



Appendix P: Resource Enhancement and Mitigation Program



North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program

Resource Enhancement and Mitigation Program

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TABLE OF CONTENTS

<u>Section</u>	<u>Page No.</u>
I. INTRODUCTION	1
A. DEFINITIONS.....	1
B. PROGRAM OVERVIEW	3
C. FUNDING	4
D. WORKING GROUP.....	4
II. GOALS AND PROCESS OVERVIEW.....	7
A. GOALS	7
B. STAKEHOLDER AND AGENCY PARTICIPATION	7
C. RESOURCE IMPACTS AND MITIGATION OPPORTUNITIES	8
III. EVALUATION FRAMEWORK.....	16
A. MITIGATION TYPES	16
B. POTENTIAL MITIGATION OPPORTUNITIES	20
C. IMPLEMENTATION FRAMEWORK	20
IV. CREDIT ESTABLISHMENT AND RELEASE	25
A. ECOLOGICAL PERFORMANCE STANDARDS.....	27
B. HABITAT ESTABLISHMENT AND RESTORATION.....	39
C. HABITAT PRESERVATION/ENHANCEMENT	39
D. LAGOON RESTORATION.....	39
E. BRIDGE OPTIMIZATION (ACHIEVING HYDRAULIC LIFT IN LAGOONS).....	40
F. LAGOON MANAGEMENT/ENDOWMENTS – CONTINGENCY MITIGATION CREDIT.....	40
V. MITIGATION PHASING	43
VI. HABITAT MITIGATION AND MONITORING PLANS.....	44
VII. PROGRAM PHASING.....	46
VIII. SUPPLEMENTING REMP OPPORTUNITIES – MITIGATION CONTINGENCIES AND FUTURE OPPORTUNITIES.....	47

APPENDICES

- Appendix A Specific USACE Requirements
Appendix B Mitigation Site Assessments

LIST OF FIGURES

FIGURE 1	5
FIGURE 2	23

TABLE OF CONTENTS

<u>Section</u>	<u>Page No.</u>
-----------------------	------------------------

LIST OF TABLES

TABLE 1. PWP/TREP PROJECT IMPACTS AND MITIGATION/ENHANCEMENT OPPORTUNITIES SUMMARY	9
TABLE 2. LONG-TERM TEMPORARY IMPACTS FOR THE I-5 NCC PROJECT	12
TABLE 3. ASSESSMENT OF POTENTIAL MITIGATION PROJECTS	17
TABLE 4. MITIGATION PROJECTS AND ESTIMATED FUNDING ALLOCATIONS.....	19
TABLE 5A. PERMANENT WETLAND IMPACTS VS. NO NET LOSS MITIGATION (BY YEAR/PHASE)	31
TABLE 5B: PERMANENT UPLAND HABITAT IMPACTS VS. NO NET LOSS MITIGATION (BY YEAR/PHASE) ..	35
TABLE 6. COSTS FOR PREVIOUS DREDGING PROJECTS AT BATIQUITOS LAGOON	41
TABLE 7. BATIQUITOS LAGOON TIDAL RANGE PERCENT CHANGE FOLLOWING A DREDGING EVENT	42

I. Introduction

The North Coast Corridor (NCC) includes approximately 30 miles of coastline that is recognized for a number of unique and significant marine and environmentally sensitive habitat areas (ESHA). The Public Works Plan (PWP)/Transportation Restoration Enhancement Program (TREP) planning area has been delineated as the Coastal Zone boundary to the east and with the Pacific Ocean as the western boundary, and extending from La Jolla Village Drive in San Diego as the southern boundary to Harbor Drive in Oceanside/Camp Pendleton Marine Corps Base as the northern boundary (Figure 1). The coastal watersheds, lagoons, and upland areas in the corridor provide a range of diverse habitats and ecosystems that support a variety of plant and wildlife species. Due to the location of the proposed PWP/TREP improvements, the sensitive habitats traversed by the planned corridor improvements, and the sensitive species living along the corridors, all impacts to coastal resources cannot be avoided. SANDAG and Caltrans have coordinated with the regulatory and resource agencies for many years through the I-5 NCC Project environmental review processes, as well as applicable permit processes for each agency with jurisdictional oversight over resources within the PWP/TREP planning area. The PWP/TREP Resource Enhancement and Mitigation Program (REMP) has been developed to identify compensatory mitigation opportunities to address these unavoidable impacts, and to implement projects that benefit existing natural resources, which exceed standard ratio-based compensatory mitigation programs. The PWP/TREP planning area has been defined as the Service Area for compensatory mitigation opportunities needed to offset impacts associated with approved PWP/TREP transportation infrastructure and community enhancement¹ projects.

a. Definitions

Compensatory mitigation is defined by the U.S. Army Corps of Engineers (Corps) and the Environmental Protection Agency (EPA) as the “restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved” (2008).

Throughout this document, the term “enhancement” serves different purposes as it pertains to the regulatory needs of the Coastal Commission and the Corps. In regards to the Coastal Commission process, enhancement is used in a broad sense akin to resource improvement or benefit. This includes compensatory mitigation projects that would result in varying levels of functional lift to the coastal resources located within the NCC and includes large-scale lagoon enhancement restoration projects, endowments for lagoon inlet maintenance, and preservation of high quality habitat from the threat of future development. The Corps ‘definition’ of enhancement is more specific and defined below, and involves more specific calculation of precise mitigation acreage credits associated with the individual compensatory mitigation projects as is further detailed in Appendix A.

The following terms below, are utilized throughout the document but are defined differently for the Corps. These terms are generally defined for this document as:

¹ Throughout this document, the term “community enhancements” refers to the suite of bicycle, trail, park, and other pedestrian amenities included within the larger list of PWP/TREP specific projects.

Wetland is defined as land where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes and includes those types of wetlands where vegetation is lacking and soil is poorly developed or lacking as a result of frequent and drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentration of salts or other substances in the substrate. The **upland** limit of a wetland is defined as (A) the boundary between land with predominantly hydrophytic cover and land with predominantly mesophytic or xerophytic cover, (B) the boundary between soil that is predominantly hydric and soil that is predominantly non hydric, or (C) in the case of wetlands without vegetation or soils, the boundary between land this is flooded or saturated at some time during years of normal precipitation, and land that is not.

For the purposes of the Corps and EPA, the following definitions of compensatory mitigation approaches are being utilized in the REMP. **Establishment (creation):** 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.

Restoration: 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 the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.

- **Re-establishment:** 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.
- **Rehabilitation:** Manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing the 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.

Enhancement: 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.

For other resource agencies, the following definitions apply for **upland** habitat mitigation. **Establishment** in uplands is the manipulation of the physical, chemical, or biological characteristics of a site with no existing native habitat to create native habitat. This generally requires grading and planting, or could be extensive clearing, removal of thatch, weeding and planting. **Restoration** is the manipulation of the physical, chemical, or biological characteristics of degraded upland habitats to a native habitat through extensive clearing, exotic control, and planting. **Enhancement** is the manipulation of the physical, chemical, or biological characteristics that results in improvements to degraded native habitats through weeding and some seeding.

The proposed REMP employs a combination of measures to mitigate for coastal resource impacts resulting from implementation of the PWP/TREP transportation infrastructure and community enhancement projects. The constrained, primarily built-out condition of the NCC leaves few opportunities for land acquisition typically necessary to implement traditional, ratio-based compensatory mitigation. However, the NCC is home to six major lagoon systems which represent

some of southern California's most significant natural resource areas. These lagoon systems, associated upland habitat, and riparian wetland interface and their contributing watersheds provide large, contiguous areas that support sensitive habitats for a variety of plant and wildlife species, and that provide water quality, flood control, groundwater recharge and recreational benefits. The NCC's lagoon systems and their habitats are biologically unique and cannot be replicated elsewhere. As such, the REMP focuses on opportunities to protect the NCC's lagoon systems from potential future degradation and to expand, restore, and/or enhance habitat within these systems. This approach requires comprehensive solutions with efforts focused on ecosystem-wide enhancements, including preservation, restoration, and long-term management. The REMP approach to evaluating and implementing compensatory mitigation projects at the regional scale and in advance of PWP/TREP project impacts, and designing lagoon bridges to avoid and minimize project impacts, results in greater benefits to coastal resources throughout the corridor than if only ratio-based, project and site-specific compensatory mitigation were employed.

The REMP includes options for allocating funds from SANDAG's Environmental Mitigation Program (EMP) for a variety of regionally significant mitigation opportunities, including the establishment, restoration (re-establishment or rehabilitation), enhancement, preservation, and long-term management of coastal wetlands and adjacent riparian areas, other transitional habitats, and upland habitat areas. These mitigation activities include: 1) acquisition of habitat parcels for the REMP because of the sites' contribution to protecting and enhancing NCC lagoon system and watershed functions and services and meeting no net loss through establishment and restoration, 2) acquisition, preservation, and if necessary, enhancement, of parcels which contribute to regionally significant resources, including upland habitat areas, 3) planning and implementation of regionally significant lagoon restoration projects, 4) providing long-term non-wasting endowments for two regionally significant lagoons to fill funding gaps for maintenance and management activities, and 5) funding a Scientific Advisory Committee to provide technical support for the design, implementation, and monitoring of the suite of mitigation activities described in this REMP (see Figure 1).

