisk and mapped as tamarisk scrub will be restored as MFS. MFS restoration will cover approximately 0.41 acre of the site and will require 615 one-gallon containers and/or cuttings of mule fat to be installed in these areas once the tamarisk has been removed in addition to the seed palette in Table 10.

Table 10 MULE FAT SCRUB PLANT PALETTE					
Seed Mix (0.41 acre)					
Scientific Name	Common Name	Min. % Purity/ Germination		Lbs./ Acre	Lbs. Required
<i>Ambrosia psilostachya</i>	western ragweed	20/30		10	4.10
<i>Carex barbarae</i>	Santa Barbara sedge	95/70		15	6.15
<i>Urtica dioica</i> ssp. <i>holosericea</i>	stinging nettle	37/69		15	6.15
TOTAL				35	16.4
Container Stock (0.41 acre) ¹					
Scientific Name	Common Name	Grouping Size	Spacing (feet on center)	Number Per Acre	Quantity Required
<i>Baccharis salicifolia</i>	mule fat	13	6	1,500	615
TOTAL				1,500	615

¹ All container stock is one-gallon size, except where noted.

² Plugs instead of one-gallon container stock.

F. IRRIGATION

The proposed approach for irrigation is hand-watering of plant and seed and/or using hydroseed application as a means of conserving water. Hand watering will be conducted initially and as needed thereafter. During the 120-day establishment period, water will be applied liberally to develop deep root growth and encourage germination. Following the 120-day establishment period, water will be applied only as needed to help ensure the viability of plants and seedlings. A water truck with hose attachment(s) will be used to bring water to the site. Alternately, a temporary above-ground system that is charged by a water truck could be installed to increase efficiency of hand watering methods.

G. 120-DAY ESTABLISHMENT PERIOD

Following installation completion, the 120-day plant establishment period will start. The 120-day plant establishment period is intended to provide an observation and guarantee period to ensure that most seed and plant material installed is becoming established. The restoration specialist will conduct monthly monitoring visits during this period and develop a list of action items to be immediately addressed, if necessary. Action items may include maintenance for weed control, erosion, irrigation, vandalism, replacement of container stock, removal of trash or debris, pest management, site protection or signage, and horticultural treatments (pruning, mulching, disease control). The installation contractor is responsible for performing remedial measures to fix any observed problems identified by the restoration specialist. Success at the end of the 120-day establishment period will be met if all targeted non-native species located within the mitigation areas have been eradicated (by removing to ground level and killing any remaining stumps to prevent re-sprouting), there is 90 percent survivorship of container stock within planting areas, installed seed has begun to germinate, and there are no erosion-related issues. The restoration specialist may recommend replacement of planting or reseedling if the site is not on track to meet success criteria. The site should be free of trash and debris. The successful completion of this period will set the mitigation areas up with a higher probability of long-term success during the following five-year maintenance and monitoring period.

H. AS-BUILT CONDITIONS

The restoration specialist shall submit a brief as-built letter report to the City within 30 days of completion of installation activities and the 120-day establishment period. This letter will describe site preparation, installation methods, activities conducted during the 120-day establishment period, and the as-built status of the overall restoration project. To document baseline site conditions and implementation of the Plan, the letter will include an as-built graphic on an aerial photo base as well as photos taken from the designated photo stations before and after installation.

VI. MAINTENANCE PROGRAM

A. MAINTENANCE SCHEDULE

Maintenance will be performed for five years, as necessary, to prevent re-seeding by non-native plants and maintenance activities will likely change with varying site conditions and seasons; the schedule outlined herein serves only as a guideline (Table 11). The installation/maintenance contractor(s) will complete maintenance requests from the restoration specialist within 14 days of any written request or monitoring report. At a minimum, the installation contractor will conduct monthly maintenance during the 120-day establishment period. To complete the installation period, container plantings must have 90 percent survivorship, and all non-native species must be removed from the mitigation area. Any replacement plantings added to attain the survivorship criterion must be installed for at least 30 days prior to sign-off. The maintenance contractor will be responsible for all maintenance activities during the minimum five-year maintenance and monitoring period. For the first year of the five-year maintenance and monitoring period, maintenance is expected to be required once per month. For Years 2 and 3, maintenance is expected to be required once per month between November and April (to cover the peak growing period for most plants) and two additional visits for the remainder of the year. Maintenance visits may be reduced and become quarterly in Years 4 and 5 if approved by the restoration specialist.

Table 11 MAINTENANCE SCHEDULE*	
Time Frame	Schedule
Installation Contractor	
120-day Establishment Period	Monthly
Maintenance Contractor	
Year 1	Monthly
Year 2 and Year 3	8 visits per year
November – April	Monthly
May – October	August and October
Years 4 and 5	Quarterly

* This schedule is only a guideline; maintenance will be performed as necessary and as directed by the restoration specialist.

B. MAINTENANCE ACTIVITIES

These maintenance guidelines are specifically tailored for native plant establishment. The maintenance program will include weed control, hand watering, erosion control, removal of trash, and any remedial measures deemed necessary for the success of the restoration program (e.g., re-seeding and re-planting). Maintenance activities will be directed by the restoration specialist. Damage to plants and other facilities occurring because of unusual weather or vandalism will be repaired as directed by the restoration specialist; the cost of such repairs will be paid for as extra work.

1. Non-native Plant Control

Within the mitigation areas, non-native species will be removed to ground level. For the duration of the maintenance period, there will be a very low tolerance for non-native species, and removal will be conducted as necessary to minimize competition that could prevent the establishment of native species. As non-native species become evident, they should be removed by hand or controlled with appropriate herbicides (e.g., only wetland-approved herbicides should be used, if necessary, in the wetland mitigation areas). The restoration specialist will oversee non-native plant removal by the maintenance contractor; however, maintenance personnel must be knowledgeable in distinguishing non-native species from desirable native vegetation. In addition, a weed-free buffer of 20 feet should be maintained around the Otay Reed site (only on City-owned lands).

2. Invasive Plant Control

Within the mitigation areas, invasive plant species make up a special subset of non-native species. This includes species that are rated as either High or Moderate by the California Invasive Plant Council (Cal-IPC 2017). These species are highly invasive pest plants that have been documented as aggressive invaders that displace natives and disrupt natural habitats. These species would be removed from the entire wetland mitigation area as well as upland habitat that is immediately adjacent to the riparian corridor. Examples of invasive plants that occur on site include, but are not limited to, tamarisk and giant reed. These are targeted for complete eradication. Several other species, which have a lower rating by Cal-IPC but are locally very prevalent, will also be targeted for complete eradication. These species include eucalyptus, Canary Island date palm, and Brazilian pepper tree.

3. Herbicides

Any herbicides used to control non-native plants as part of the overall mitigation effort must be on a City list of approved herbicides. In addition, only those herbicides that are approved for aquatic use can be sprayed within wetland habitats. Lastly, herbicides must be applied by an individual with a valid applicator's license, and only those individuals with an F Category on their license can use herbicides in aquatic habitats.

4. Irrigation

The goal is to obtain germination and growth with the least amount of irrigation. Frequent irrigation encourages weed invasion and leaches nutrients from the soil; therefore, water will be applied infrequently and only as needed to prevent plant and seedling mortality. Native plantings that are infrequently irrigated may grow slower initially but will ultimately be better able to withstand natural variations in rainfall and, therefore, be more successful in the long term. Irrigation of the wetland mitigation areas will be conducted by hand until the restoration specialist determines that supplemental water is no longer required.

5. Trash Removal

All trash will be removed by the maintenance contractor from the wetland mitigation areas during each maintenance visit throughout the maintenance period. Care will be taken that trash removal activities minimize or avoid impacts to plants in the mitigation. All trash and weed debris will be removed from the project site and disposed of at an off-site licensed waste-disposal facility.

6. Other Pests

Insects, vertebrate pests, and diseases will be monitored. Generally, pests will be tolerated unless they pose a significant threat to project success. If deemed necessary, a licensed pest control adviser will make specific pest control recommendations. All applicable federal and state laws and regulations will be closely followed. The restoration specialist will be consulted on any pest control matters.

7. Horticultural Treatments

No pruning, mulching, fertilizer application, or disease control is necessary unless otherwise directed by the restoration specialist.

8. Erosion Control

Erosion control measures will be replaced, or additional measures will be installed as needed or as identified by the restoration specialist. Any installed erosion control materials will be removed from the site by the maintenance contractor once the restoration specialist determines that sufficient native plant cover is established.

9. Replacement Planting and Seeding

If success criteria outlined in Section VII.C, below, are not being met, additional measures, such as installation of replacement cuttings, may be implemented.

10. Vandalism

Damage to facilities occurring because of unusual weather or vandalism will be repaired, as directed by the restoration specialist. The cost of such repairs will be paid for as extra work. The contractor will be responsible for damage caused by the contractor's inadequate maintenance or operation of facilities, as determined by the restoration specialist.

11. Sensitive Species Issues

Maintenance personnel will be trained to identify sensitive species and instructed to conduct the maintenance activities to avoid impacting them.

VII. MONITORING PROGRAM

A. MONITORING AND REPORTING SCHEDULES

Monitoring and annual assessments will be carried out under the direction of the restoration specialist. This monitoring program will begin with site preparation and habitat installation and continue for a minimum of five years following the end of the 120-day plant establishment period (Table 12).

Table 12 MONITORING SCHEDULE¹	
Phase	Schedule
Installation Monitoring	
Site preparation and installation	Daily
120-day plant establishment period	Monthly
Maintenance Monitoring	
Year 1	Monthly (12 visits)
Years 2 and 3 February to July August to January	8 visits per year Monthly (6 visits per year) 2 visits per year
Years 4 and 5	Quarterly (4 visits per year)
Annual Monitoring	
Years 1 through 5	August or September (1 visit per year)

¹ This schedule is only a guideline; monitoring will be performed as necessary, as determined by the restoration specialist.

Monitoring will be conducted daily during site preparation and installation, and monthly during the 120-day plant establishment period. A post-installation and as-built report will be prepared following the successful completion of the 120-day plant establishment period. Maintenance monitoring will be conducted monthly during the first year of the five-year maintenance and monitoring period. In Years 2 and 3, monitoring will be conducted monthly from February through July (to cover the peak establishment period of both spring and summer germinating species) and twice in the remainder of the year. During Years 4 and 5, monitoring will be conducted four times per year. Maintenance monitoring memos will be prepared following each visit to document observations, progress toward meeting mitigation goals, and any recommendations. Annual monitoring will be conducted in August or September of each year to coincide with the peak of the growing season for wetland habitats. The exact timing of the visits will depend on site and weather conditions. An annual report will be prepared following each annual assessment (in August or September) and will be submitted to the City for review before the end of each monitoring year.

B. INSTALLATION MONITORING

The restoration specialist will be on site daily, or as needed, during installation to ensure that activities are being conducted per the mitigation plan. The restoration specialist will monitor all

phases of the installation process, including site preparation (initial non-native plant removal, grading, and erosion control) and the installation of plants and seed. The restoration specialist must inspect and authorize each phase of work before the next phase may begin. Pre-installation photos will be taken of existing habitats in the mitigation area from designated photo documentation stations. This information will be used later to track the changes in vegetation due to the mitigation.

C. MAINTENANCE MONITORING

Following installation, a restoration specialist will monitor maintenance activities conducted by the maintenance contractor during the five-year maintenance and monitoring period, beginning immediately following the 120-day establishment period and in accordance with the schedule outlined in Table 11. This monitoring schedule is the minimum; more frequent inspections may be necessary if there are problems with contractor performance or habitat development. Monitoring memos noting any issues with plant establishment, watering, sediment control, etc., as well as wildlife observations, will be provided to the maintenance contractor and the City. These maintenance monitoring memos will be distributed as an appendix to the annual reports.