The design of bridges that cross lagoons have been evaluated through intensive hydraulic and sediment transport analyses to allow for full tidal exchange, restore/improve wildlife movement, and to maximize the avoidance and minimization of direct and indirect impacts of the I-5 widening project as required by the resource and regulatory agencies. These optimized bridges and increased lagoon channel cross sectional areas protect existing tidal lagoon system functions and services and do not constrain future options for restoring tidal flows to lagoons that are currently restricted. The optimized bridge lengths and channel configurations are included in the REMP; however, funding for these enhancements would be provided through capital expenditures.

b. Program Overview

For the Coastal Commission, the REMP provides for mitigation planning and implementation through the NCC Public Works Plan (PWP) and Transportation Restoration Enhancement Program (TREP) process to effectively mitigate NCC project impacts in a manner that addresses regionally significant resource needs. For the Corps, the REMP is being utilized as a Planning Level Compensatory Mitigation Plan for permitting individual projects within the NCC that are authorized to use one of the described compensatory mitigation sites. In addition, the REMP is being utilized to guide the development of detailed site-specific Habitat Mitigation and Monitoring Plans (HMMPs) for each of the compensatory mitigation sites in order to support permittee-responsible advance mitigation. For the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), National Marine Fisheries Service (NMFS), and the San Diego Regional Water Quality Control Board (RWQCB),

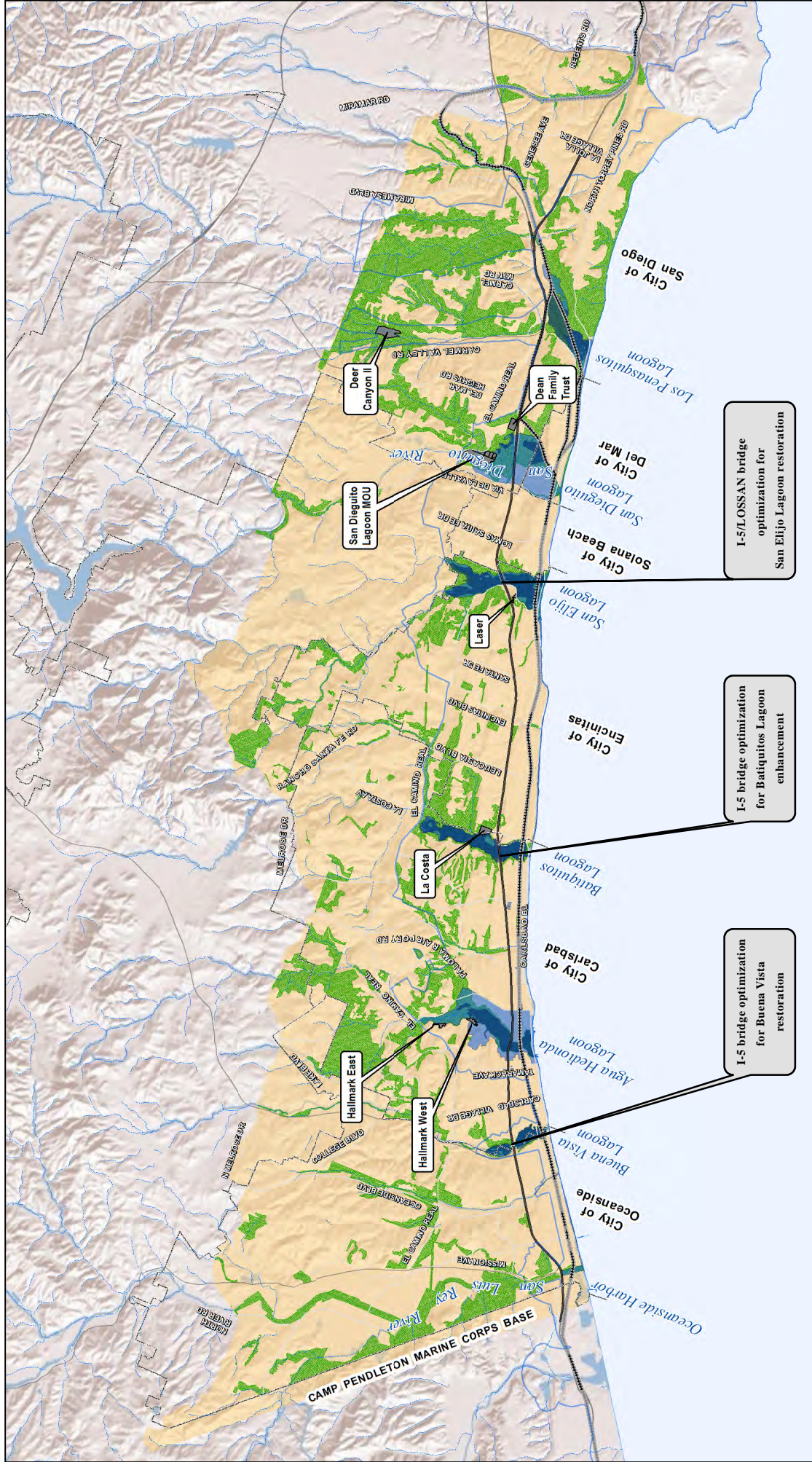
the REMP is being utilized as the overall compensatory mitigation package for the covered projects. However, pursuant to each agency's jurisdictional authority and purview, agency-specific permits or consultations may result in additional requirements or procedures to be followed for project impacts and mitigation sites. Overall, the REMP provides the planning and implementation framework to ensure that the most valuable, high quality compensatory mitigation opportunities in the NCC are identified, secured, and prioritized for implementation in a manner that cost-effectively utilizes available mitigation funding to maximize benefits to the natural resources with the NCC.

c. Funding

The *TransNet* Extension Ordinance approved by the San Diego voters in November 2004 established an EMP for the advancement of mitigation for resource impacts associated with regional and local transportation projects. The REMP is structured to support the region's efforts to develop a comprehensive regional mitigation strategy utilizing the *TransNet* EMP, to be implemented as an integrated element of the PWP/TREP Implementation Plan and to be utilized by the resource and regulatory agencies in permitting transportation projects within the NCC. The REMP prioritizes expenditure of EMP funds on a corridor-wide level, with an emphasis on establishment, restoration, enhancement, and preservation, and improving the ecological functions and services of sensitive NCC habitats in advance of impacts through funding system-wide restoration plans, endowments, and a Scientific Advisory Committee.

d. Working Group

The PWP/TREP includes the formation of a REMP Working Group (Working Group) that would include SANDAG, Caltrans and resource and regulatory agency personnel directly involved in permitting of transportation projects, including but not limited to the USFWS, Corps, EPA, NMFS, CDFW, California Wildlife Conservation Board, RWQCB, Coastal Conservancy, and the Coastal Commission. The Working Group will provide oversight and advisory assistance for purposes of prioritizing compensatory mitigation timing and implementation, developing and reviewing of the site-specific HMMPs, and ensuring specific REMP requirements are achieved. The Working Group would also prioritize and coordinate disbursement of REMP funds for the San Elijo or Buena Vista Lagoon Restoration Projects. The Working Group may advise SANDAG and Caltrans on potential resource benefits of new compensatory mitigation opportunities that may be determined necessary as contingency measures and/or warranting consideration for incorporation into the REMP given their unique value.



DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, Imagery: DigitalGlobe March 2008

FIGURE 1
Resource Enhancement and Mitigation Program Overview

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II. Goals and Process Overview

a. Goals

The overall goal of the REMP is to enhance and restore the biodiversity and habitat functions and services of critical ecological coastal resources within the NCC as compensatory mitigation in advance of unavoidable impacts associated with planned PWP/TREP transportation projects and community enhancement projects. This goal is being achieved through 1) the acquisition of habitat mitigation parcels for the NCC program in consideration of the sites' contributions to protecting and enhancing NCC lagoon system and watershed functions and services and meeting no net loss through establishment and restoration, 2) the acquisition, preservation, and if necessary, the enhancement of parcels which contribute to regionally significant resources, including upland habitat areas, 3) planning and implementation of regionally significant lagoon restoration projects, 4) providing long-term non-wasting endowments for two regionally significant lagoons to fill funding gaps for maintenance and management activities, and 5) funding a Scientific Advisory Committee to provide technical support during the design, implementation, and monitoring of the suite of mitigation activities described in this REMP. All compensatory mitigation sites include long-term non-wasting endowments to fund management in perpetuity. Funding for projects included within the REMP is directed to those sites identified as addressing the most critical ecological needs in the NCC while respecting the project phasing, the mitigation needs identified in the PWP/TREP, anticipated compensatory mitigation requirements by regulatory agencies, and the voter-adopted *TransNet* Expenditure Plan's EMP budget for the NCC. The resource mitigation program is intended to be flexible and adapt to future changes in opportunities, while promoting mitigation in advance of impacts.

The opportunities identified within this REMP, including early acquisition of sites containing high-value habitat for long-term preservation, will be phased ahead of or concurrent with unavoidable impacts from planned PWP/TREP transportation infrastructure and community enhancement projects. Implementing REMP and individual compensatory mitigation sites in advance of unavoidable impacts will serve to reduce typically required mitigation ratios by reducing the uncertainty of location, type, and quantity of mitigation and reducing temporal loss of habitat acreage, functions, and services from construction-related impacts. In addition, phasing transportation facility infrastructure at sensitive locations has been specifically designed to avoid and minimize impacts, protect existing lagoon system functions and services, and allow for future large-scale lagoon restoration projects.

b. Stakeholder and Agency Participation

REMP opportunities and asset evaluations were identified and developed in coordination with various NCC natural resource stakeholders and resource and regulatory agencies. In consultation with these entities, SANDAG and Caltrans have identified several categories of mitigation opportunities (described in the following section), as well as a variety of resource protection options to address regionally significant needs. In some cases, the opportunity to implement site-specific compensatory mitigation efforts has already been secured via land acquisition of suitable restoration sites.

In coordination with stakeholder groups and resource and regulatory agencies, SANDAG and Caltrans have identified two large-scale lagoon restoration and enhancement projects (San Elijo and Buena Vista lagoons) and one large-scale lagoon establishment project (San Dieguito W-19 property). Technical studies and environmental documents for these projects are being developed and the various stakeholder groups and resource and regulatory agencies are considering implementation of these projects, depending on the alternative chosen, for compensatory mitigation for the NCC transportation projects. SANDAG and Caltrans have been assisting through participation in project

planning and provision of funds for technical and environmental studies. In coordination with resource and regulatory agencies, SANDAG and Caltrans funded hydraulic and sediment transport studies to analyze I-5 and LOSSAN bridge designs at the corridor lagoons to maximize avoidance and minimization of impacts, reduce tidal muting, and restore/improve wildlife movement. These optimized bridge designs in concert with expanded channel dimensions allow for possible future establishment, restoration, and enhancement of tidal wetlands and improved water quality within the lagoons.

c. Resource Impacts and Mitigation Opportunities

Table 1 includes the total anticipated permanent impacts resulting from the NCC transportation infrastructure and community enhancement projects to be authorized by the PWP/TREP under the Coastal Act and other regulatory permit mechanisms, such as Clean Water Act Sections 401 and 404 and/or Rivers and Harbors Act Section 10 permit authorization. Table 1 also includes a summary of the compensatory mitigation opportunities (and cost estimates) by type and acreage in order to satisfy regulatory agency permitting requirements. To ensure impacts can be adequately mitigated in advance and to provide contingency mitigation, the mitigation opportunities have been categorized into three “pools”. Combined, these compensatory mitigation opportunities are expected to enhance regionally significant resources beyond traditional project-by-project ratio-based mitigation requirements. In addition, the REMP includes funding for formation of an independent Scientific Advisory Committee made up of scientists charged with providing scientific technical support through the design, implementation, and monitoring of the suite of compensatory mitigation activities described in the REMP.

Table 1. PWP/TREP Project Impacts and Mitigation Opportunities Summary

COMPENSATORY MITIGATION OPPORTUNITIES (BY WATERSHED)		COASTAL WETLAND ACRES ESTABLISHED	COASTAL WETLAND ACRES RESTORED	COASTAL WETLAND ACRES PRESERVED/ENHANCED	TOTAL IMPACTS (LOSSAN & I-5) ¹	NO NET LOSS WETLAND BALANCE ²	UPLAND HABITAT ACRES ESTABLISHED	UPLAND HABITAT ACRES RESTORED	UPLAND HABITAT ACRES PRESERVED/ENHANCED	TOTAL IMPACTS (LOSSAN & I-5) ¹	NO NET LOSS UPLAND BALANCE ²	COST ESTIMATE (INCL. RIGHT-OF- WAY & CONSTRUCTION COSTS) ³	
		WETLAND					UPLAND						
ESTABLISHMENT (NO NET LOSS) – NO NET LOSS POOL													
Los Penasquitos	Deer Canyon II						14					\$1,600,000.00	
San Dieguito	Dean Family Trust							20.8				\$2,650,000.00	
	San Dieguito W19	47.3					9.6	19.8				\$48,600,000.00	
Batiquitos	Batiquitos Bluffs		2.5					3.7				TBD ⁴	
Agua Hedionda	Hallmark (East and West)	4.37	0.97				3.5	6.6				\$9,600,000.00	
Corridor Wide Establishment (No Net Loss) Sub Total		51.67	3.47			27.1	50.9					\$62,450,000.00	
RESTORATION, ENHANCEMENT, & PRESERVATION –“ENHANCEMENT” POOL													
San Dieguito	Dean Family Trust								1.5			Costs identified, above.	
San Elijo	Laser			0.02					4.1			\$1,610,000.00	
Batiquitos	La Costa								18.8			\$1,430,000.00	
	Batiquitos Bluffs								39.9			TBD ⁴	
Agua Hedionda	Hallmark (East and West)			0.44					1.8			Costs identified, above.	
San Elijo Lagoon Restoration Project													\$90,000,000.00 ⁵
Buena Vista Lagoon Restoration Project													
Corridor Wide Preservation & Enhancement Sub Total				0.46								66.1	
BRIDGE OPTIMIZATION													
Batiquitos I-5 Bridge Lengthening		Included for project avoidance and minimization purposes.										\$8,000,000.00	
San Elijo I-5 Bridge Lengthening												\$16,000,000.00	
San Elijo LOSSAN Bridge Lengthening (Assumes SELRP Alt 2A)												\$25,100,000.00	
Buena Vista I-5 Bridge Lengthening												\$7,000,000.00	
Bridge Optimization Sub Total												\$56,100,000.00	
LAGOON MANAGEMENT ENDOWMENTS – CONTINGENCY POOL													
Regional Lagoon Maintenance Program	Batiquitos - \$9.50/ cy [est.] Penasquitos - \$3.90/ cy [actual]	20.7*			39.28 – 40.04	35.8 – 36.56				63.79 – 73.89	4.11 – 14.21	\$10,000,000.00	
Corridor Wide Lagoon Management Endowments Sub Total		20.7*							\$10,000,000.00				
Corridor Wide Project Impact vs. Habitat Establishment, Preservation, Enhancement & Lagoon Management Endowment Totals		72.37	3.47	0.46			27.1	50.9	66.1			\$165,490,000.00	
PROJECT PRIORITIZATION/ LAGOON MANAGEMENT TECHNICAL SUPPORT ⁶													
Scientific Advisory Committee		Included to ensure mitigation site success.										\$1,000,000.00	
Technical Support Sub Total												\$1,000,000.00	

NOTES:

* Caltrans and SANDAG find that establishing an endowment should either be credited 20.7 acres based on hydraulic improvement and habitat creation as a result of maintaining the lagoon mouths at Batiquitos and Los Penasquitos Lagoons, or it is understood that this endowment would address any potential no net loss deficits between credit release and when impacts would occur, as well as any temporal impacts.

¹ Corridor-wide impacts identified for the I-5 Locally Preferred Alternative (8+4 with Buffer) combined with LOSSAN Project impacts. See Tables 4a and 4b for detailed project impacts by phase.

² No net loss balance totals for purposes of Coastal Commission mitigation do not include preservation acreage.

³ Costs are preliminary and identified for all opportunities, including those to be funded by Environmental Mitigation Program (EMP) (i.e., No Net Loss Pool, Enhancement Pool, Lagoon Management Endowments, and Technical Support) or Capital funds (i.e., Bridge Optimization).

⁴ Contingent upon a willing seller and reasonable cost.

⁵ These restoration planning efforts are in process, and final cost estimates are not available at this time. However, it is acknowledged that at least one large-scale lagoon restoration project will be funded in full through the REMP.

⁶ A REMP Working Group to include resource and regulatory agencies will be formed to evaluate, prioritize, and oversee the implementation of the potential compensatory mitigation sites identified in this REMP.

i. Temporary Impacts

Temporary impacts to natural resources (e.g., vegetation clearing, access road construction, staging, diversions, etc.) will occur to enable access and construction at PWP/TREP transportation infrastructure and community enhancement project sites. For purposes of adequately addressing potential temporary impacts, disturbances resulting in impacts to natural resources lasting more than 12 months are defined as long-term temporary impacts and must be mitigated beyond same-site restoration. An estimate of long-term temporary impacts associated with implementation of the NCC infrastructure projects is provided in Table 2 below. The LOSSAN temporary impacts are reflected within the permanent impact estimates for the rail improvements, based on use of a conservative 50 foot from centerline footprint within the rail right of way.

Long-term temporary impact areas will be returned to pre-construction elevations and contours and re-vegetated with appropriate native species. Unless restricted due to weather, re-establishing elevations and contours should occur within one month following construction. Re-vegetation with native species will commence within three months after restoration of pre-construction elevations and contours and be completed within one growing season. If re-vegetation cannot start due to seasonal considerations, exposed earth surfaces will be stabilized immediately with jute-netting, straw matting, or other applicable best management practice to minimize any interim erosion. Restoration plans for all long-term temporary impact areas over 0.5 acre will be prepared for approval by resource and regulatory agencies.

Compensatory mitigation for these long-term temporary impacts to uplands would include either revegetation with native species of other nonnative habitat temporary impact areas (at a 1:1 ratio of replacement to impacts) or the preservation of high quality native habitat under the threat of development (a 2:1 ratio of preservation to impacts). The suite of activities proposed in the “enhancement pool” listed previously in Table 1 and described below, would be used to mitigate any additional compensatory mitigation requirements for long-term temporary impacts to wetlands and other aquatic habitats. Nearly all construction activities will require access and staging for greater than 12 months; therefore, most temporary impacts addressed through this REMP will be considered long-term temporary impacts. Short-term temporary impacts, or impacts lasting less than 12 months in duration that do not have significant impacts to native habitats or wildlife, will be restored to pre-existing conditions (contours and vegetated condition) immediately following construction.

The “enhancement pool” of opportunities includes large-scale habitat restoration and enhancement projects, as well as preservation of high quality upland habitats. The “enhancement pool” will mitigate for long-term temporary impacts by ensuring long-term protection of natural resources in advance of construction impacts at the regional (NCC project area) scale. See additional discussion in the Credit Establishment and Accounting section, below.

Table 2. Long-term Temporary Impacts for the I-5 NCC Project

Habitat Type	Long-term Temporary Impacts* (acres)
Sensitive Upland Habitats	
Baccharis scrub	0.14
Baccharis scrub (disturbed)	1.01
Coastal sage scrub	4.06
Coastal sage scrub (disturbed)	9.20
Maritime succulent scrub	0.22
Native grassland	0.15
Southern maritime chaparral	0.47
Southern maritime chaparral (disturbed)	1.37
Total Temporary Upland Impacts	16.62
Wetland and Riparian Habitats	
Arundo scrub	0.21
Coastal brackish marsh	0.58
Coastal brackish marsh (disturbed)	1.54
Drainage ditch	0.66
Disturbed wetland	0.73
Freshwater marsh	1.36
Freshwater marsh (disturbed)	0.38
Mudflat	0.44
Mulefat scrub	0.00
Open water	2.69
Salt flat	0.04
Coastal salt marsh	2.33
Salt marsh transition	0.21
Southern willow scrub	0.15
Southern willow scrub (disturbed)	1.38
Southern willow scrub/freshwater marsh	0.80
Tidal riprap at bridge abutments	0.03
Waters of the US. (unvegetated channel)	0.08
Total Temporary Impacts to Aquatic Habitats	13.59

* All temporary impacts likely longer than 12 months, impacts to open water may consist of a barge anchored in area

ii. “No Net Loss Pool” – Establishment and Restoration (Re-establishment and Rehabilitation)

The no net loss pool of opportunities includes compensatory mitigation sites that have significant establishment and/or restoration components, and would generally result in a net gain in habitat area and/or functions and services, thereby directly offsetting permanent wetland and/or upland ESHA impacts at a 1:1 ratio, provided that the subject mitigation plans are implemented and performing at identified standards ahead of construction impacts associated with PWP/TREP transportation infrastructure and community enhancement projects.

For waters of the U.S., waters of the State, or other aquatic habitats, establishment is the manipulation of the physical, chemical, or biological characteristics to create an aquatic resource that did not previously exist at an upland site resulting in a gain in aquatic resource area and functions. For both wetland and upland habitats, restoration involves 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 resource. Restoration efforts result in a gain in habitat function and habitat area. For the purpose of tracking net gains in aquatic resource area, the Corps and EPA divide restoration activities into two categories: re-establishment and rehabilitation.

Each establishment or restoration opportunity included in the REMP has a detailed Mitigation Site Assessment (MSA) that describes existing site conditions and potential opportunities for establishment or significant restoration available on the site. MSAs can be located in Appendix B attached to this document.

iii. “Enhancement Pool” - Restoration, Enhancement, & Preservation

The preservation and enhancement pool of compensatory mitigation opportunities includes sites where permanent preservation of existing and/or potentially enhanced habitat can be achieved. It also includes large-scale lagoon restoration activities intended to improve corridor-wide lagoon system function and services and would serve to mitigate indirect impacts, temporal, and long-term temporary impacts resulting from PWP/TREP transportation infrastructure project and community enhancement project impacts, given the resulting benefits to wetland and other aquatic habitats and upland resources, water quality, tidal range, flood control, groundwater recharge, plant and wildlife habitat, and recreation.

Habitat Preservation. Additional PWP/TREP project impact mitigation will be fulfilled by acquisition of parcels containing high quality upland ESHA, wetland or other aquatic resources, or parcels where enhancement of habitat can occur within the NCC Coastal Zone area which can be permanently preserved. Habitat preservation would serve to mitigate for temporal resource losses and long-term temporary impacts resulting from PWP/TREP project impacts by ensuring long-term preservation of upland ESHA, wetland, or other aquatic resources in advance of construction impacts occurring.