D. ANNUAL MONITORING

In addition to maintenance monitoring visits, the restoration specialist will conduct an annual technical monitoring visit in August or September (Table 12) of each year during the five-year restoration period. Annual monitoring will involve the evaluation of native and non-native vegetative cover, observations of wildlife, and photo documentation. In addition, annual monitoring in Year 5 will also include a CRAM assessment and jurisdictional delineation. Methods of each component of the annual monitoring are described below. An annual report will be prepared each year during the five-year monitoring period and submitted to the City.

1. Vegetation Analysis

The quality of vegetation communities within the wetland creation, restoration, and enhancement areas will be assessed by estimating native and non-native vegetation cover using the relevé method (CNPS 2007). Each contiguous created and restored vegetation community within a wetland mitigation area will serve as a sampling plot to determine and assign cover classes (1: <1%, 2: 1-5%, 3a: >5-15%, 3b: >15-25%, 4: >25-50%, 5: >50-75%, 6: >75%) to native and non-native vegetation, as well as list dominant species present and note the presence/absence of invasive weed species. Average height of tree and shrub species and general observations of plant health will also be documented for each plot during each of the five years of maintenance and monitoring. Visual estimates of container planting survivorship for the entire mitigation area will be made only in Years 1 and 2.

2. Wildlife Observations

Observations of wildlife within the restoration areas will be documented and included in each annual report. Incidental sightings made during maintenance monitoring visits will also be included.

3. Photo Documentation

Photos will be taken from the same photo locations that will be established prior to the start of the mitigation effort. Photos will be taken from these same locations as part of all five annual monitoring events and will be included in the respective year's annual report. The photo locations will be permanently marked in the field and then mapped on an aerial photograph in the baseline monitoring report (as-built report following the 120-day establishment period) and all subsequent annual reports. To visually demonstrate the progress of the restoration effort, photos taken immediately before and after installation will be included in each report for comparison with the respective year's annual assessment photos.

4. California Rapid Assessment Method

The CRAM assessment will be conducted at two AAs within the Otay Reed site at the end of Year 5. Only one CRAM is considered necessary during the five-year period as CRAM evaluates the overall function of an area and does not detect small changes in physical and biotic structures (i.e., plant cover) or other habitat features. The AAs will be the same ones that were sampled for the pre-installation CRAM assessment. To determine whether the project has developed the target functions and services, the CRAM score obtained during the Year 5 annual assessment will be compared with the score from the pre-installation CRAM assessment. Results from the Year 5 CRAM assessment will be included in the Year 5 annual report.

5. Jurisdictional Delineation

A jurisdictional delineation will be conducted in the wetland creation areas in Year 5 to determine the presence of hydrophytic vegetation, hydrology, and hydric soils within the wetland creation areas. Soil pit depth and analysis will be based on standard wetland delineation methods; however, it should be noted that hydric soil indicators may take more than five years to develop. Hydric soils may be assumed to be present in plant communities that have complete dominance of obligate or facultative wetland species. In some cases, there is only inundation during the growing season and the determination must be made by direct observation during that season, recorded hydrologic data, testimony of reliable persons, and/or indication on aerial photographs.

6. Annual Reports

An annual report will be prepared each year during the five-year monitoring period. Annual reports will use qualitative data to determine the success of the mitigation effort and include recommendations necessary to ensure ultimate success of the mitigation project. Each report will evaluate the success of the mitigation effort to date, along with any recommendations for future work that may be deemed necessary. Baseline pre-installation photos, as well as photos from the respective annual assessment, will be included in the annual reports, which will be submitted to the City by the end of each restoration year, prior to submittal to the resource agencies. The annual monitoring reports will cover all monitoring and maintenance events during a 12-month period starting for Year 1 with the completion of the 120-day establishment period and start of the five-year maintenance and monitoring period.

VIII. SUCCESS CRITERIA

The following sections provide standards to determine the successful completion of the mitigation effort as well as measurement methods for success criteria. Attainment of these standards indicates that the mitigation area is progressing toward attaining the habitat function and services targeted by this plan. The success criteria are for wetland areas only; there are no success criteria for the non-wetland areas.

A. 120-DAY ESTABLISHMENT PERIOD

Success at the end of the 120-day establishment period will be met if all targeted non-native species located within the project site have been eradicated (by removing to ground level and killing any remaining stumps to prevent re-sprouting), there is 90 percent survivorship of container stock within planting areas, and there are no erosion-related issues.

B. FIVE-YEAR MAINTENANCE PERIOD

Annual performance goals have been set to track the progress of the mitigation effort. These success criteria are summarized in Table 13 below and are described in the following text. The success criteria will only be applied to the creation areas.

Table 13 SUCCESS CRITERIA					
Criteria	Year 1	Year 2	Year 3	Year 4	Year 5
Container plant survival (minimum %)	80	80	--	--	--
Species richness (minimum)*	--	--	5	6	8
Native vegetation cover (minimum %)	--	--	25 (cover class 3b)	50 (cover class 4)	75 (cover class 5)
Non-native vegetation cover (maximum %)	10	10	10	10	10
Target invasive species (maximum)†	0	0	0	0	0

* Number of native species.

† No target invasive species shall be allowed to persist within the mitigation area.

1. Container Plant Survival

Container plantings should have at least 80 percent survival for the first two years. At the first and second anniversary of plant installation, container plantings should be added to the creation area if mortality exceeds 20 percent of the original plantings, unless the function of these plants has been replaced by native recruitment (as determined by the restoration specialist). If plant mortality continues to be a problem, alternative measures (e.g., additional seeding) should be considered.

2. Species Richness

Species richness and recruitment are closely linked. Species richness is the number of species present in an area – the higher the number of species, the greater the richness. Recruitment is the successful, natural reproduction, and/or establishment of plants. When recruitment is achieved by many species, richness and overall diversity will increase. However, recruitment may not necessarily increase species richness if, for example, only one species is successfully reproducing. Only through the successful introduction and establishment of varied species does richness increase. While no species richness success criteria have been established for Years 1 or 2, there should be an indication that sufficient species are present to meet Years 3 through 5 goals. Success criteria for the wetland mitigation areas require that species richness makes up at least five native species by Year 3, at least six species by Years 4, and eight by Year 5. If the species richness goal for a given year is not met, corrective measures (e.g., re-seeding, planting, etc.) will be taken to ensure eventual achievement of the five-year goal.

3. Native Vegetation Cover

Success criteria for native cover are based on current observations of native cover within adjacent, undisturbed habitat as well as the fact that riparian habitat will take time to develop before it mirrors the stature of the mature, surrounding habitat. No specific cover criteria have been established for Years 1 or 2 because this is early in the development stage of the habitat creation, restoration, and enhancement areas; however, cover will be assessed visually, and if the vegetation is not on target to meet Year 3 goals, corrective measures (e.g., re-planting, re-seeding, adding cuttings, hand watering, and/or increasing removal of non-native species) should be implemented. Starting in Year 3, the wetland creation and restoration areas should attain at least 25 percent native cover (or a cover class of 4: between 25 and 50 percent). At the end of the five-year monitoring period, native cover will be at least 75 percent (or a cover class of 5: between 50 and 75 percent). If annual goals for vegetative cover are not met, remedial measures, including re-seeding, may be implemented to ensure final success.

4. Non-native Vegetation Cover

Non-native plants are typically a problem in habitat restoration projects, particularly at their outset. The areas designated for habitat creation will be disturbed by grading, which favors the establishment of fast-germinating and fast-growing non-native annual species. As the mitigation effort takes hold, non-native cover should decrease due to diligent removal of these species and expanding cover by native vegetation. In Years 1 through 5, cover by non-native species, exclusive of highly invasive species, shall account for no more than 10 percent (or a cover class of 3a: between five and 15 percent).

5. Target Invasive Species

Invasive weed cover is used here for High- or Moderate-rated species rated by Cal-IPC and species that are problematic regionally, as identified in Section VI.B.2, above. The acceptable cover value for invasive weed species will be zero for each year of the five-year maintenance and monitoring period (Table 12). Other noxious species, in addition to the ones identified as invasive in this

report, may colonize the project site or may already be present. The tolerance for all such species is zero.

C. CALIFORNIA RAPID ASSESSMENT METHOD

A CRAM evaluation of the mitigation area will be included as part of the Year 5 monitoring report. The fifth-year CRAM score projection will be treated as target scores. As noted above in Section III.G and Table 3, the CRAM score is expected to be 59 or higher for AA1 and 63 or higher at AA2 the end of the five-year monitoring period. The CRAM assessment will determine if the mitigation area is on track to meet hydrologic, physical, and biogeochemical standards as described in this plan.

D. JURISDICTIONAL DELINEATION

At the end of the five-year maintenance and monitoring period, the wetland creation areas are expected to develop hydric soils, contain adequate wetland vegetation, and exhibit wetland hydrology. A jurisdictional wetland delineation of the creation areas will be included as part of the Year 5 monitoring report. The annual monitoring for Year 5 in the wetland creation areas will include digging soil pits to check for hydric soil development. Hydrology indicators that will likely be documented during annual assessments include observations of water flow, drift lines, saturation, and sediment deposits.

IX. COMPLETION OF MITIGATION

A. NOTIFICATION OF COMPLETION

The City will notify and coordinate with the appropriate resource agencies to seek concurrence that the final performance standards have been met through the submittal of the final monitoring report and a letter requesting a Notification of Completion. The final report will include analysis of quantitative sampling data that will illustrate that the final success criteria have been met. All temporary structures/fences/irrigation and similar temporary items must be removed from the site prior to filing the notification of completion. The site may qualify for early approval if final success criteria has been met prior to Year 5 and the site is accepted as complete by the USACE, CDFW, RWQCB, and the City; however, the site must be off supplemental irrigation for at least three growing seasons prior to final approval.

B. CONFIRMATION

If the project meets all success standards at the end of the five-year monitoring period, then the mitigation will be considered a success; if not, the maintenance and monitoring program will be extended until the standards are met. Specific remedial measures (approved by the City and resource agencies) will be used during any such extension. Monitoring extensions will be done only for areas that fail to meet final success criteria. This process will continue until all Year 5 standards are attained or until the resource agencies determine that other contingency measures are

appropriate. If requested, a site visit may be conducted with the responsible agencies to verify site conditions.

C. LONG-TERM MAINTENANCE

The City is the owner of the property used as mitigation. The OVRP has an approved CP (County et al. 2001) which includes the mitigation area. Additionally, part of the mitigation area is within the MSCP which has development restrictions. Once the site has met the five-year success criteria and has been signed off by the regulatory agencies, City Park & Recreation (P&R) Department Staff will review the final annual report and may visit the site prior to accepting long-term management responsibility.

The City P&R Department will manage the 5.41-acre mitigation area once it is accepted by the permitting agencies. The City P&R Department would incorporate the 5.41-acre mitigation area into its overall management of the OVRP. Specific management activities for the creation area include providing long-term maintenance and monitoring, trash removal, non-native vegetation control, and wildlife habitat monitoring, as described below.

The City will provide long-term protection of the Otay Reed site through a real estate instrument or other long-term protection mechanism, as approved by USACE. The City is obligated to protect and manage the site for purposes of habitat and species conservation in accordance with the MSCP Implementing Agreement (City 1997) and the CP. Section 10.2 of the Implementing Agreement requires the City to preserve lands within the MHPA. Most of the rehabilitation and enhancement areas are within the MHPA. Sections 10.3, 10.4, and 10.5 require the implementation of preserve guidelines, land use adjacency guidelines, and planning policies and design guidelines. These policies have been incorporated into the City's Land Development Code and serve to protect lands within the MHPA from direct and indirect habitat degradation. Section 10.6 of the Implementing Agreement defines the City's responsibilities for Preserve Management and refers to the MSCP Framework Management Plan, which is Section 1.5 of the City's Subarea Plan (City 1997).