Lagoon Restoration. In recognition of the unique opportunities and value of comprehensive lagoon restoration activities for corridor lagoons, the REMP includes large-scale lagoon ecosystem restoration and enhancement mitigation opportunities, which will result in significant ecological lift to the San Elijo Lagoon and/or Buena Vista Lagoon systems. The mitigation opportunity includes funding a large-scale lagoon restoration program in full for either San Elijo or Buena Vista Lagoons, which would be in addition to funds already contributed to previous and ongoing planning and technical evaluation activities necessary to facilitate and implement these lagoon restoration programs. Large-scale lagoon

restoration in either San Elijo or Buena Vista Lagoons may include, but is not limited to, enhancement and restoration (both types) of wetland and other aquatic resources in the associated Lagoons.

In the context of the regional lagoon systems of the NCC and their proximity to the ocean, the intent of the large-scale lagoon restoration funding is to improve the ecological health and hydrological connectivity and to enhance critical coastal resources and habitats. Potential San Elijo and Buena Vista Lagoon restoration will be eligible for inclusion in the REMP, provided it results in a restored coastal wetland ecosystem that is in alignment with regulatory agency and resource needs in the NCC (and impacts caused by the PWP/TREP transportation project improvements). REMP measures that contribute to large-scale lagoon restoration opportunities, including funding and critical transportation infrastructure improvements, shall be considered a substantial mitigation element for all PWP/TREP project impacts (including temporary long-term impacts) given the resulting wide range of benefits to sensitive habitat for plant and wildlife species, tidal range, water quality, flood control, groundwater recharge, and recreation.

iv. “Contingency Pool” – Endowments and Restoration Infrastructure

The contingency pool of opportunities is provided to ensure there are no mitigation (no net loss) deficits that could not be adequately addressed in advance of project impacts. Ideally, the contingency pool would not be required because impacts would be avoided by careful site planning, implementation, monitoring and management of the sites in the “No Net Loss Pool” and “Enhancement Pool”. However, the contingency pool can be used for no net loss purposes to address any unforeseen circumstance, such as delays in achieving ecological performance standards at mitigation sites within the “No Net Loss Pool” or PWP/TREP project impacts occurring prior to release of adequate compensatory mitigation credits.

Lagoon Management Endowments. The REMP includes an endowment component that is intended to increase the capacity for long-term management of the Batiquitos and Los Penasquitos Lagoons and support stewardship of these resources in perpetuity. This includes, but may not be limited to, funding for maintenance of lagoon inlets and channels deemed necessary to sustain tidal and fluvial flows and reduce sedimentation within these lagoon systems. To ensure that endowment funding is effectively managed, a Long Term Management Plan indicating the ecological priorities and associated endowment contributions would be created, reviewed, and approved by the resource agencies, and the lagoon manager. The Long Term Management Plan would be created in association with the lagoon manager and be a living document, reflecting current conditions and needs of the lagoon ecosystem. Development of a Long Term Management Plan for use of the funds at Batiquitos and Los Peñasquitos Lagoons would identify specific tasks covered by the proposed endowment, and would support establishment of long-term goals to ensure appropriate triggers (e.g., likely annually for Los Penasquitos, every 3 years for Batiquitos, or imminent closure of the lagoon mouth) for when dredging activities would occur and funds would be released. Performance evaluation of the endowment would be evaluated at the end of the first phase of the PWP/TREP Implementation Phasing Plan (approximately 10 years) to ensure that adequate financial resources are in place to cover activities in perpetuity.

Absent the need for financial supplementation to ensure stability, the lagoon management endowments are to be considered supplemental to the enhancement component of the REMP. This endowment would not be applied to the other no net loss mitigation, enhancement, and preservation projects included in this REMP, as funding for those sites already reflect a separate, site-specific long-term management endowment in their project costs.

Lagoon Restoration. As discussed previously, REMP measures that contribute to large-scale lagoon restoration opportunities are considered a substantial mitigation element for all PWP/TREP project impacts. Enhancement efforts within San Elijo and/or Buena Vista Lagoon that may result in a change from current upland or freshwater dominated conditions to tidally influenced habitats may also be used for contingency mitigation, as necessary. Design alternatives for the environmental review of these large-scale lagoon restorations are ongoing so specific acreage amounts are not presently available. The determination of acreage amounts for these potential future habitat changes that would qualify for contingency mitigation credit, as well as performance standards to measure and monitor the success of the restoration efforts, would occur pursuant to future Notice of Impending Development (NOIDs) or Coastal Development Permit (CDP) submittals and in discussions with the REMP Working Group.

Other Contingency Opportunities. Modifications to Coast Highway, possibly including replacement of the culverts with a bridge or larger culverts, or other North Coast Corridor transportation infrastructure currently representing a significant constraint to a lagoon system, could be considered by the Working Group in the future to offset potential no-net-loss deficits, as needed.. These facilities are, however, not within the LOSSAN or I-5 right-of-way and are therefore not included in the scope of PWP/TREP improvements.

v. Bridge Optimization

Bridge optimization projects are specifically funded through capital expenditures and designed to avoid and minimize project impacts and protect existing lagoon system functions and services. At several crossings, the optimized bridges will also allow for large-scale lagoon restoration projects that are needed as compensatory mitigation within the “Enhancement Pool”. Bridge optimization projects involve lengthening lagoon bridges and expanding lagoon channel dimensions along the I-5 and LOSSAN rail corridors to improve existing tidal and fluvial flows, and will enhance wetland habitats, water quality within the lagoons, and wildlife movement.

vi. Lagoon Management Technical Support

Scientific Advisory Committee. The REMP provides funding for a Scientific Advisory Committee (Committee) made up of independent scientists. The Committee will provide technical advice, as necessary, regarding the design, implementation, and monitoring of mitigation projects described in this REMP. Funding for the Committee would cover the time, expenses, and materials needed by scientists to complete their tasks. The Committee will be directed by the REMP Working Group and will oversee the development or modification of ecological performance standards, monitoring methodology (techniques and timing), actual monitoring of site performance, will recommend adaptive management measures to ensure site success, and review monitoring reports, as necessary.

III. Evaluation Framework

SANDAG and Caltrans have developed a suite of REMP evaluation classifications to assist in matching the various mitigation opportunities identified for the PWP/TREP with the type and/or level of impact and timing of implementation.

The list below defines the criteria used to assess the various types of mitigation opportunities available to meet the needs of the PWP/TREP. The mitigation opportunity assets have been broken down into categories to clearly demarcate and define the suite of opportunities that are available to mitigate for the various types of impacts that are expected with implementation of the PWP/TREP transportation infrastructure and community enhancement projects. Table 3 lists each REMP opportunity by site name, outlines the type of associated mitigation anticipated on-site, and identifies the evaluated assets that are provided by that particular opportunity.

a. Mitigation Types

1. **Opportunities that are “shovel ready”.** A project is considered “shovel ready” if the site has been secured, purchased, or is in escrow, and planning, design and permitting are underway.
2. **Opportunities with strong stakeholder support.** Mitigation projects that have stakeholder support are those that have a willing landowner, are supported by elected officials and community members, and have funding or expressed support from other stakeholders potentially affected by the proposed actions.
3. **Opportunities that provide significant watershed-focused ecosystem improvements.** Within the watersheds of the NCC, several watershed focused mitigation opportunities exist. These projects serve to substantially restore, enhance, and protect different habitat types within the lagoon watershed where the impacts occur. Such projects improve the habitat and functions typically provided by the affected aquatic resource.
4. **Opportunities with high ecological benefit for a given cost.**
5. **Opportunities with guaranteed funding for long-term maintenance and management.**
6. **Opportunities that provide a unique value which would not likely be available or would be more costly in the future (e.g., a lost opportunity).** Several mitigation projects extinguish development potential through preservation efforts and/or conservation easements post mitigation implementation efforts thereby preserving the unique habitat values that persist on the site.

Table 4 lists the proposed suite of mitigation opportunities and their associated REMP funding and capital costs. Tables 3 and 4 aim to depict the differences in opportunities, exhibiting those that sustain a stronger nexus for meeting the most critical ecological needs while respecting the phasing requirements for transportation project development identified in the PWP/TREP, and greater feasibility and flexibility for timely resource mitigation project implementation.

Table 3. Assessment of Potential Mitigation Projects

Mitigation Site	Mitigation Type				Mitigation Status					
	No-Net Loss Establishment & Re-Establishment	Restoration (Rehabilitation)	Preservation & Enhancement	Hydraulic Lift	“Shovel Ready”	Stakeholder Support	Watershed Focused Ecosystem Enhancement	High Ecological Benefit to Cost Ratio	Long-term Maintenance & Management	Provides a Unique Value or Opportunity
Establishment / No Net Loss – No Net Loss Pool										
San Dieguito Lagoon W19	Upland (9.6 ac Re-Establishment wetland (47.3 ac) establishment		Upland (19.8) enhancement		Site secured and planning underway	SANDAG/CT/resource agencies in discussions to move forward with conceptual plans	Provides connectivity to adjacent lagoon system enhancement efforts (SONGS)	76.7 ac establishment (wetland & upland) & enhancement at approx. \$634K per ac	SANDAG/CT will provide management endowment to be managed by San Dieguito JPA	Supports ongoing enhancement efforts & improves tidal function
Hallmark (East/West)	Upland (3.5 ac) & wetland (4.37 ac) establishment	Upland (6.6 ac) & wetland (0.97 ac) restoration	Upland (1.8 ac) & wetland (0.44 ac) preservation		Sites purchased and planning underway; I-5 NCC Project EIR/EIS underway	SANDAG/CT/resource agencies in discussions to move forward with conceptual plans	Provides connectivity to adjacent lagoon system	17.68 ac establishment, enhancement & preservation (upland & wetland) at approx. \$543K per ac	SANDAG/CT will provide management endowment	Extinguishes development potential near Agua Hedionda & preserves high quality habitat
Dean Family Trust		Upland restoration (20.8 ac)	Upland preservation (1.5 ac)		Site purchased and planning underway; I-5 NCC Project EIR/EIS underway	SANDAG/CT/resource agencies in discussions to move forward with conceptual plans	Provides connectivity to adjacent lagoon system enhancement efforts (SONGS)	22.3 ac establishment & preservation (upland) at approx. \$119K per ac	SANDAG/CT will provide management endowment	Extinguishes development potential near San Dieguito & preserves high quality habitat
Batiquitos Bluffs		Upland (3.7 ac) & wetland (2.5 ac) restoration	Upland preservation (39.9 ac)		Site contingent on willing seller; planning underway	SANDAG/CT/resource agencies in discussions to move forward with conceptual plans	Provides connectivity to adjacent lagoon system	46.1 ac restoration (upland & wetland) & preservation (upland) with a cost ratio TBD.	SANDAG/CT will provide management endowment	Extinguishes development potential near Batiquitos & preserves high quality habitat
Deer Canyon II	Upland re-establishment (14 ac)				Site in escrow for purchase and planning underway	SANDAG/CT/resource agencies in discussions to move forward with conceptual plans	Provides connectivity to adjacent Pardee/Deer Canyon enhancement efforts in Penasquitos watershed	14 ac establishment (upland) at approx. \$110K per ac	SANDAG/CT will provide management endowment after site is restored and turned over to City of San Diego	Expands establishment of uplands in the Carmel Creek drainage of the Penasquitos watershed & supports ongoing enhancement efforts
Restoration & Preservation/Enhancement – Enhancement Pool										
Laser			Upland (4.1 ac) & wetland (0.02) preservation		Site purchased; I-5 NCC Project EIR/EIS underway	SANDAG/CT/resource agencies in discussions to move forward with long-term management	Provides connectivity to adjacent lagoon system and future enhancement efforts (SELRP)	4.12 ac preservation (upland & wetland) at approx. \$322K per ac	SANDAG/CT will provide management endowment to San Elijo Lagoon Conservancy for management	Extinguishes development potential near San Elijo & preserves high quality habitat
La Costa			Upland preservation (18.8 ac)		Site purchased; I-5 NCC Project EIR/EIS underway	SANDAG/CT/resource agencies in discussions to move forward with long-term management	Provides connectivity to adjacent lagoon system and ongoing enhancement/ maintenance efforts	18.8 ac preservation (upland) at 17pprox.. \$72K per ac	SANDAG/CT will provide management endowment	Extinguishes development potential near Batiquitos & preserves high quality habitat
San Elijo Lagoon Restoration Project (SELRP)		Offers large-scale upland and wetland establishment & enhancement at San Elijo Lagoon			Environmental permit review processes underway (pending selection of alternative)	Strong support associated with SELRP	Facilitates system-wide improvements associated with SELRP	Pending selection of alternative & approval of conceptual plans by resource agencies	SANDAG/CT will provide management endowment as part of SELRP	Supports ongoing enhancement efforts & provides new hydraulic connections and halts loss of mudflat habitat
Buena Vista Lagoon Restoration Project		Offers large-scale wetland establishment & enhancement at Buena Vista Lagoon			Environmental permit review processes underway (pending selection of alternative)	Strong support associated with BVLRP	Facilitates system-wide improvements (pending selection of alternative)	Pending selection of alternative & approval of conceptual plans by agencies	SANDAG/CT will provide management endowment as part of BVLRP	Supports ongoing enhancement efforts

Table 3. Assessment of Potential Mitigation Projects

Mitigation Site	Mitigation Type				Mitigation Status					
	No-Net Loss Establishment & Re-Establishment	Restoration (Rehabilitation)	Preservation & Enhancement	Hydraulic Lift	“Shovel Ready”	Stakeholder Support	Watershed Focused Ecosystem Enhancement	High Ecological Benefit to Cost Ratio	Long-term Maintenance & Management	Provides a Unique Value or Opportunity
Bridge Optimization										
Batiquitos I-5 Bridge Lengthening				Meets optimization goals for lagoon	Optimization study complete; I-5 NCC Project EIR/EIS underway	Strong support amongst resource agencies & lagoon foundations	Provides new intertidal habitat, reduces tidal muting/lag times & reduces historic wetland fill	Based on current and ongoing maintenance & dredging programs	SANDAG/CT will provide management endowment to support ongoing maintenance	Supports ongoing enhancement efforts & provides new hydraulic connections
San Elijo I-5 Bridge Lengthening (See Lagoon Restoration Above)	Supports establishment efforts within San Elijo through increasing hydrology east of I-5	Supports enhancement efforts within San Elijo through increasing hydrology east of I-5		Meets optimization goals for lagoon restoration alternatives	Optimization study complete; I-5 NCC Project EIR/EIS and San Elijo Lagoon Restoration Project EIR/EIS underway	Strong support amongst resource agencies & lagoon foundations	Facilitates SELRP, reduces tidal muting/lag times & reduces historic wetland fill	Pending selection of SELRP alternative; proposed bridge length same for all alternatives	SANDAG/CT will provide management endowment to support ongoing maintenance	Supports ongoing enhancement efforts & provides new hydraulic connections
San Elijo LOSSAN Bridge Lengthening (Assumes SELRP Alt 2A)	Supports establishment efforts within San Elijo through increasing hydrology	Supports enhancement efforts within San Elijo through increasing hydrology		Meets optimization goals for lagoon restoration alternatives	Optimization study complete; San Elijo Lagoon Restoration Project EIR/EIS underway	Strong support amongst resource agencies & lagoon foundations	Facilitates SELRP, reduces tidal muting/lag times & reduces historic wetland fill	Pending selection of SELRP alternative	SANDAG/CT will provide management endowment to support ongoing maintenance	Supports ongoing enhancement efforts & provides new hydraulic connections
Buena Vista I-5 Bridge Lengthening				Meets optimization goals for potential future enhancement project alternatives	Optimization study complete; I-5 NCC Project EIR/EIS underway	Strong support amongst resource agencies	Facilitates Buena Vista lagoon enhancement and fluvial flows			Supports potential future lagoon enhancement efforts
Lagoon Management Endowments – Contingency Pool										
Lagoon Management/ Endowment for Los Penasquitos and Batiquitos Lagoons		Offers restoration and enhancement through inlet maintenance/ dredging in accordance with agency requirements		Meets optimization goals for lagoons for long term maintenance and enhancement	An endowment account and an oversight committee to be established	Strong support amongst resource agencies & lagoon foundations	Facilitates system-wide improvements through ongoing maintenance	Based on current and ongoing maintenance & dredging programs	SANDAG/CT will provide management endowment to support ongoing maintenance	Supports ongoing enhancement efforts & provides continued funding to assure uninterrupted hydraulic connections

Table 4. Mitigation Projects and Estimated Funding Allocations

Mitigation Site	Funding (Millions \$2012)¹	Capital Cost (Millions \$2012)
No Net Loss Pool		
San Dieguito W19 Restoration Site	\$48.6 ²	--
Hallmark East and West Mitigation Site	\$9.6	--
Batiquitos Bluffs Mitigation Site	TBD ³	--
Dean Parcel Mitigation Site	\$2.65	--
Deer Canyon II Mitigation Site	\$1.6	--
Subtotal	\$62.45	--
Enhancement Pool		
Laser Parcel Preservation Site	\$1.61	--
La Costa Parcel Preservation Site	\$1.43	--
San Elijo Lagoon Restoration Project	\$90.0 ⁴	--
Buena Vista Lagoon Restoration Project		--
Subtotal	\$93.04	--
Bridge Optimization		
Batiquitos I-5 Bridge Lengthening	--	\$8.0
San Elijo I-5 Bridge Lengthening	--	\$16.0
San Elijo LOSSAN Bridge Lengthening Assumes SELRP Alt 2A	--	\$25.1
Buena Vista I-5 Bridge Lengthening	--	\$7.0
Subtotal	--	\$56.1
Contingency Pool		
Lagoon Management/Endowment for Los Penasquitos & Batiquitos Lagoons	\$10.0	--
Subtotal	\$10.0	--
Lagoon Management Technical Support⁵		
Scientific Advisory Committee	\$1.0	--
Subtotal	\$1.0	--
PROGRAM TOTAL	\$166.49	\$56.1

¹ All compensatory mitigation projects include funding for long-term maintenance and management.

² This cost could be increased if Southern California Edison (SCE) requires SANDAG to pay for a portion of lagoon mouth maintenance activities, although SCE received acreage of credit for keeping the lagoon mouth open.

³ Contingent upon willing seller, and reasonable price.

⁴ These restoration planning efforts are in process, and final cost estimates are not available at this time. However, at least one large-scale lagoon restoration at Buena Vista Lagoon or San Elijo Lagoon will be funded in full through the REMP provided that it results in a restored coastal wetland ecosystem that is in alignment with regulatory agency and resource needs in the NCC (and impacts caused by the NCC program of improvements).

⁵ An interagency advisory committee will be formed to evaluate, prioritize, and oversee the implementation of mitigation (establishment (no net loss), restoration, and preservation/enhancement) projects.

b. Potential Mitigation Opportunities

It is recognized that new opportunities for various types of resource improvements may become available in the corridor after approval of the PWP/TREP and authorization by other resource and regulatory agencies, due to factors such as additional funding availability, completed habitat restoration plans, or land acquisition options. In addition, some mitigation opportunities which would promote large-scale resource protection may be considered more critical for the region, while others which would contribute to improving a smaller area within the corridor may be considered less necessary for achieving regional goals. Widespread improvements to natural resources in the NCC require a unique, comprehensive approach with input from multiple resource and regulatory agencies and stakeholders. These factors make it necessary to maintain flexibility when considering the most appropriate mitigation opportunities.

The REMP is the framework used to describe the corridor-wide compensatory mitigation opportunities available at this time. The REMP framework provides flexibility for supplementing the mitigation opportunities package when new opportunities arise, which could be authorized by amending the REMP to include new mitigation opportunities associated with future Coastal Commission approvals (project-specific NOIDS, CDPs or federal consistency review as applicable) and for authorization by other resource and regulatory agencies (see Implementation Framework section below).

c. Implementation Framework

The REMP Implementation Framework includes, as an integral element of the PWP/TREP Implementation Phasing Plan, advance compensatory mitigation to ensure no net loss of resource functions and services at any time within the NCC by avoiding temporal losses during construction activities. In addition, implementation of multiple transportation projects requires consideration of their synergy with other planned improvements in the corridor. For example, replacement of the I-5 bridge at San Elijo Lagoon should be installed concurrently with the replacement of the LOSSAN bridge at the new inlet, if needed, and with implementation of the San Elijo Lagoon Restoration Project, to avoid unnecessary impacts in the lagoon, limit temporary impacts by sharing access and staging areas, and better ensure restoration project success.

The REMP Implementation Framework is designed to achieve the overall goal of the REMP to enhance and restore the biodiversity and habitat functions and services of critical ecological coastal resources within the NCC as compensatory mitigation in advance of unavoidable impacts associated with planned transportation and community enhancement projects by focusing on meeting six primary objectives:

1. To provide a planning level compensatory mitigation plan to facilitate the review and authorization of individual PWP/TREP projects by regulatory agencies that have maximized avoidance and minimization of resource functions and services.
2. To provide a framework for developing site-specific Habitat Mitigation and Monitoring Plans (HMMPs) and Long term Management Plans (LTMP) for each REMP mitigation project (except HMMPs are not required for pure preservation projects, as discussed later in this document).
3. To provide phasing that appropriately balances PWP/TREP transportation infrastructure and community enhancement project impacts with compensatory mitigation projects that achieve no-net loss of natural resource acreage or functions and services within the NCC at any time.
4. To initiate implementation of the identified mitigation opportunities immediately upon REMP approval to achieve advance mitigation.
5. To establish a track record of effective project implementation and stewardship; and,

6. To provide the basis for monitoring and adaptive management that will inform the long term implementation of the REMP and the effectiveness of specific infrastructure improvements and mitigation efforts.