The Otay Reed site is partially within the MHPA, which is the preserve area assembled under the MSCP. An MHPA Boundary Line Adjustment is proposed so that the entire Otay Reed site would be included within the MHPA (Figure 3). The Otay Reed project proposes an MHPA Boundary Line Adjustment to add areas of native habitat created, restored, or enhanced by the mitigation project that are currently outside the MHPA. The proposed additional areas are contiguous with existing similar habitat within the MHPA. If approved by the City and resource agencies, the proposed MHPA Boundary Line Adjustment would result in a net gain in habitat value to the MHPA, and result in project consistency with the MSCP. Adjustments to the MHPA boundary may be made without amending the City's MSCP Subarea Plan or the MSCP Plan in cases where the new MHPA boundary preserves an area of equivalent or greater biological value. In order for a boundary line adjustment to be approved, six findings must be made in accordance with Section 5.4.3 of the City's MSCP Subarea Plan (City 1997). The final determination regarding the biological value of the proposed boundary change will be made in accordance with the MSCP Plan and with concurrence of the City, United States Fish and Wildlife Service (USFWS), and CDFW. Section 21.3 of the Implementing Agreement states that "notwithstanding the stated term as herein set forth, the Parties agree and recognize that once Take of a Covered Species has occurred and/or

their habitat modified within the Subarea, such Take and habitat modification will be permanent. The Parties, therefore, agree that the preservation and maintenance of the habitat provided for under this Agreement shall likewise be permanent and extend beyond the term of this Agreement.” Therefore, although the Term of the MSCP is 50 years (1997 – 2047), the preservation of lands within the MHPA, especially in areas where preserved lands are specifically required due to a permanent impact/take, is explicitly permanent.

The City has established protections for lands within the MHPA, in conformance with the Implementing Agreement, through Section 143.0101 of the City’s Land Development Code (Environmentally Sensitive Lands Regulations). This section of the Land Development Code incorporates Sections 1.4.1 and 1.4.2 of the MSCP Subarea Plan that restricts uses within the MHPA in a similar fashion as a conservation easement or deed restriction. The Land Development Code also incorporates Section 1.4.3 of the MSCP Subarea Plan that restricts land uses adjacent to the MHPA, including potential adverse drainage conditions, toxic chemical uses, lighting, noise, and invasive species, these restrictions provide greater site protection and ensure more long-term sustainability than typical conservation easements and/or deed restrictions.

Site Access

City biologists, park rangers, and designated maintenance staff shall have access to the site for maintenance and monitoring related activities, or as otherwise authorized.

Maintenance and Monitoring Parameters

City biologists will be responsible for directing and/or conducting all long-term monitoring efforts and remedial measures. City biologists and designated maintenance staff will ensure any remedial and management actions are consistent with MSCP and MHPA guidelines and regulations.

Trash

Anthropogenic trash, as well as non-native plant species biomass shall be removed from the site, and disposed of in a legal and appropriate manner. Biomass originating from native plant species shall remain on site for carbon cycling, and is not considered “trash”.

Non-Native Vegetation Control

Non-native plant species, particularly perennial species that have historically shown to be highly invasive, shall be controlled. Control may involve hand pulling prior to seed-set (for species where the entire root mass may be removed), herbicide application, cutting, mechanical removal, or a combination thereof. Any herbicide use shall be conducted following the manufactures recommendations, and applied in a manner compatible with applicable federal, state, and local regulations, consistent with MSCP management guidelines. Biomass from non-native vegetation shall be removed from the site, and disposed of in a legal and appropriate manner. Care should be taken to avoid spreading root, shoot, or seed material around the site or in the stream, which may provide opportunity for dissemination or additional colonization. No non-native plant material shall be stored on site or within the floodplain where it is in danger of being washed downstream.

Treatment and/or removal of non-native vegetation with significant structure to provide habitat for special status wildlife should be evaluated for absence/presence prior to engaging the control methods, particularly during the raptor/nesting bird season (generally January 15 through September 15). All federal, state, and local work restrictions for native wildlife habitat shall be followed.

Other Potential Environmental Stressors

Other stressors that have the potential to negatively affect the habitat quality of the site include, but are not limited to: fire, flood, excessive erosion or aggradation, significant streambed migration, or effects from adjacent or upstream land uses.

Should affects from environmental stressors or events be observed, City biologists shall perform an analysis to identify the effects of the stressor(s) and formulate remedial action(s) intended to support dynamic habitat equilibrium and wildlife use of the site. Depending on the nature of the stressor, consultation with additional regulatory agencies and/or specialists may be warranted. Any adaptive management, remedial action, or regular management activity performed shall be implemented in accordance with applicable regulatory guidelines.

Wildlife Habitat Monitoring

Ongoing and collaborative biological monitoring between City staff and CDFW and USFWS may or may not include specific species monitoring on this site, but may include monitoring of species within the general segment of Otay River, as part of the MSCP and MHPA.

Funding

The City's General Fund, Environmental Growth Fund, and Special Funds in the P&R Department long-term accounts provide for maintenance and management of City owned lands with approval from the City Council. Following acceptance of the mitigation site by the Responsible Agencies, after the five-year maintenance and monitoring period, ongoing management will be provided by the Open Space Division of the P&R Department. The P&R Department's annual budget for open space in FY 2018 includes approximately \$10.4 million for management. This annual allocation provides for developing public facilities within the City's resource-based open space parks, including Black Mountain Open Space Natural Park, Los Penasquitos Canyon Preserve, Mission Trails Regional Park, Marian Bear Memorial Park, Tecolote Canyon Natural Park, Otay Valley Regional Park, and Rose Canyon. Other open space systems may be included as additional acquisitions are completed.

X. REMEDIATION MEASURES

A. INITIATING PROCEDURES

If the mitigation effort is not meeting success standards for the project, the City shall notify the responsible agencies and propose corrective measures. If any of the agencies determine upon

receipt of any of the annual monitoring reports that the mitigation effort is not meeting success standards for the project, the agencies shall notify the project proponent in writing that the wetland creation, restoration, and enhancement effort may require augmentation for successful completion. The project proponent shall then have 30 days to respond to the correspondence, confirming that contingency measures will be required. The project proponent shall be responsible for all costs associated with restoration, monitoring, and any remedial measures.

B. ALTERNATIVE LOCATIONS FOR CONTINGENCY MITIGATION

No alternative locations have been identified for this mitigation work. The Otay Reed site is considered an ideal location due to its proximity to the Nestor Creek channel maintenance work and its location within a regional park. If necessary, the City will work with the responsible agencies to identify a mutually acceptable alternative location for their mitigation requirements if this location fails.

C. NATURAL DISASTER

Should the restoration area fail due to a natural disaster such as fire or flood, the project proponent will not be held responsible for replanting of any wetland habitat.

XI. LIST OF PREPARERS

The following individuals contributed to the fieldwork and/or preparation of this report:

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XII. REFERENCES

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Appendix A

JURISDICTIONAL DELINEATION RESULTS



WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Otay Reed City/County: San Diego/NA Sampling Date: 12Apr2017
Applicant/Owner: City of San Diego State: Ca Sampling Point: 1
Investigator(s): W. Larry Sward, Laura Moreton Section, Township, Range: _____
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 1-2
Subregion (LRR): L Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	
Remarks:	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 X 60</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
_____ = Total Cover			
Sapling/Shrub Stratum (Plot size: _____)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
_____ = Total Cover			
Herb Stratum (Plot size: _____)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
_____ = Total Cover			
Woody Vine Stratum (Plot size: _____)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
_____ = Total Cover			
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____			
Remarks:			

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)
Total Number of Dominant Species Across All Strata: _____ (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:
Total % Cover of: _____ Multiply by: _____
OBL species _____ x 1 = _____
FACW species _____ x 2 = _____
FAC species _____ x 3 = _____
FACU species _____ x 4 = _____
UPL species _____ x 5 = _____
Column Totals: _____ (A) _____ (B)
Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is $\leq 3.0^1$
___ Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No _____

SOIL

Sampling Point: 1

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:		
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes <input type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		



Appendix B

COMPENSATORY MITIGATION SITE EVALUATION CHECKLIST



Attachment 12512-1 – Compensatory mitigation site evaluation checklist.

1	Date: June 5, 2017	Corps file no.: NA	Project name: Otay Reed	Project Manager: NA
		Column A:	Column B:	Column C:
2.a	Mitigation site name:	Otay Reed	Otay Reed	Otay Reed
	Location figure(s):	Attached	Attached	Attached
2.b	Mitigation objective(s) to improve:	Habitat	Habitat	Habitat
2.c	Proposed Mitigation method:	Establishment	Restoration	Enhancement
	If enhancement, list function(s) to be increased: Function 1: Function 2 (if applicable): Function 3 (if applicable):	NA	NA	Remove non-native invasive vegetation. Increase native vegetation component through supplemental seeding and increase habitat quality for native animal species.
2.d	Primary type(s) of site treatment:	Grading, installation of native container stock	Non-native species removal, seeding	Non-native species removal, seeding
2.e	Aquatic resource type (Cowardin system):	Riverine	Riverine	Riverine
2.f	Hydrology:	Upland	Perennial	Perennial
2.g	FCAM classification used: FCAM Subclass(es):	Riverine	Riverine	Riverine
2.h	Vegetation classification system used: Vegetation class(es)/subclass(s):	Holland 1986	Holland 1986	Holland 1986
2.i	Vernacular/common name of proposed type of aquatic resource, if appropriate:	Cismontane alkali marsh, mule fat scrub, southern willow scrub	Cismontane alkali marsh, mule fat scrub, southern willow scrub	Mule fat scrub, southern willow scrub