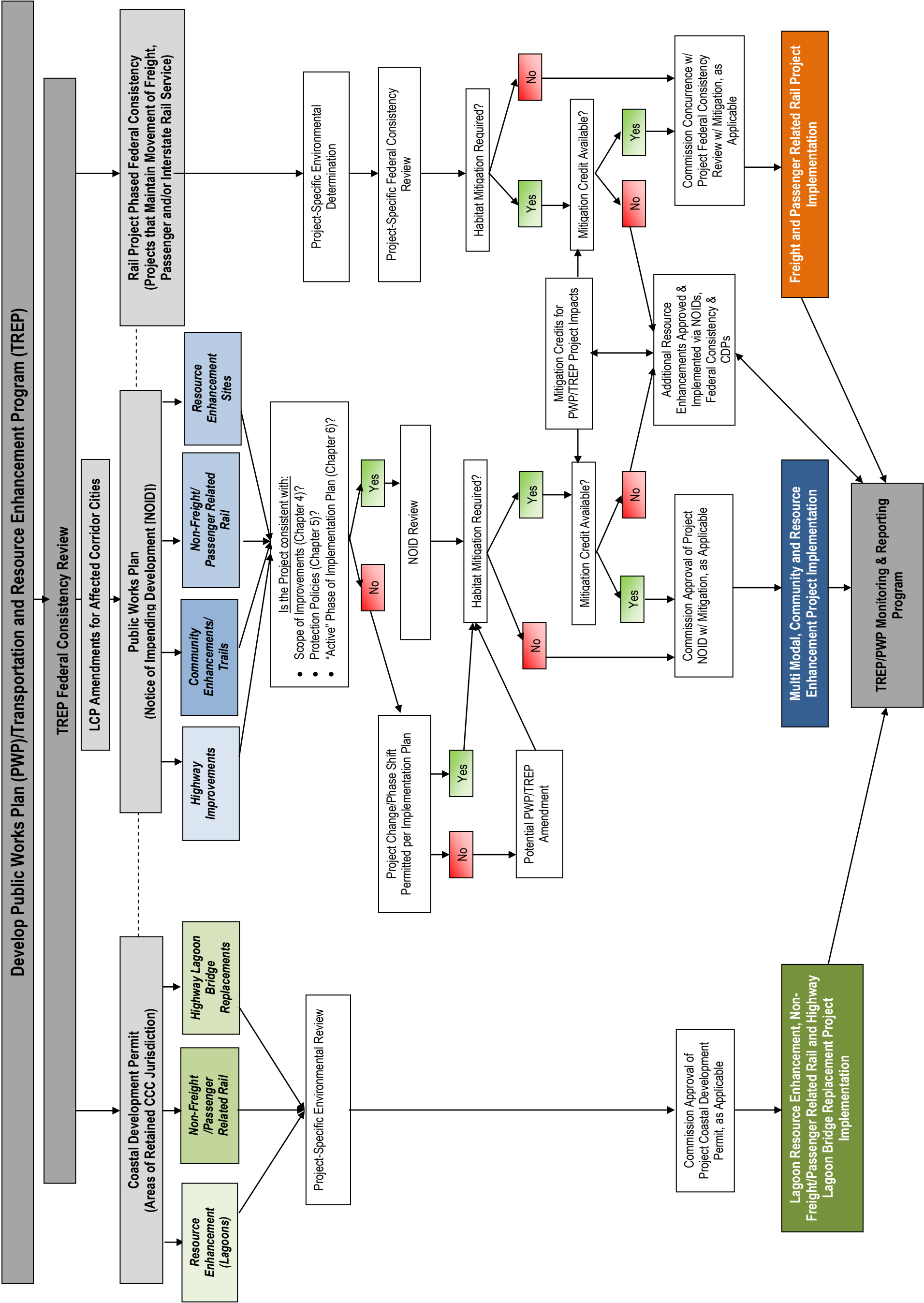
Tables 5A and 5B identify the PWP/TREP Implementation Phasing Plan for transportation infrastructure and community enhancement project impacts and corresponding compensatory mitigation. The Phasing Plan was developed to allow for resource credits to be available in advance of each phase of PWP/TREP project impacts. As described previously, each phase of PWP/TREP projects and associated mitigation will be submitted to the applicable agencies for their review and approval as part of their permit processes. The agencies would issue authorizations to proceed prior to final PWP/TREP project submittal to the Coastal Commission for approval as a part of a NOID, CDP, or federal consistency review submittal (see Figure 2 for a summary overview of the Coastal Commission approval processes). Overall PWP/TREP project impacts and REMP accounting will be tracked with a single credit ledger that tracks project implementation timing, permanent and temporary impacts, and credit establishment and release. Post-construction reports would be submitted to resource and regulatory agencies for every authorized PWP/TREP project to include as-build reports, final delineation of permanent and temporary impacts, and a summary of the initial activities required to restore temporary impact areas. The PWP/TREP credit ledger will be updated according to the final post-project construction reports. The accounting system will ensure the overall program implementation is consistent with approved impacts, and meets required compensatory mitigation requirements and overall resource benefits within the NCC.

Compensatory mitigation site maintenance and monitoring will be tracked and reported pursuant to final, site-specific HMMPs and annual site monitoring reports submitted to the REMP Working Group and resource and regulatory agencies as appropriate in order to ensure that the overall program implementation is consistent with agency-approved impacts and meets the required mitigation and resource benefits identified in the PWP/TREP Implementation Phasing Plan. Each compensatory mitigation site will have independent funding and an HMMP, and if recommendations for adaptive management and remedial measures are made by the restoration or resource manager, or by the REMP Working Group, they will occur within the first appropriate season following recommendation. This will ensure REMP compensatory mitigation sites meet established performance standards. In most cases, problems on a mitigation site can be corrected through additional grading, planting, weeding, or soil amendment. However, if a site develops a fatal flaw that cannot be corrected onsite, SANDAG and Caltrans, with consultation and direction from the REMP Working Group and resource and regulatory agencies, as appropriate, will coordinate to identify and implement alternate mitigation.

In addition, the PWP/TREP Implementation Phasing Plan ensures that all PWP/TREP compensatory mitigation projects are reviewed and monitored as a part of the development review process for all transportation infrastructure and community enhancement projects included in the PWP/TREP, regardless of the specific Coastal Commission approval process required for each REMP project. The PWP/TREP Implementation Phasing Plan also includes a monitoring and reporting program that will provide a yearly "checklist"-type assessment and summary of information and updates to the Phasing Plan Framework in order to document projects and associated mitigation requirements completed, and to assess cumulative PWP/TREP phase impacts, benefits and available resource mitigation credits for future project and/or phase implementation as identified in the compensatory mitigation credit ledger. This annual report will be submitted to the REMP Working Group and Scientific Advisory Committee for large-scale no net loss wetland mitigation and restoration projects, as defined in approved site-specific HMMPs, for review and written approval.

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FIGURE 2: TREP, PWP/NOID, AND CDP COASTAL COMMISSION APPROVAL PROCESS



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IV. Credit Establishment and Release

A compensatory mitigation “credit” is a unit of measure (e.g., an acre, linear foot, functional or conditional measure or other suitable metric) representing the accrual or attainment of aquatic or terrestrial area and functions at a mitigation site. The REMP credits will be further defined in the site-specific HMMPs by the mitigation type (establishment, re-establishment, rehabilitation, enhancement, or preservation), the resource type (non-wetland waters of the U.S., wetlands waters of the U.S., aquatic resource buffer (i.e. riparian and uplands), and habitat type (tidal wetlands, freshwater wetlands, riparian, sage scrub, etc.)

Mitigation credit availability is based on the timing of site-specific HMMP approval, mitigation project implementation, and attainment of specific site protections and project performance criteria. The REMP coordinates with the larger PWP/TREP Implementation Phasing Plan to ensure mitigation credits are available when PWP/TREP projects are implemented to ensure resource protections are in advance to the maximum extent possible, while achieving a balance of transportation infrastructure and community enhancement projects in each phase. Under these procedures, a percentage of mitigation credits will be released at the time the final site-specific HMMP and LTMPs (draft and/or final) are approved by resource and regulatory agencies and both site protections and funding mechanisms are secured. Additional percentages of mitigation credits will be released after site grading and planting is complete (as-builts), and interim performance standards are achieved. More specific Corps crediting informational needs and site evaluation requirements are attached in Appendix A. See the specific credit release schedules described below.

The following credit release is for **pure preservation mitigation sites** (for CCC purposes to be utilized as mitigation for temporal losses associated with long term temporary impacts; an HMMP is not required for a pure preservation mitigation site):

- **Release 1:** 25% of the total anticipated Waters of the U.S., State wetland, transitional habitat, and upland habitat credits upon resource and regulatory agency approval of the site for compensatory mitigation, written proof the site was purchased in full, and submission of a Draft LTMP.
- **Release 2:** 25% of the total anticipated Waters of the U.S., State wetland, transitional habitat, and upland habitat credits (50% cumulative total) upon resource and regulatory agency approval of the Final LTMP and draft site protection mechanism.
- **Final Release:** 50% of the total anticipated Waters of the U.S., State wetland, transitional habitat, and upland habitat credits (100% cumulative total) upon identification of the resource and regulatory agency-approved land manager and 100% of the Endowment Fund has been provided. If an agency-approved land manager has not been determined at the time of the final release, Caltrans will assume the role of land manager in perpetuity or until such time as an agency-approved land manager can be determined. Release 2 is a prerequisite for the final release.

The following credit release is for **tidal wetland compensatory mitigation sites** based on a 10 year monitoring schedule (for CCC purposes to be utilized for permanent impacts to wetland resources):

- **Release 1:** 15% of the total anticipated Waters of the U.S. and State wetland credits upon resource and regulatory agency approval of the final HMMP, final LTMP, draft site protection mechanism, and 100% of the Endowment Fund.

- **Release 2:** Up to an additional 15% of the total anticipated Waters of the U.S. and State wetland credits (30% cumulative total) when construction and plantings are completed and as-built drawings have been reviewed by resource and regulatory agencies and approved by the Corps and Coastal Commission in writing. Release 1 is a prerequisite for Release 2.
- **Release 3:** Up to an additional 10% of the total anticipated Waters of the U.S. and State wetland credits (40% cumulative total) when the Third Year Performance Standards have been attained, as documented in an annual monitoring report. Release 2 is a prerequisite for release 3.
- **Release 4:** Up to an additional 10% of the total anticipated Waters of the U.S. and State wetland credits (50% cumulative total) when the Fifth Year Performance Standards have been attained as documented in an annual monitoring report. Release 3 is a prerequisite for release 4.
- **Release 5:** Up to an additional 25% of the total anticipated Waters of the U.S. and State wetland credits (75% cumulative total) when the Seventh Year Performance Standards have been attained as documented in an annual monitoring report and submittal of a Waters of the U.S. and the State jurisdictional determination and delineation. Release 4 is a prerequisite for release 5.
- **Final Release:** Up to an additional 25% of Waters of the U.S. and State wetland credits (100% cumulative total) when i) the Final Monitoring Report as required by the final HMMP has been submitted, ii) final Performance Standards have been attained, iii) any required remedial actions are completed and deemed successful, iv) any additional performance standards required as a result of required remedial actions have been attained, and v) the site has been successfully transferred to the resource and regulatory agency approved long term manager. If an agency-approved long term land manager has not been determined at the time of the final release, Caltrans will assume the role of land manager in perpetuity or until such time as an agency-approved land manager can be determined. Release 5 is a prerequisite for the Final Release.