3	<p>Watershed Planning and Prioritization</p> <p>a. Are mitigation proposal objectives aligned with the objective(s) of one or more appropriate watershed plans?</p>	<p>Enter: <input checked="" type="checkbox"/> yes / <input type="checkbox"/> no/ <input type="checkbox"/> N/A</p> <p>Relevant watershed plan objective(s): Policy: Convert land uses from sand and gravel mining and batching operations to open space or uses consistent with the Concept Plan as conditional use permit terms expire.</p> <p>Policy: In light of the potential value of the terrace lands west of I-805 and north of the river for accommodating active recreation and for providing a buffer to the floodway of the river channel, be amenable to acquisition of parcels in these terrace lands, as they become available, and if they are not encumbered by environmental pollution or other factors making them unsuitable for park development.</p> <p>Cite watershed plan(s), including title, preparer, and date:</p> <ul style="list-style-type: none"> County of San Diego, City of San Diego, and City of Chula Vista. 2001. Otay Valley Regional Park Concept Plan. Regional Water Quality Control Board San Diego Region. 2016. Water Quality Control Plan for the San Diego Basin (9). May 17. <p>Cite applicable parts of plan(s) (by page number):</p>	<p>Enter: <input checked="" type="checkbox"/> yes / <input type="checkbox"/> no/ <input type="checkbox"/> N/A</p> <p>Relevant watershed plan objective(s):</p> <p>See column A.</p> <hr/> <hr/> <hr/> <p>Cite watershed plan(s), including title, preparer, and date:</p> <p>See Column A.</p> <hr/> <hr/> <hr/> <p>Cite applicable parts of plan(s) (by page number):</p> <p>See Column A.</p> <hr/> <hr/> <hr/>	<p>Enter: <input checked="" type="checkbox"/> yes / <input type="checkbox"/> no/ <input type="checkbox"/> N/A</p> <p>Relevant watershed plan objective(s):</p> <p>See column A.</p> <hr/> <hr/> <hr/> <p>Cite watershed plan(s), including title, preparer, and date:</p> <p>See Column A.</p> <hr/> <hr/> <hr/> <p>Cite applicable parts of plan(s) (by page number):</p> <p>See Column A.</p> <hr/> <hr/> <hr/>
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5a	<p>Site Potential for Proposed Method of Mitigation</p> <p><u>Is establishment or re-establishment proposed?</u> <u>If yes, complete 5a(a-d). If not, skip to step 5b.</u></p> <p>a. The site is not an aquatic resource.</p> <p>b. The site is not high quality terrestrial habitat (e.g., natural land cover with few observed stressors)</p> <p>c. The site is in close proximity to an aquatic resource in good functional condition. <i>For proximal site, consider FCAM scores.</i></p> <p>d. For re-establishment, is there evidence the type of proposed aquatic resource was present historically on site?</p>	<p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p>Overall step acceptable? <input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p>PM justification:</p> <p>The site appears to be fill. It is currently upland habitat mapped as disturbed habitat. It is predominantly vegetated by non-native species. It is directly adjacent to the Otay River. Historical aerals as far back as 1994 indicated upland on the site, however there may have been wetland in the project location before 1994.</p>	<p><input type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input type="checkbox"/> yes / <input type="checkbox"/> no</p> <p>Overall step acceptable? <input type="checkbox"/> yes / <input type="checkbox"/> no</p> <p>PM justification:</p>	<p><input type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input type="checkbox"/> yes / <input type="checkbox"/> no</p> <p>Overall step acceptable? <input type="checkbox"/> yes / <input type="checkbox"/> no</p> <p>PM justification:</p>
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5b	<p>Site Potential for Proposed Method of Mitigation</p> <p><u>Is rehabilitation or enhancement proposed?</u> <u>If yes, complete 5b(a-d). If not, skip to step 5c.</u></p> <p>a. The site is a degraded aquatic resource.</p> <p>b. For rehabilitation, would increase most, if not all, functions.</p> <p>c. The site has stressors/impacts that can be remedied in a practicable manner via proposed actions (see 2.d). <i>Complete Table 1 below.</i></p> <p>d. For enhancement, mitigation work at the site will not change the type of aquatic resource or degrade its functioning and condition.</p>	<p><input type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input type="checkbox"/> yes / <input type="checkbox"/> no</p> <p>Overall step acceptable? <input type="checkbox"/> yes / <input type="checkbox"/> no</p> <p>PM justification:</p>	<p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input type="checkbox"/> yes / <input type="checkbox"/> no</p> <p>Overall step acceptable? <input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p>PM justification:</p> <p>Rehabilitation will consist primarily of removing non-native and/or invasive species from existing wetland communities. Rehabilitation would enable the area to function in a manner like adjacent native habitat.</p>	<p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p>Overall step acceptable? <input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p>PM justification:</p> <p>Enhancement will consist primarily of removing non-native and/or invasive species from existing wetland communities. It will not degrade the site from its current condition.</p>
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5c	<p>Site Potential for Proposed Method of Mitigation</p> <p><u>Is preservation proposed? If yes, complete 5c(a-f). If not, skip to step 6.</u></p> <p>a. Does preservation of the proposed aquatic resources provide important physical, chemical, or biological functions for the watershed? <i>Attach FCAM scores, if available.</i></p> <p>b. The aquatic resources to be preserved contribute significantly to the ecological sustainability of the watershed.</p> <p>c. Preservation is determined by the district engineer to be appropriate and practicable.</p> <p>d. The resources are under threat of destruction or adverse modifications.</p> <p>e. Proposed preservation would be done in conjunction with aquatic resource restoration, establishment, and/or enhancement activities.</p> <p>f. The preserved site will be permanently protected through an appropriate real estate or other legal instrument (e.g., easement, title transfer to state resource agency or land trust).</p>	<p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p>No FCAM</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input type="checkbox"/> yes / <input type="checkbox"/> no Have not discussed with district engineer.</p> <p><input type="checkbox"/> yes / <input checked="" type="checkbox"/> no</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p>Overall step acceptable? <input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p>PM justification:</p> <p>Preservation mechanisms will be put in place by the City of San Diego to ensure the site is protected into perpetuity.</p>	<p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p>No FCAM</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input type="checkbox"/> yes / <input type="checkbox"/> no See column A.</p> <p><input type="checkbox"/> yes / <input checked="" type="checkbox"/> no</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p>Overall step acceptable? <input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p>PM justification:</p> <p>See column A.</p>	<p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input type="checkbox"/> yes / <input type="checkbox"/> no</p> <p>No FCAM</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input type="checkbox"/> yes / <input type="checkbox"/> no See column A.</p> <p><input type="checkbox"/> yes / <input checked="" type="checkbox"/> no</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p>Overall step acceptable? <input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p>PM justification:</p> <p>See column A.</p>
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6	<p>Site Potential for Sustained Ecological Performance over Time</p> <p>a. Does site have natural buffer of suitable width to attain mitigation objectives listed in step 2.b above?</p> <p>b. Does site have appropriate hydrology (as demonstrated by a water budget) to meet proposed mitigation site criteria listed in step 2 above?</p> <p>c. Does site have appropriate soils to meet proposed mitigation site criteria listed in step 2 above?</p> <p>d. Is site free of known contaminants?</p>	<p>Enter:</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input type="checkbox"/> yes / <input type="checkbox"/> no Untested</p> <p>Overall step acceptable? <input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p>PM justification:</p> <p>The condition of the enhancement and restoration areas on site indicate the potential for wetland habitat to be successful on site. In addition, the areas up and down stream of the mitigation site contain the target wetland communities of the restoration project.</p> <p>Soils in areas that are currently upland are mapped the same as those that are currently wetland habitats.</p>	<p>Enter:</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input type="checkbox"/> yes / <input type="checkbox"/> no Untested</p> <p>Overall step acceptable? <input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p>PM justification:</p> <p>See column A.</p>	<p>Enter:</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p><input type="checkbox"/> yes / <input type="checkbox"/> no Untested.</p> <p>Overall step acceptable? <input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p>PM justification:</p> <p>See column A.</p>
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7	<p>Risk and Uncertainty</p> <p>a. Would all existing and anticipated stressors from Table 1 be resolved and therefore unlikely to jeopardize the mitigation proposal?</p> <p>b. Does proposed site include necessary water rights, as necessary, to ensure hydrology?</p> <p>c. Would the proposed mitigation be free of structures which would require on-going maintenance and incompatible uses (for example, on-going requirement to maintain channel capacity)?</p> <p>d. Do local planning documents/policies envision the surrounding natural landscape as open space such that landscape-scale connectivity would be maintained or improved (in other words, no zoning changes or planned development are anticipated which would pose a barrier to natural drainage and the movement of wildlife)?</p>	<p>Enter:</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p>List <i>unresolved</i> existing and/or anticipated stressor(s) and describe magnitude of effect:</p> <p>_____</p> <p>_____</p> <p>_____</p> <p><input type="checkbox"/> yes / <input type="checkbox"/> no / <input checked="" type="checkbox"/> N/A</p> <p><input type="checkbox"/> yes / <input checked="" type="checkbox"/> no</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p>Overall step acceptable? <input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p>PM justification:</p> <p>Hydrology is present in the form of the Otay River. Site is within the Otay Valley Regional Park and Land use is not expected to change.</p> <p>SDG&E and sewer easements are within the parcel boundary but are not included in the mitigation site.</p>	<p>Enter:</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p>List <i>unresolved</i> existing and/or anticipated stressor(s) and describe magnitude of effect:</p> <p>_____</p> <p>_____</p> <p>_____</p> <p><input type="checkbox"/> yes / <input type="checkbox"/> no / <input checked="" type="checkbox"/> N/A</p> <p><input type="checkbox"/> yes / <input checked="" type="checkbox"/> no</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p>Overall step acceptable? <input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p>PM justification:</p> <p>See column A.</p>	<p>Enter:</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p>List <i>unresolved</i> existing and/or anticipated stressor(s) and describe magnitude of effect:</p> <p>_____</p> <p>_____</p> <p>_____</p> <p><input type="checkbox"/> yes / <input type="checkbox"/> no / <input checked="" type="checkbox"/> N/A</p> <p><input type="checkbox"/> yes / <input checked="" type="checkbox"/> no</p> <p><input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p>Overall step acceptable? <input checked="" type="checkbox"/> yes / <input type="checkbox"/> no</p> <p>PM justification:</p> <p>See column A.</p>
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8	Final Evaluation a. List number of final overall “yes” and “no” answers above (acceptable or not). Total answers should be five (5) unless a watershed plan is not available (in that case 4). Most steps must be acceptable for a mitigation proposal to be found environmentally acceptable; however, in some cases, a single “no” may render a proposal unacceptable.	Number of steps that would be acceptable (“yes” answers at bottom of each step): __6__ Number of steps that would not be acceptable (“no” answers at bottom of each step): __0__ In summary, are activities in column A appropriate for this site?: <input checked="" type="checkbox"/> yes / <input type="checkbox"/> no PM Justification: See below.	Number of steps that would be acceptable (“yes” answers at bottom of each step): ____6 Number of steps that would not be acceptable (“no” answers at bottom of each step): ____0 In summary, are activities in column B appropriate for this site?: <input checked="" type="checkbox"/> yes / <input type="checkbox"/> no PM Justification: See Below.	Number of steps that would be acceptable (“yes” answers at bottom of each step): ____6 Number of steps that would not be acceptable (“no” answers at bottom of each step): ____0 In summary, are activities in column C appropriate for this site?: <input checked="" type="checkbox"/> yes / <input type="checkbox"/> no PM Justification: See below.
9	Overall conclusions:	The area proposed for mitigation is considered suitable for wetland habitat creation, restoration, and enhancement due to the location of the site along an existing riparian corridor and the presence of existing riparian habitat both within the Otay Reed site as well as upstream and downstream of the site. The vertical and horizontal proximity to existing wetland habitats also figured into the identification of wetland creation areas. Otay River functions include watershed recharge, water purification, and flood control. In addition, the existing wetland and upland habitats are used by a variety of wildlife as a corridor between important habitat areas and for foraging, nesting, and roosting. Wildlife use of the areas proposed for wetland creation area is lower due to the prevalence of non-native species. Furthermore, the presence of non-native vegetation provides a constant weed seed source for the downstream habitat along the Otay River. Creation, restoration, and enhancement of the Otay Reed site will increase the value of the area to native flora and fauna. The functions and services of the site will be improved with the removal of invasive non-native species and their replacement by native species.		

Table 1. Stressor List for step 5b above. Review proposed mitigation site and mitigation project design. Check observed stressors in column 1. Check stressors in column 2 that can be reduced or eliminated via proposed mitigation actions in step 2.d. Describe the magnitude of each observed stressor and explain whether it can be reduced or eliminated. *Note: project design*

features are intended to reduce or eliminate existing and future onsite disturbance (stressors), and improve aquatic resource functions. Also note: Project design features that reduce or eliminate site disturbance (stressors) will improve the ecological condition of the site. A site in good condition functions at levels comparable to its aquatic resource type at reference sites.

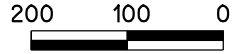
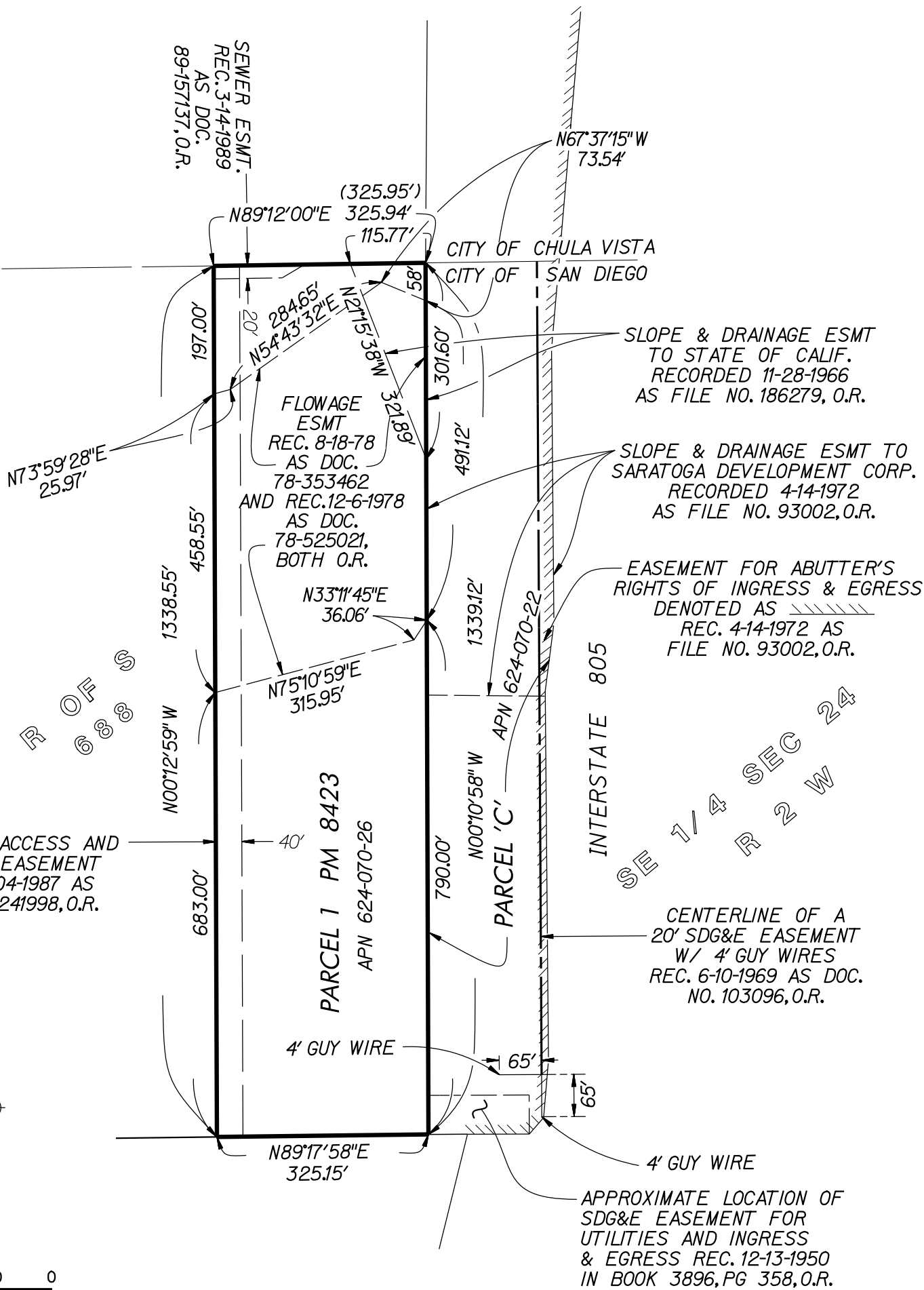
Example water quality stressors:	1. Observed	2. To be reduced/ eliminated	3. PM explanation (if appropriate)
Point source discharges features (outfall, discharge pipes)	<input type="checkbox"/>	<input type="checkbox"/>	
Obvious unnatural concentrations of salts (salt encrustation)	<input type="checkbox"/>	<input type="checkbox"/>	
Unnatural odors, foam, oil sheen	<input type="checkbox"/>	<input type="checkbox"/>	
Formation of heavy algal mats	<input type="checkbox"/>	<input type="checkbox"/>	
Turbidity in water column	<input type="checkbox"/>	<input type="checkbox"/>	
Other:	<input type="checkbox"/>	<input type="checkbox"/>	
Example hydrologic regime stressors:			
Agricultural tiles, siphons or pumps	<input type="checkbox"/>	<input type="checkbox"/>	
Ditches, dikes, levees or berms	<input type="checkbox"/>	<input type="checkbox"/>	
Other water control structures	<input type="checkbox"/>	<input type="checkbox"/>	
Other:	<input type="checkbox"/>	<input type="checkbox"/>	
Example physical structure stressors:			
Evidence livestock or feral animals trampling and substrate compaction	<input type="checkbox"/>	<input type="checkbox"/>	
Past dredging and fill activity	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Fill potentially present in upland area. Will be removed by mitigation.
Off road vehicle use	<input type="checkbox"/>	<input type="checkbox"/>	
Plowing and disking	<input type="checkbox"/>	<input type="checkbox"/>	
Dumping of trash	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Homeless encampments present on site. Will be removed by mitigation efforts.
Other:	<input type="checkbox"/>	<input type="checkbox"/>	
Example vegetation stressors:			
Invasive species	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Invasive species will be removed as part of mitigation.
Mechanical plant removal or mowing	<input type="checkbox"/>	<input type="checkbox"/>	
Intensive grazing by livestock or feral animals	<input type="checkbox"/>	<input type="checkbox"/>	
Chemical vegetation control	<input type="checkbox"/>	<input type="checkbox"/>	
Intentional burning	<input type="checkbox"/>	<input type="checkbox"/>	
Other:	<input type="checkbox"/>	<input type="checkbox"/>	



Appendix C

RECORD INFORMATION AND EASEMENT DOCUMENTS





SCALE 1" = 200'

17204-I Otay River Wetland Mitigation Site (Base File)



Appendix D

CRAM WORKSHEETS AND RESULTS



Basic Information Sheet: Riverine Wetlands

Assessment Area Name: <u>AA1</u>	
Project Name: <u>May Reed</u>	
Assessment Area ID #: <u>AA1</u>	
Project ID #: <u>SDD-24.10</u>	Date: <u>4/12/17</u>
Assessment Team Members for This AA:	
<u>Larry Sward, Laura Moreton</u>	
Average Bankfull Width: <u>82 in</u>	
Approximate Length of AA (10 times bankfull width, min 100 m, max 200 m): <u>70 m (culvert to East Not included in AA)</u>	
Upstream Point Latitude: <u>32° 35' 25.66" N</u> Longitude: <u>117° 02' 16.14" W</u>	
Downstream Point Latitude: <u>32° 35' 25.07" N</u> Longitude: <u>117° 02' 18.64" W</u>	
Wetland Sub-type:	
<input type="checkbox"/> Confined <input checked="" type="checkbox"/> Non-confined	
AA Category:	
<input type="checkbox"/> Restoration <input checked="" type="checkbox"/> Mitigation <input type="checkbox"/> Impacted <input type="checkbox"/> Ambient <input type="checkbox"/> Reference <input type="checkbox"/> Training	
<input type="checkbox"/> Other:	
Did the river/stream have flowing water at the time of the assessment? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no	
<p>What is the apparent hydrologic flow regime of the reach you are assessing?</p> <p>The hydrologic flow regime of a stream describes the frequency with which the channel conducts water. <i>Perennial</i> streams conduct water all year long, whereas <i>ephemeral</i> streams conduct water only during and immediately following precipitation events. <i>Intermittent</i> streams are dry for part of the year, but conduct water for periods longer than ephemeral streams, as a function of watershed size and water source.</p> <p> <input checked="" type="checkbox"/> perennial <input type="checkbox"/> intermittent <input type="checkbox"/> ephemeral </p>	

Photo Identification Numbers and Description:

	Photo ID No.	Description	Latitude	Longitude	Datum
1	4	Upstream	N32°35.46	W117 02.288	WGS 84
2	X	Middle Left			
3	5	Middle Right	N32° 35.467	W117 02.383	WGS 84
4	6	Downstream	N32° 35.433	W117 02.318	WGS 84
5					
6					
7					
8					
9					
10					

Site Location Description:

Located along the Otay River, west of 805 freeway

Comments:

Scoring Sheet: Riverine Wetlands

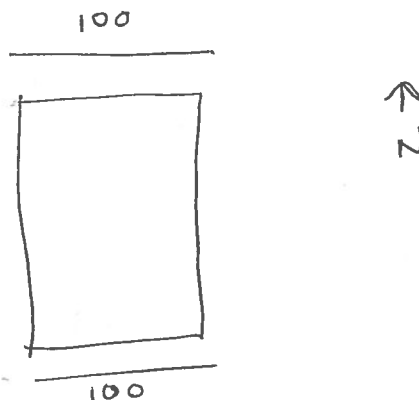
AA Name: AA1				Date: 4/12/17		
Attribute 1: Buffer and Landscape Context (pp. 11-19)				Comments		
Stream Corridor Continuity (D)		Alpha.	Numeric			
		A	12			
Buffer:						
Buffer submetric A: Percent of AA with Buffer	Alpha.			Numeric	100 % w/ buffer	
	A			12		
Buffer submetric B: Average Buffer Width	D			3	16 m	
Buffer submetric C: Buffer Condition	D	3				
Raw Attribute Score = $D + [C \times (A \times B)^{1/2}]^{1/2}$			16	Final Attribute Score = (Raw Score/24) x 100	66	
Attribute 2: Hydrology (pp. 20-26)						
Water Source		Alpha.	Numeric			
		C	6			
Channel Stability		B	9	aggradation		
Hydrologic Connectivity		C	6	entrenchment ratio 1.64		
Raw Attribute Score = sum of numeric scores			21	Final Attribute Score = (Raw Score/36) x 100	58	
Attribute 3: Physical Structure (pp. 27-33)						
Structural Patch Richness		Alpha.	Numeric			
		C	6	7 patch types		
Topographic Complexity		D	3			
Raw Attribute Score = sum of numeric scores			9	Final Attribute Score = (Raw Score/24) x 100	37	
Attribute 4: Biotic Structure (pp. 34-41)						
Plant Community Composition (based on sub-metrics A-C)						
Plant Community submetric A: Number of plant layers	Alpha.	Numeric				
	A	12		4 plant layers		
	Plant Community submetric B: Number of Co-dominant species	B		9	9 co-dominant species	
Plant Community submetric C: Percent Invasion	D	3		55% invasion		
Plant Community Composition Metric (numeric average of submetrics A-C)			8			
Horizontal Interspersion		D	3			
Vertical Biotic Structure		C	6			
Raw Attribute Score = sum of numeric scores			17	Final Attribute Score = (Raw Score/36) x 100	47	
Overall AA Score (average of four final Attribute Scores)				52		

Worksheet for Stream Corridor Continuity Metric for Riverine Wetlands

Lengths of Non-buffer Segments For Distance of 500 m Upstream of AA		Lengths of Non-buffer Segments For Distance of 500 m Downstream of AA	
Segment No.	Length (m)	Segment No.	Length (m)
1	0	1	0
2	0	2	0
3	0	3	0
4	0	4	0
5	0	5	0
Upstream Total Length		Downstream Total Length	0

Percent of AA with Buffer Worksheet

In the space provided below make a quick sketch of the AA, or perform the assessment directly on the aerial imagery; indicate where buffer is present, estimate the percentage of the AA perimeter providing buffer functions, and record the estimate amount in the space provided.