The following credit release is for all **upland and non-tidal wetland and other aquatic resource** compensatory mitigation sites (for CCC purposes to be utilized for permanent impacts to upland habitats):

- **Release 1:** 15% of the total anticipated Waters of the U.S. and State upland credits upon resource and regulatory agency approval of the final HMMP, final LTMP, draft site protection mechanism, and 100% of the Endowment Fund.
- **Release 2:** Up to an additional 15% of the total anticipated Waters of the U.S. and State upland credits (30% cumulative total) when as-built drawings have been reviewed by resource and regulatory agencies and approved by the Corps and Coastal Commission in writing. Release 1 is a prerequisite for Release 2.
- **Release 3:** Up to an additional 10% of the total anticipated Waters of the U.S. and State upland credits (40% cumulative total) when the Second Year Performance Standards have

been attained as documented in an annual monitoring report. Release 2 is a prerequisite for Release 3.

- **Release 4:** Up to an additional 10% of the total anticipated Waters of the U.S. and State upland credits (50% cumulative total) when the Third Year Performance Standards have been attained as documented in an annual monitoring report. Release 3 is a prerequisite for Release 4.
- **Release 5:** Up to an additional 25% of the total anticipated Waters of the U.S. and State upland credits (75% cumulative total) when the Fourth Year Performance Standards have been attained as documented in an annual monitoring report, and submittal of a Waters of the U.S. and the State jurisdictional determination and delineation for wetland mitigation sites. Release 4 is a prerequisite for Release 5.
- **Final Release:** Up to an additional 25% of Waters of the U.S. and State upland credits (100% cumulative total) when: i) the Final Monitoring Report as required by the final HMMP has been submitted, ii) final Performance Standards have been attained, iii) any required remedial actions are completed and deemed successful, iv) any additional performance standards required as a result of required remedial actions have been attained, and v) a resource and regulatory agency approved long term manager has been identified. If an agency-approved land manager has not been determined at the time of the final release, Caltrans will assume the role of land manager in perpetuity or until such time as an agency-approved land manager can be determined. Release 5 is a prerequisite for the Final Release.

a. Ecological Performance Standards

Ecological performance standards are benchmarks to be used as indicators of the relative progress towards achieving site-specific habitat establishment, restoration, and enhancement goals and ecosystem types. Performance standards will be developed for each compensatory mitigation site and provided in the site-specific Habitat Mitigation and Monitoring Plans (HMMPs) for review and approval by the REMP Working Group and resource and regulatory agencies, as appropriate. Performance standards will be developed for a 10-year monitoring schedule for tidal wetlands and a 5-year monitoring schedule for all upland habitats and other aquatic resource types.

The interim performance standards will be based on realistic benchmarks anticipated based on the design of the site, reference site data, and best professional judgment of experts in the field of restoration for the specific ecosystem. Reference sites will be used where appropriate and will be within close proximity or adjacent to the compensatory mitigation site unless otherwise justified (i.e. lagoons) and represent the physical, hydrological, and biological functions or conditions anticipated for the mitigation site. The REMP Working Group, as needed for significant wetlands or uplands no net loss mitigation sites, shall select appropriate reference site locations. Performance standards will either be fixed standards or relative standards compared to the selected reference sites. One or more performance standards will be developed in each of five categories: Physical, Hydrology, Water quality, Flora, and Fauna unless otherwise approved by the REMP Working Group and resource and regulatory agencies, as appropriate. Performance standards will be assessed based on the results of quantitative and qualitative sampling. A more thorough presentation of specific Corps evaluation requirements as they relate to performance standards are attached in Appendix A.

Performance standards must be assigned with the intent to provide resource and regulatory agencies with a high level of confidence that, once performance standards are achieved, the restored habitat is providing the desired ecological functions and will be self-sustainable under a long term management program. Once the mitigation areas are established, restored, and/or enhanced a comparative analysis of pre-and post-mitigation site conditions will demonstrate the improvements in ecological functions. Reference sites will be utilized and will be monitored pre- and post-construction of the mitigation site to account for regional trends in the habitat type. Continued success of the restored habitat, without supplemental irrigation or significant remedial actions, must be demonstrated for three consecutive years prior to regulatory agency sign-off and release of the final credits.

Caltrans and SANDAG (permittees) shall be fully responsible for any failure to meet assigned performance standards. The REMP Working Group can modify performance standards based on site conditions if modified performance standards are equal to or superior to the originally approved standards. If approved performance standards are not achieved, the REMP Working Group shall prescribe remedial measures with guidance from the Scientific Advisory Committee, which shall be immediately implemented by the permittee. If the permittees do not agree that remediation is necessary, the matter may be set for hearing and disposition by the Coastal Commission.

In measuring the performance of wetland or other aquatic compensatory mitigation sites, the following physical and biological standards will be utilized as appropriate. The following list includes all performance standards available for inclusion within each individual HMMP. The Biological Opinion issued by the USFWS already identifies specific information that must be contained in each HMMP, and other conditions may be identified in permits issued by other agencies. The REMP Working Group will determine what suite of the described performance standards shall be utilized as a component of the final HMMP review process.

- 1) **Topography.** The wetland/and or aquatic habitat shall not undergo major topographic degradation (such as excessive erosion or sedimentation) and shall maintain a specified final wetland acreage amount.
- 2) **Water Quality.** Water quality variables (to be specified) shall be similar to reference wetlands or aquatic habitat.
- 3) **Tidal Prism.** The designed tidal prism shall be maintained, and tidal flushing shall not be interrupted.
- 4) **Habitat Areas.** The area of different habitats shall not vary by more than 10% from the area indicated in the final HMMP.
- 5) **Biological Communities.** Community composition and the total densities and number of species of fish, macroinvertebrates and birds shall be similar to that in similar habitats in the reference wetlands.
- 6) **Vegetation.** The proportion of total vegetative cover and open space and plant species diversity in the marsh shall be similar to those proportions and diversity found in the reference sites. The percent cover of algae shall be similar to the percent cover found in the reference sites.
- 7) ***Spartina* Canopy Architecture.** The restored wetland shall have a canopy architecture that is similar in distribution to the reference sites, with an equivalent proportion of stems over 3 feet tall.

- 8) **Reproductive Success.** Certain plant species, as specified in the HMMP, shall have demonstrated reproduction at least once in three years.
- 9) **Food Chain Support.** The food chain support provided to birds shall be similar to that provided by the reference sites, as determined by feeding activity of the birds.
- 10) **Exotics.** The important functions of the wetland shall not be impaired by exotic species, including zero (0) percent coverage will be maintained for Cal-IPC's "Invasive Plant Inventory" species, and no more than five (5) percent coverage for other exotic/weed species.

In measuring the performance of upland habitat mitigation sites, the following physical and biological standards will be utilized. The following list includes all performance standards available for inclusion within each individual HMMP. The Biological Opinion issued by the USFWS already identifies specific information that must be contained in each HMMP, and other conditions may be identified in permits issued by other agencies. The REMP Working Group will determine what suite of the described performance standards shall be utilized as a component of the final HMMP review process.

- 1) **Vegetation Cover.** The proportion of total vegetative cover of shrubs, subshrubs, herbaceous and open space in the upland habitat shall be similar to those proportions found in the reference sites.
- 2) **Species Diversity.** Community composition and species diversity for both perennial and annual plant species shall be similar to that in similar upland habitats found in the reference sites.
- 3) **Exotics** The important functions of the upland habitat shall not be impaired by exotic species, including zero (0) percent coverage will be maintained for Cal-IPC's "Invasive Plant Inventory" species, and no more than five (5) percent coverage for other exotic/weed species.

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Table 5a. Permanent Wetland Impacts vs. No Net Loss Mitigation (By Year/Phase)

Phase	Transportation Improvements	Impacts (Acres)	Mitigation Site	Wetland Establishment (Acres)	Wetland Restoration (Acres)	Available No Net Loss Mitigation (Releases 1 & 2 @ 30%)	Available No Net Loss Mitigation (Release 3 @ 10%)	Available No Net Loss Mitigation (Release 4 @ 10%)	Available No Net Loss Mitigation (Release 5 @ 25%)	Available No Net Loss Mitigation (Final @ 25%)	Total Mitigation (Acres)	
2010-2020	YEAR 2013											
	5a - Oceanside Through Track (2013)	0	None underway	0	0	0						
	35 - Poinsettia Station Improvements (2013)	0										
	TOTAL IMPACT (2013)	0										TOTAL AVAILABLE MITIGATION (2013)
	TOTAL ROLLOVER MITIGATION AVAILABLE (AFTER IMPACTS SUBTRACTED)						0					
	YEAR 2014											
	15 - CP Cardiff to CP Craven - San Elijo Lagoon Double Track (2014)	4.47	Hallmark (Agua Hedionda)	4.37	0.97	1.31						
			Regional Lagoon Maintenance Program (Endowment Established; *10% Proposed for Release Upon Establishment, Contingency Pool project)	20.7	0	2.07*						
	TOTAL IMPACT (2014)	4.47	TOTAL AVAILABLE MITIGATION (2014)		3.38							
	TOTAL ROLLOVER MITIGATION AVAILABLE (AFTER 2013 + 2014 IMPACTS SUBTRACTED)						-1.09					
	YEAR 2015											
	2 HOV from Lomas Santa Fe to Union St, including San Elijo Bridge Replacement, Manchester DAR, bike paths/trails & ultimate grading (Phase 1A: 2015-2018)	0.53	Hallmark (Agua Hedionda)	Ongoing; year 1 monitoring			0.53					
	1 HOV from Union St to SR 78 (Phase 1B: 2015-2018)	0.79	Regional Lagoon Maintenance Program	Ongoing; credit released when adequate funds established in escrow account and/or contingencies required								
	3 - CP Eastbrook to CP Shell Double Track (2015)	0.36	San Dieguito W19 (San Dieguito) (Release 1 only)*	47.3	0	7.1*						
	6 - Carlsbad Village Double Track, includes Buena Vista Bridge Replacement (2015)	0.26										
	TOTAL IMPACT (2015)	1.94	MITIGATION RELEASED BY YEAR (2015)			7.1	0.53					
	TOTAL AVAILABLE MITIGATION (2015)						7.63					
	AVAILABLE MITIGATION SUBTOTAL (2014 ROLLOVER + 2015)						6.54					
	TOTAL ROLLOVER MITIGATION AVAILABLE (AFTER 2015 IMPACTS SUBTRACTED)						4.6					
	YEARS 2016-2020											
	2 HOV from La Jolla Village Dr to I-5/I-805 merge, includes Voigt DAR & I-5 /I-805 HOV Flyover Connector (Phase 1C: 2017-2020)	0.13	Hallmark (Agua Hedionda)	Ongoing; year 2 monitoring			0.53					
	Advanced Batiquitos Lagoon Bridge Replacement (Phase 2D: 2018-2019)	3.62	Regional Lagoon Maintenance Program	Ongoing; credit released when adequate funds established in escrow account and/or contingencies required								
	10 - CP Ponto to CP Moonlight Double Track, includes Batiquitos Bridge Replacement (2016)	0.01	San Dieguito W19 (San Dieguito)	Ongoing; year 1 monitoring (Release 2 + Release 3)*			11.83*					
	13 - Encinitas Station Parking	0										