Percent of AA with Buffer: 100 %

Worksheet for calculating average buffer width of AA

Line	Buffer Width (m)
A	22
B	16
C	13
D	13
E	
F	
G	
H	
Average Buffer Width *Round to the nearest integer*	64


one-sided AA

Worksheet for Assessing Channel Stability for Riverine Wetlands

Condition	Field Indicators (check all existing conditions)
Indicators of Channel Equilibrium	<input type="checkbox"/> The channel (or multiple channels in braided systems) has a well-defined bankfull contour that clearly demarcates an obvious active floodplain in the cross-sectional profile of the channel throughout most of the AA. <input type="checkbox"/> Perennial riparian vegetation is abundant and well established along the bankfull contour, but not below it. <input type="checkbox"/> There is leaf litter, thatch, or wrack in most pools (if pools are present). <input type="checkbox"/> The channel contains embedded woody debris of the size and amount consistent with what is naturally available in the riparian area. <input type="checkbox"/> There is little or no active undercutting or burial of riparian vegetation. <input type="checkbox"/> If mid-channel bars and/or point bars are present, they are not densely vegetated with perennial vegetation. <input type="checkbox"/> Channel bars consist of well-sorted bed material (smaller grain size on the top and downstream end of the bar, larger grain size along the margins and upstream end of the bar). <input type="checkbox"/> There are channel pools, the spacing between pools tends to be regular and the bed is not planar throughout the AA <input type="checkbox"/> The larger bed material supports abundant mosses or periphyton.
Indicators of Active Degradation	<input type="checkbox"/> The channel is characterized by deeply undercut banks with exposed living roots of trees or shrubs. <input type="checkbox"/> There are abundant bank slides or slumps. <input type="checkbox"/> The lower banks are uniformly scoured and not vegetated. <input type="checkbox"/> Riparian vegetation is declining in stature or vigor, or many riparian trees and shrubs along the banks are leaning or falling into the channel. <input type="checkbox"/> An obvious historical floodplain has recently been abandoned, as indicated by the age structure of its riparian vegetation. <input type="checkbox"/> The channel bed appears scoured to bedrock or dense clay. <input type="checkbox"/> Recently active flow pathways appear to have coalesced into one channel (i.e. a previously braided system is no longer braided). <input type="checkbox"/> The channel has one or more knickpoints indicating headward erosion of the bed.
Indicators of Active Aggradation	<input type="checkbox"/> There is an active floodplain with fresh splays of coarse sediment (sand and larger that is not vegetated) deposited in the current or previous year. <input type="checkbox"/> There are partially buried living tree trunks or shrubs along the banks. <input checked="" type="checkbox"/> The bed is planar (flat or uniform gradient) overall; it lacks well-defined channel pools, or they are uncommon and irregularly spaced. <input type="checkbox"/> There are partially buried, or sediment-choked, culverts. <input checked="" type="checkbox"/> Perennial terrestrial or riparian vegetation is encroaching into the channel or onto channel bars below the bankfull contour. <input type="checkbox"/> There are avulsion channels on the floodplain or adjacent valley floor.
Overall	<input type="checkbox"/> Equilibrium <input type="checkbox"/> Degradation <input checked="" type="checkbox"/> Aggradation

Riverine Wetland Entrenchment Ratio Calculation Worksheet

The following 5 steps should be conducted for each of 3 cross-sections located in the AA at the approximate midpoints along straight riffles or glides, away from deep pools or meander bends. An attempt should be made to place them at the top, middle, and bottom of the AA.

Steps	Replicate Cross-sections 	TOP	MID	BOT
1 Estimate bankfull width.	This is a critical step requiring familiarity with field indicators of the bankfull contour. Estimate or measure the distance between the right and left bankfull contours.	250	48	280
2: Estimate max. bankfull depth.	Imagine a level line between the right and left bankfull contours; estimate or measure the height of the line above the thalweg (the deepest part of the channel).	3	3	3
3: Estimate flood prone depth.	Double the estimate of maximum bankfull depth from Step 2.	6	6	6
4: Estimate flood prone width.	Imagine a level line having a height equal to the flood prone depth from Step 3; note where the line intercepts the right and left banks; estimate or measure the length of this line.	459	450	475
5: Calculate entrenchment ratio.	Divide the flood prone width (Step 4) by the bankfull width (Step 1).	1.83	1.41	1.69
6: Calculate average entrenchment ratio.	Calculate the average results for Step 5 for all 3 replicate cross-sections. Enter the average result here and use it in Table 13a or 13b.			1.64

Structural Patch Type Worksheet for Riverine wetlands

Circle each type of patch that is observed in the AA and enter the total number of observed patches in Table below. In the case of riverine wetlands, their status as confined or non-confined must first be determined (see page 6) to determine with patches are expected in the system (indicated by a "1" in the table below). Any feature onsite should only be counted once as a patch type. If a feature appears to meet the definition of more than one patch type (i.e. swale and secondary channel) the practitioner should choose which patch type best illustrates the feature. Not all features at a site will be patch types.

**Please refer to the CRAM Photo Dictionary at www.cramwetlands.org for photos of each of the following patch types.*

STRUCTURAL PATCH TYPE (circle for presence)	Riverine (Non-confined)	Riverine (Confined)
Minimum Patch Size	3 m ²	3 m ²
Abundant wrackline or organic debris in channel, on floodplain	(1)	1
Bank slumps or undercut banks in channels or along shoreline	1	1
Cobbles and/or Boulders	1	1
Debris jams	1	1
Filamentous macroalgae or algal mats	(1)	1
Large woody debris	(1)	1
Pannes or pools on floodplain	(1)	N/A
Plant hummocks and/or sediment mounds	1	1
Point bars and in-channel bars	(1)	1
Pools or depressions in channels (wet or dry channels)	(1)	1
Riffles or rapids (wet or dry channels)	1	1
Secondary channels on floodplains or along shorelines	1	N/A
Standing snags (at least 3 m tall)	(1)	1
Submerged vegetation	1	N/A
Swales on floodplain or along shoreline	1	N/A
Variegated, convoluted, or crenulated foreshore (instead of broadly arcuate or mostly straight)	1	1
Vegetated islands (mostly above high-water)	1	N/A
Total Possible	17	12
No. Observed Patch Types (enter here and use in Table 14 below)	7	

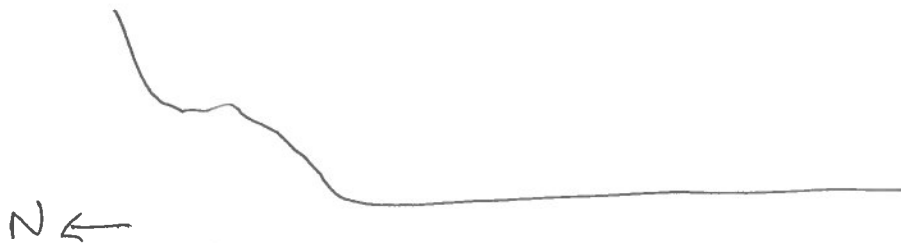
Worksheet for AA Topographic Complexity

At three locations along the AA, make a sketch of the profile of the stream from the AA boundary down to its deepest area then back out to the other AA boundary. Try to capture the benches and the intervening micro-topographic relief. To maintain consistency, make drawings at each of the stream hydrologic connectivity measurements, always facing downstream. Include the water level, an arrow at the bankfull contour, and label the benches. Based on these sketches and the profiles in Figure 10, choose a description in Table 16 that best describes the overall topographic complexity of the AA.

Profile 1



Profile 2



Profile 3



Plant Community Metric Worksheet: Co-dominant species richness for Riverine wetlands
(A dominant species represents $\geq 10\%$ relative cover)

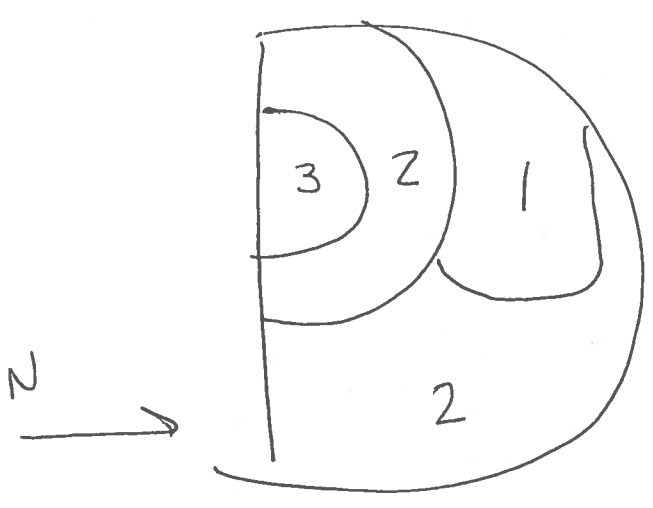
Special Note:

* Combine the counts of co-dominant species from all layers to identify the total species count. Each plant species is only counted once when calculating the Number of Co-dominant Species and Percent Invasion submetric scores, regardless of the numbers of layers in which it occurs.

Floating or Canopy-forming (non-confined only)	Invasive?	Short (<0.5 m)	Invasive?
		<i>Glebionis coronaria</i>	Yes
Medium (0.5-1.5 m)	Invasive?	Tall (1.5-3.0 m)	Invasive?
<i>Juncus acutus</i>		<i>Tamarisk ramosissima</i>	Yes
<i>Glebionis coronaria</i>	Yes	<i>Schoenoplectus acutus</i>	
		<i>Typha dominicensis</i>	
Very Tall (>3.0 m)	Invasive?	Total number of co-dominant species for all layers combined (enter here and use in Table 18)	9
<i>Eucalyptus camaldulensis</i>	Yes		
<i>Tamarisk ramosissima</i>	Yes		
<i>Salix gooddingii</i>		Percent Invasion *Round to the nearest integer* (enter here and use in Table 18)	55%

Horizontal Interspersion Worksheet.

Use the spaces below to make a quick sketch of the AA in plan view, outlining the major plant zones (this should take no longer than 10 minutes). Assign the zones names and record them on the right. Based on the sketch, choose a single profile from Figure 12 that best represents the AA overall.

	<p>Assigned zones:</p> <p>1) <i>eucalyptus woodland</i></p> <p>2) <i>freshwater marsh</i></p> <p>3) <i>southern willow scrub (disturbed)</i></p> <p>4)</p> <p>5)</p> <p>6)</p>
---	---

Worksheet for Wetland disturbances and conversions

Has a major disturbance occurred at this wetland?	Yes	<u>No</u>		
If yes, was it a flood, fire, landslide, or other?	flood	fire	landslide	other
If yes, then how severe is the disturbance?	likely to affect site next 5 or more years	likely to affect site next 3-5 years	likely to affect site next 1-2 years	
Has this wetland been converted from another type? If yes, then what was the previous type? <u>NO</u>	depressional	vernal pool	vernal pool system	
	non-confined riverine	confined riverine	seasonal estuarine	
	perennial saline estuarine	perennial non-saline estuarine	wet meadow	
	lacustrine	seep or spring	playa	

Stressor Checklist Worksheet

HYDROLOGY ATTRIBUTE (WITHIN 50 M OF AA)	Present	Significant negative effect on AA
Point Source (PS) discharges (POTW, other non-stormwater discharge)		
Non-point Source (Non-PS) discharges (urban runoff, farm drainage)	✓	
Flow diversions or unnatural inflows		
Dams (reservoirs, detention basins, recharge basins)		
Flow obstructions (culverts, paved stream crossings)		
Weir/drop structure, tide gates		
Dredged inlet/channel		
Engineered channel (riprap, armored channel bank, bed)		
Dike/levees		
Groundwater extraction		
Ditches (borrow, agricultural drainage, mosquito control, etc.)		
Actively managed hydrology		
Comments		

PHYSICAL STRUCTURE ATTRIBUTE (WITHIN 50 M OF AA)	Present	Significant negative effect on AA
Filling or dumping of sediment or soils (N/A for restoration areas)		
Grading/ compaction (N/A for restoration areas)		
Plowing/Discing (N/A for restoration areas)		
Resource extraction (sediment, gravel, oil and/or gas)	✓	✓
Vegetation management		
Excessive sediment or organic debris from watershed		
Excessive runoff from watershed		
Nutrient impaired (PS or Non-PS pollution)		
Heavy metal impaired (PS or Non-PS pollution)		
Pesticides or trace organics impaired (PS or Non-PS pollution)		
Bacteria and pathogens impaired (PS or Non-PS pollution)		
Trash or refuse	✓	
Comments		

historical
gravel
pit

homeless
camp,
concrete
debris

BIOTIC STRUCTURE ATTRIBUTE (WITHIN 50 M OF AA)	Present	Significant negative effect on AA
Mowing, grazing, excessive herbivory (within AA)		
Excessive human visitation		
Predation and habitat destruction by non-native vertebrates (e.g., <i>Virginia opossum</i> and domestic predators, such as feral pets)		
Tree cutting/sapling removal		
Removal of woody debris		
Treatment of non-native and nuisance plant species		
Pesticide application or vector control		
Biological resource extraction or stocking (fisheries, aquaculture)		
Excessive organic debris in matrix (for vernal pools)		
Lack of vegetation management to conserve natural resources		
Lack of treatment of invasive plants adjacent to AA or buffer		
Comments		

BUFFER AND LANDSCAPE CONTEXT ATTRIBUTE (WITHIN 500 M OF AA)	Present	Significant negative effect on AA
Urban residential	✓	
Industrial/commercial		
Military training/Air traffic		
Dams (or other major flow regulation or disruption)		
Dryland farming		
Intensive row-crop agriculture		
Orchards/nurseries		
Commercial feedlots		
Dairies		
Ranching (enclosed livestock grazing or horse paddock or feedlot)		
Transportation corridor	✓	
Rangeland (livestock rangeland also managed for native vegetation)		
Sports fields and urban parklands (golf courses, soccer fields, etc.)	✓	
Passive recreation (bird-watching, hiking, etc.)	✓	
Active recreation (off-road vehicles, <u>mountain biking</u> , hunting, fishing)	✓	
Physical resource extraction (rock, sediment, oil/gas)		
Biological resource extraction (aquaculture, commercial fisheries)		
Comments		

805 ftreen

Basic Information Sheet: Riverine Wetlands

Assessment Area Name: <u>AA 2</u>	
Project Name: <u>Otay Reed</u>	
Assessment Area ID #: <u>AA 2</u>	
Project ID #: <u>SDD-24.10</u>	Date: <u>4/12/17</u>
Assessment Team Members for This AA:	
<u>Larry Sward, Laura Moreton</u>	
Average Bankfull Width: <u>82 m</u>	
Approximate Length of AA (10 times bankfull width, min 100 m, max 200 m): <u>135m</u>	
Upstream Point Latitude: <u>32°35'24.21"N</u> Longitude: <u>117°02'13.31"W</u>	
Downstream Point Latitude: <u>32°35'23.19"N</u> Longitude: <u>117°02'18.57"W</u>	
Wetland Sub-type:	
<input type="checkbox"/> Confined <input checked="" type="checkbox"/> Non-confined	
AA Category:	
<input type="checkbox"/> Restoration <input checked="" type="checkbox"/> Mitigation <input type="checkbox"/> Impacted <input type="checkbox"/> Ambient <input type="checkbox"/> Reference <input type="checkbox"/> Training	
<input type="checkbox"/> Other:	
Did the river/stream have flowing water at the time of the assessment? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no	
<p>What is the apparent hydrologic flow regime of the reach you are assessing?</p> <p>The hydrologic flow regime of a stream describes the frequency with which the channel conducts water. <i>Perennial</i> streams conduct water all year long, whereas <i>ephemeral</i> streams conduct water only during and immediately following precipitation events. <i>Intermittent</i> streams are dry for part of the year, but conduct water for periods longer than ephemeral streams, as a function of watershed size and water source.</p> <p style="text-align: center;"> <input checked="" type="checkbox"/> perennial <input type="checkbox"/> intermittent <input type="checkbox"/> ephemeral </p>	

Photo Identification Numbers and Description:

	Photo ID No.	Description	Latitude	Longitude	Datum
1	1	Upstream	N 32° 35.395	W 117° 02.227'	WGS 84
2		Middle Left			
3	2	Middle Right	N 32° 35.370	W 117° 02.268'	WGS 84
4	3	Downstream	N 32° 35.365	W 117° 02.315'	WGS 84
5					
6					
7					
8					
9					
10					

Site Location Description:

Site on Otay River, west of 805 freeway.

Comments:

Scoring Sheet: Riverine Wetlands

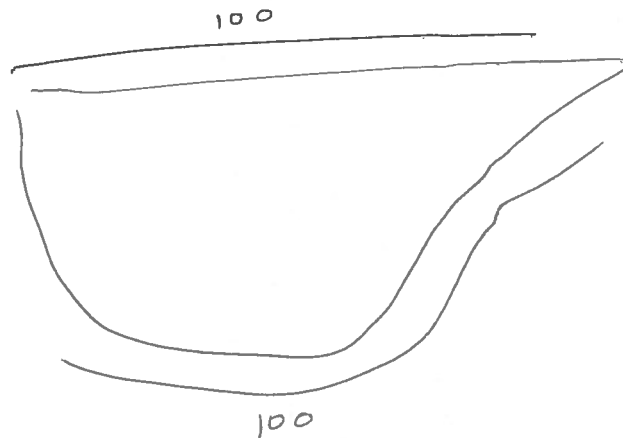
AA Name: AA 2				Date: 4/12/17		
Attribute 1: Buffer and Landscape Context (pp. 11-19)				Comments		
Stream Corridor Continuity (D)		Alpha.	Numeric			
		A	12			
Buffer:						
Buffer submetric A: Percent of AA with Buffer	Alpha.			Numeric	100% w/ buffer	
	A			12		
Buffer submetric B: Average Buffer Width	A			12	over 250m	
Buffer submetric C: Buffer Condition	C	6				
Raw Attribute Score = $D + [C \times (A \times B)^{1/2}]^{1/2}$			20	Final Attribute Score = (Raw Score/24) x 100	85	
Attribute 2: Hydrology (pp. 20-26)						
		Alpha.	Numeric			
Water Source		c	6			
Channel Stability		B	9	Aggradation		
Hydrologic Connectivity		C	6	entrenchment ratio 1.6 2		
Raw Attribute Score = sum of numeric scores			21	Final Attribute Score = (Raw Score/36) x 100	58	
Attribute 3: Physical Structure (pp. 27-33)						
		Alpha.	Numeric			
Structural Patch Richness		D	3	4 patch types		
Topographic Complexity		D	3			
Raw Attribute Score = sum of numeric scores			6	Final Attribute Score = (Raw Score/24) x 100	25	
Attribute 4: Biotic Structure (pp. 34-41)						
Plant Community Composition (based on sub-metrics A-C)						
		Alpha.	Numeric			
Plant Community submetric A: Number of plant layers	A	12			4 plant layers	
Plant Community submetric B: Number of Co-dominant species	B	9			9 co dominant species	
Plant Community submetric C: Percent Invasion	C	6			33% invasion	
Plant Community Composition Metric (numeric average of submetrics A-C)			9			
Horizontal Interspersion		C	6			
Vertical Biotic Structure		C	6			
Raw Attribute Score = sum of numeric scores			21	Final Attribute Score = (Raw Score/36) x 100	58	
Overall AA Score (average of four final Attribute Scores)				56		

Worksheet for Stream Corridor Continuity Metric for Riverine Wetlands

Lengths of Non-buffer Segments For Distance of 500 m Upstream of AA		Lengths of Non-buffer Segments For Distance of 500 m Downstream of AA	
Segment No.	Length (m)	Segment No.	Length (m)
1	0	1	0
2	0	2	0
3	0	3	0
4	0	4	0
5	0	5	0
Upstream Total Length		Downstream Total Length	0

Percent of AA with Buffer Worksheet

In the space provided below make a quick sketch of the AA, or perform the assessment directly on the aerial imagery; indicate where buffer is present, estimate the percentage of the AA perimeter providing buffer functions, and record the estimate amount in the space provided.



Percent of AA with Buffer: 100 %

Worksheet for calculating average buffer width of AA


Line	Buffer Width (m)
A	250 +
B	250 +
C	250 +
D	250 +
E	
F	
G	
H	
Average Buffer Width *Round to the nearest integer*	
over 250m	

Worksheet for Assessing Channel Stability for Riverine Wetlands

Condition	Field Indicators (check all existing conditions)
Indicators of Channel Equilibrium	<input type="checkbox"/> The channel (or multiple channels in braided systems) has a well-defined bankfull contour that clearly demarcates an obvious active floodplain in the cross-sectional profile of the channel throughout most of the AA. <input type="checkbox"/> Perennial riparian vegetation is abundant and well established along the bankfull contour, but not below it. <input type="checkbox"/> There is leaf litter, thatch, or wrack in most pools (if pools are present). <input type="checkbox"/> The channel contains embedded woody debris of the size and amount consistent with what is naturally available in the riparian area. <input checked="" type="checkbox"/> There is little or no active undercutting or burial of riparian vegetation. <input type="checkbox"/> If mid-channel bars and/or point bars are present, they are not densely vegetated with perennial vegetation. <input type="checkbox"/> Channel bars consist of well-sorted bed material (smaller grain size on the top and downstream end of the bar, larger grain size along the margins and upstream end of the bar). <input type="checkbox"/> There are channel pools, the spacing between pools tends to be regular and the bed is not planar throughout the AA <input type="checkbox"/> The larger bed material supports abundant mosses or periphyton.
Indicators of Active Degradation	<input type="checkbox"/> The channel is characterized by deeply undercut banks with exposed living roots of trees or shrubs. <input type="checkbox"/> There are abundant bank slides or slumps. <input type="checkbox"/> The lower banks are uniformly scoured and not vegetated. <input type="checkbox"/> Riparian vegetation is declining in stature or vigor, or many riparian trees and shrubs along the banks are leaning or falling into the channel. <input type="checkbox"/> An obvious historical floodplain has recently been abandoned, as indicated by the age structure of its riparian vegetation. <input type="checkbox"/> The channel bed appears scoured to bedrock or dense clay. <input type="checkbox"/> Recently active flow pathways appear to have coalesced into one channel (i.e. a previously braided system is no longer braided). <input type="checkbox"/> The channel has one or more knickpoints indicating headward erosion of the bed.
Indicators of Active Aggradation	<input type="checkbox"/> There is an active floodplain with fresh splays of coarse sediment (sand and larger that is not vegetated) deposited in the current or previous year. <input type="checkbox"/> There are partially buried living tree trunks or shrubs along the banks. <input checked="" type="checkbox"/> The bed is planar (flat or uniform gradient) overall; it lacks well-defined channel pools, or they are uncommon and irregularly spaced. <input type="checkbox"/> There are partially buried, or sediment-choked, culverts. <input checked="" type="checkbox"/> Perennial terrestrial or riparian vegetation is encroaching into the channel or onto channel bars below the bankfull contour. <input type="checkbox"/> There are avulsion channels on the floodplain or adjacent valley floor.
Overall	<input type="checkbox"/> Equilibrium <input type="checkbox"/> Degradation <input checked="" type="checkbox"/> Aggradation

Riverine Wetland Entrenchment Ratio Calculation Worksheet

The following 5 steps should be conducted for each of 3 cross-sections located in the AA at the approximate midpoints along straight riffles or glides, away from deep pools or meander bends. An attempt should be made to place them at the top, middle, and bottom of the AA.

Steps	Replicate Cross-sections 	TOP	MID	BOT
1 Estimate bankfull width.	This is a critical step requiring familiarity with field indicators of the bankfull contour. Estimate or measure the distance between the right and left bankfull contours.	318	364	170
2: Estimate max. bankfull depth.	Imagine a level line between the right and left bankfull contours; estimate or measure the height of the line above the thalweg (the deepest part of the channel).	3	3	3
3: Estimate flood prone depth.	Double the estimate of maximum bankfull depth from Step 2.	6	6	6
4: Estimate flood prone width.	Imagine a level line having a height equal to the flood prone depth from Step 3; note where the line intercepts the right and left banks; estimate or measure the length of this line.	450	510	350
5: Calculate entrenchment ratio.	Divide the flood prone width (Step 4) by the bankfull width (Step 1).	1.41	1.40	2.05
6: Calculate average entrenchment ratio.	Calculate the average results for Step 5 for all 3 replicate cross-sections. Enter the average result here and use it in Table 13a or 13b.	1.62		

Structural Patch Type Worksheet for Riverine wetlands

Circle each type of patch that is observed in the AA and enter the total number of observed patches in Table below. In the case of riverine wetlands, their status as confined or non-confined must first be determined (see page 6) to determine with patches are expected in the system (indicated by a "1" in the table below). Any feature onsite should only be counted once as a patch type. If a feature appears to meet the definition of more than one patch type (i.e. swale and secondary channel) the practitioner should choose which patch type best illustrates the feature. Not all features at a site will be patch types.

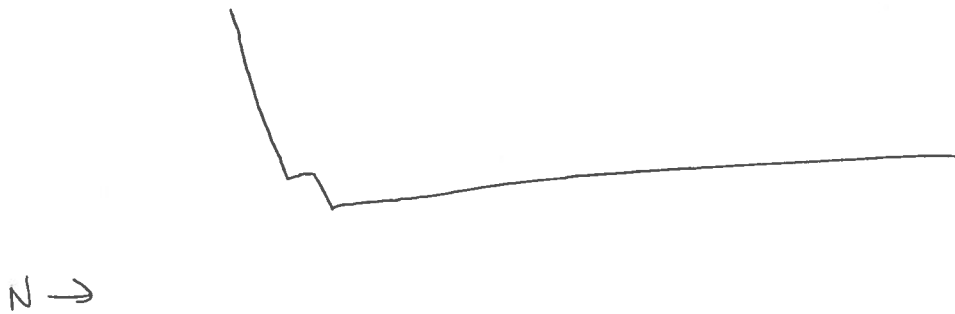
**Please refer to the CRAM Photo Dictionary at www.cramwetlands.org for photos of each of the following patch types.*

STRUCTURAL PATCH TYPE (circle for presence)	Riverine (Non-confined)	Riverine (Confined)
Minimum Patch Size	3 m ²	3 m ²
Abundant wrackline or organic debris in channel, on floodplain	1	1
Bank slumps or undercut banks in channels or along shoreline	1	1
Cobbles and/or Boulders	1	1
Debris jams	1	1
Filamentous macroalgae or algal mats	①	1
Large woody debris	1	1
Pannes or pools on floodplain	①	N/A
Plant hummocks and/or sediment mounds	1	1
Point bars and in-channel bars	①	1
Pools or depressions in channels (wet or dry channels)	①	1
Riffles or rapids (wet or dry channels)	1	1
Secondary channels on floodplains or along shorelines	1	N/A
Standing snags (at least 3 m tall)	1	1
Submerged vegetation	1	N/A
Swales on floodplain or along shoreline	1	N/A
Variegated, convoluted, or crenulated foreshore (instead of broadly arcuate or mostly straight)	1	1
Vegetated islands (mostly above high-water)	1	N/A
Total Possible	17	12
No. Observed Patch Types (enter here and use in Table 14 below)	4	

Worksheet for AA Topographic Complexity

At three locations along the AA, make a sketch of the profile of the stream from the AA boundary down to its deepest area then back out to the other AA boundary. Try to capture the benches and the intervening micro-topographic relief. To maintain consistency, make drawings at each of the stream hydrologic connectivity measurements, always facing downstream. Include the water level, an arrow at the bankfull contour, and label the benches. Based on these sketches and the profiles in Figure 10, choose a description in Table 16 that best describes the overall topographic complexity of the AA.

Profile 1



Profile 2



Profile 3



Plant Community Metric Worksheet: Co-dominant species richness for Riverine wetlands
(A dominant species represents $\geq 10\%$ relative cover)

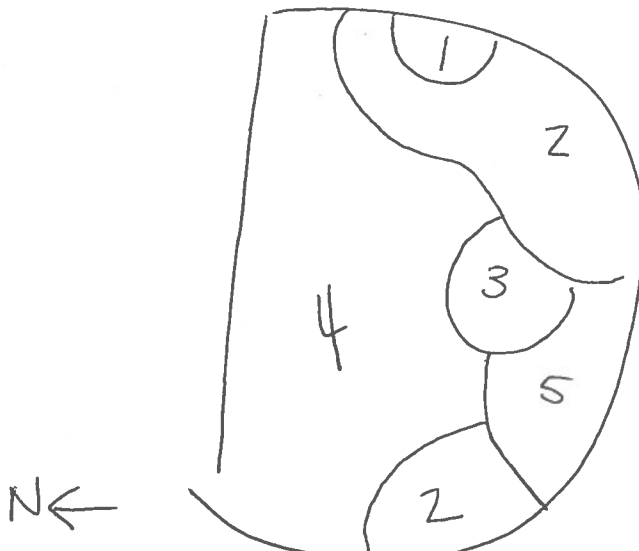
Special Note:

* Combine the counts of co-dominant species from all layers to identify the total species count. Each plant species is only counted once when calculating the Number of Co-dominant Species and Percent Invasion submetric scores, regardless of the numbers of layers in which it occurs.

Floating or Canopy-forming (non-confined only)	Invasive?	Short (<0.5 m)	Invasive?
		<i>Bromus diandrus</i>	yes
Medium (0.5-1.5 m)	Invasive?	Tall (1.5-3.0 m)	Invasive?
<i>Juncus acutus</i>		<i>Tamarisk ramosissima</i>	yes
<i>Toxicodendron diversilobum</i>		<i>Toxicodendron diversilobum</i>	
		<i>Baccharis salicifolia</i>	
Very Tall (>3.0 m)	Invasive?	Total number of co-dominant species for all layers combined (enter here and use in Table 18)	9
<i>Salix gooddingii</i>			
<i>Tamarisk ramosissima</i>	yes		
<i>Salix lasiolepis</i>			
		Percent Invasion *Round to the nearest integer* (enter here and use in Table 18)	33%

Horizontal Interspersion Worksheet.

Use the spaces below to make a quick sketch of the AA in plan view, outlining the major plant zones (this should take no longer than 10 minutes). Assign the zones names and record them on the right. Based on the sketch, choose a single profile from Figure 12 that best represents the AA overall.

	<p>Assigned zones:</p> <ol style="list-style-type: none"> 1) mule fat scrub 2) tamarisk scrub 3) non-native vegetation 4) Southern willow scrub disturbed 5) disturbed habitat 6)
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Worksheet for Wetland disturbances and conversions

Has a major disturbance occurred at this wetland?	Yes	No		
If yes, was it a flood, fire, landslide, or other?	flood	fire	landslide	other
If yes, then how severe is the disturbance?	likely to affect site next 5 or more years	likely to affect site next 3-5 years	likely to affect site next 1-2 years	
Has this wetland been converted from another type? If yes, then what was the previous type? <i>NO</i>	depressional	vernal pool	vernal pool system	
	non-confined riverine	confined riverine	seasonal estuarine	
	perennial saline estuarine	perennial non-saline estuarine	wet meadow	
	lacustrine	seep or spring	playa	

Stressor Checklist Worksheet

HYDROLOGY ATTRIBUTE (WITHIN 50 M OF AA)	Present	Significant negative effect on AA
Point Source (PS) discharges (POTW, other non-stormwater discharge)		
Non-point Source (Non-PS) discharges (urban runoff, farm drainage)	✓	
Flow diversions or unnatural inflows		
Dams (reservoirs, detention basins, recharge basins)		
Flow obstructions (culverts, paved stream crossings)		
Weir/drop structure, tide gates		
Dredged inlet/channel		
Engineered channel (riprap, armored channel bank, bed)		
Dike/levees		
Groundwater extraction		
Ditches (borrow, agricultural drainage, mosquito control, etc.)		
Actively managed hydrology		
Comments		

PHYSICAL STRUCTURE ATTRIBUTE (WITHIN 50 M OF AA)	Present	Significant negative effect on AA
Filling or dumping of sediment or soils (N/A for restoration areas)		
Grading/ compaction (N/A for restoration areas)		
Plowing/Discing (N/A for restoration areas)		
Resource extraction (sediment, gravel, oil and/or gas)	✓	✓
Vegetation management		
Excessive sediment or organic debris from watershed		
Excessive runoff from watershed		
Nutrient impaired (PS or Non-PS pollution)		
Heavy metal impaired (PS or Non-PS pollution)		
Pesticides or trace organics impaired (PS or Non-PS pollution)		
Bacteria and pathogens impaired (PS or Non-PS pollution)		
Trash or refuse	✓	
Comments		

historical
gravel
pit

homeless
in area

BIOTIC STRUCTURE ATTRIBUTE (WITHIN 50 M OF AA)	Present	Significant negative effect on AA
Mowing, grazing, excessive herbivory (within AA)		
Excessive human visitation		
Predation and habitat destruction by non-native vertebrates (e.g., <i>Virginia opossum</i> and domestic predators, such as feral pets)		
Tree cutting/sapling removal		
Removal of woody debris		
Treatment of non-native and nuisance plant species		
Pesticide application or vector control		
Biological resource extraction or stocking (fisheries, aquaculture)		
Excessive organic debris in matrix (for vernal pools)		
Lack of vegetation management to conserve natural resources		
Lack of treatment of invasive plants adjacent to AA or buffer		
Comments		

BUFFER AND LANDSCAPE CONTEXT ATTRIBUTE (WITHIN 500 M OF AA)	Present	Significant negative effect on AA
Urban residential	✓	
Industrial/commercial		
Military training/Air traffic		
Dams (or other major flow regulation or disruption)		
Dryland farming		
Intensive row-crop agriculture		
Orchards/nurseries	✓	
Commercial feedlots		
Dairies		
Ranching (enclosed livestock grazing or horse paddock or feedlot)		
Transportation corridor	✓	
Rangeland (livestock rangeland also managed for native vegetation)		
Sports fields and urban parklands (golf courses, soccer fields, etc.)		
Passive recreation (bird-watching, hiking, etc.)	✓	
Active recreation (off-road vehicles <u>mountain biking</u> , hunting, fishing)	✓	
Physical resource extraction (rock, sediment, oil/gas)		
Biological resource extraction (aquaculture, commercial fisheries)		
Comments		

planted
euc
woodland
South of
site
805 freeway