Table 5a. Permanent Wetland Impacts vs. No Net Loss Mitigation (By Year/Phase)

Phase	Transportation Improvements	Impacts (Acres)	Mitigation Site	Wetland Establishment (Acres)	Wetland Restoration (Acres)	Available No Net Loss Mitigation (Releases 1 & 2 @ 30%)	Available No Net Loss Mitigation (Release 3 @ 10%)	Available No Net Loss Mitigation (Release 4 @ 10%)	Available No Net Loss Mitigation (Release 5 @ 25%)	Available No Net Loss Mitigation (Final @ 25%)	Total Mitigation (Acres)
	16 - Solana Beach Station Parking	0									
	17 - San Dieguito Bridge/Double Track, includes San Dieguito Bridge Replacement (2016)	2.35									
	TOTAL IMPACT (2016-2020)	6.11	MITIGATION RELEASED BY YEAR (2016-2020)					11.83	0.53		
	TOTAL AVAILABLE MITIGATION (2016-2020)								12.36		
	AVAILABLE MITIGATION SUBTOTAL (2015 ROLLOVER + 2016-2020)								16.96		
	TOTAL ROLLOVER MITIGATION AVAILABLE (AFTER 2016-2020 IMPACTS SUBTRACTED)								10.85		
	INITIAL-TERM TOTAL IMPACT	12.52	INITIAL-TERM TOTAL MITIGATION								
2021-2030	2 ML from I-5/I-805 to SR 56, including new Sorrento Valley Road bike/maintenance vehicle bridge, trails under I-5 at Carmel Creek, widening of I-5 at Carmel Creek, and trail under merge (Phase 2A: 2020-2022)	+0.41 (creation)	Hallmark (Agua Hedionda) San Dieguito W19 (San Dieguito) Regional Lagoon Maintenance Program	Ongoing	Full mitigation/sign-off anticipated by 2021						
	2 ML from SR 56 to Lomas Santa Fe Dr, including San Dieguito River Bridge Widening and bike paths/trails (Phase 2B: 2020-2025)	3.59									
	2 ML from Union St to Palomar Airport Rd (Phase 2C: 2025-2030)	1.33									
	5b - Oceanside Station Parking	0									
	7 - Carlsbad Village Station Parking	0									
	9 - Carlsbad Poinsettia Station Parking	0									
	14 - CP Moonlight to CP Swami Double Track	0									
	18 - Del Mar Fairgrounds Platform	0									
	MID-TERM TOTAL IMPACT	4.51	MID-TERM TOTAL AVAILABLE MITIGATION								60.29
	TOTAL MID-TERM ROLLOVER MITIGATION AVAILABLE (AFTER IMPACTS SUBTRACTED)										55.78

Table 5a. Permanent Wetland Impacts vs. No Net Loss Mitigation (By Year/Phase)

Phase	Transportation Improvements	Impacts (Acres)	Mitigation Site	Wetland Establishment (Acres)	Wetland Restoration (Acres)	Available No Net Loss Mitigation (Releases 1 & 2 @ 30%)	Available No Net Loss Mitigation (Release 3 @ 10%)	Available No Net Loss Mitigation (Release 4 @ 10%)	Available No Net Loss Mitigation (Release 5 @ 25%)	Available No Net Loss Mitigation (Final @ 25%)	Total Mitigation (Acres)	
2031-2040	2-4 ML from Palomar Airport Rd to SR 76, includes Agua Hedionda & Buena Vista Lagoon Bridge Replacements (Phase 3A-3C: 2030-2035)	5.76	Hallmark (Agua Hedionda) San Dieguito W19 (San Dieguito) Regional Lagoon Maintenance Program	Ongoing		Full mitigation /sign-off anticipated by 2021						
	Construct Braided Ramps from Roselle to Genesee (Phase 3D: 2030-2035)	1.11										
	LONG-TERM TOTAL IMPACT		6.87	LONG-TERM TOTAL AVAILABLE MITIGATION								55.78
	TOTAL ROLLOVER MITIGATION AVAILABLE (AFTER IMPACTS SUBTRACTED)											48.91
NCC TOTALS (ALL PHASES EXCLUDING VISION PHASE¹)		23.9	Sites identified above.	71.84	0.97	72.81						
2041-2050	11 - Leucadia Blvd Grade Separation	0	Hallmark (Agua Hedionda) San Dieguito W19 (San Dieguito) Regional Lagoon Maintenance Program	Ongoing		Full mitigation /sign-off anticipated by 2021						
	20/21 - Del Mar Tunnel -Camino Del Mar / Penasquitos Double Track Option -I-5 / Penasquitos Option	2.01-2.77										
	22b - Penasquitos Double Track	9.87										
	I-5/SR-78	3.5										
	VISION PHASE¹ TOTAL IMPACT		15.38 – 16.14	VISION PHASE TOTAL AVAILABLE MITIGATION								48.91
	TOTAL “ENHANCEMENT” FOLLOWING PROGRAM IMPLEMENTATION											32.77 – 33.53

Note:

1. “Vision” Phase projects are programmatic in nature, and currently scheduled for implementation in years 2041 to 2050. At a future date and prior to their implementation, project-specific information would be made available to further refine the impact estimates presented herein.

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Table 5b: Permanent Upland Habitat Impacts vs. No Net Loss Mitigation (By Year/Phase)

Phase	Transportation Improvements	Impacts (Acres)	Mitigation Site	Upland Habitat Establishment (Acres)	Upland Habitat Restoration (Acres)	Total Available No Net Loss Mitigation (Releases 1 & 2 @ 30%)	Total Available No Net Loss Mitigation (Release 3 @ 10%)	Total Available No Net Loss Mitigation (Release 4 @ 10%)	Total Available No Net Loss Mitigation (Release 5 @ 25%)	Total Available No Net Loss Mitigation (Final @ 25%)	Total Mitigation (Acres)
2010-2020	YEAR 2013										
	5a - Oceanside Through Track (2013)	0	Deer Canyon II (Los Penasquitos)	14	0	4.2					
	35 - Poinsettia Station Improvements (2013)	0	Dean Family Trust (San Dieguito)	20.8	0	6.24					
	TOTAL IMPACT (2013)	0	TOTAL AVAILABLE MITIGATION (2013)			10.44					
	TOTAL ROLLOVER MITIGATION AVAILABLE (AFTER 2013 IMPACTS SUBTRACTED)					10.44					
	YEAR 2014										
	15 - CP Cardiff to CP Craven - San Elijo Lagoon Double Track (2014)	0	Deer Canyon II (Los Penasquitos)	Ongoing; year 1 monitoring			1.4				
			Dean Family Trust (San Dieguito)	Ongoing; year 1 monitoring			2.08				
			Hallmark (Agua Hedionda)	3.5	6.6	3.03					
	TOTAL IMPACT (2014)	0	MITIGATION RELEASED BY YEAR (2014)			3.03	3.48				
	TOTAL AVAILABLE MITIGATION (2014)						6.51				
	AVAILABLE MITIGATION SUBTOTAL (2013 ROLLOVER + 2014)						16.95				
	TOTAL ROLLOVER MITIGATION AVAILABLE (AFTER 2014 IMPACTS SUBTRACTED)						16.95				
	YEAR 2015										
	2 HOV from Lomas Santa Fe to Union St, including San Elijo Bridge Replacement, Manchester DAR, bike paths/trails & ultimate grading (Phase 1A: 2015- 2018)	22.08	Deer Canyon II (Los Penasquitos)	Ongoing; year 2 monitoring				1.4			
	1 HOV from Union St to SR 78 (Phase 1B: 2015- 2018)	1.06	Dean Family Trust (San Dieguito)	Ongoing; year 2 monitoring				2.08			
	3 - CP Eastbrook to CP Shell Double Track (2015)	0	Hallmark (Agua Hedionda)	Ongoing; year 1 monitoring			1.01				
	6 - Carlsbad Village Double Track, includes Buena Vista Bridge Replacement (2015)	0									
	TOTAL IMPACT (2015)	23.14	MITIGATION RELEASED BY YEAR (2015)			1.01	3.48				
	TOTAL AVAILABLE MITIGATION (2015)						4.49				
	AVAILABLE MITIGATION SUBTOTAL (2014 ROLLOVER + 2015)						21.44				
	TOTAL ROLLOVER MITIGATION AVAILABLE (AFTER IMPACTS SUBTRACTED)						-1.7				
	YEAR 2016-2020										
	Advanced Batiquitos Lagoon Bridge Replacement (Phase 2D: 2018-2019)	8.8	Deer Canyon II (Los Penasquitos)	Ongoing; year 3 monitoring					3.5		

Table 5b: Permanent Upland Habitat Impacts vs. No Net Loss Mitigation (By Year/Phase)

Phase	Transportation Improvements	Impacts (Acres)	Mitigation Site	Upland Habitat Establishment (Acres)	Upland Habitat Restoration (Acres)	Total Available No Net Loss Mitigation (Releases 1 & 2 @ 30%)	Total Available No Net Loss Mitigation (Release 3 @ 10%)	Total Available No Net Loss Mitigation (Release 4 @ 10%)	Total Available No Net Loss Mitigation (Release 5 @ 25%)	Total Available No Net Loss Mitigation (Final @ 25%)	Total Mitigation (Acres)	
	2 HOV from La Jolla Village Dr to I-5/I-805 merge, includes Voigt DAR & I-5 /I-805 HOV Flyover Connector (Phase 1C: 2017-2020)	0.57	Dean Family Trust (San Dieguito)	Ongoing; year 3 monitoring					5.2			
	10 - CP Ponto to CP Moonlight Double Track, includes Batiquitos Bridge Replacement (2016)	0.03	Hallmark (Agua Hedionda)	Ongoing; year 2 monitoring				1.01				
	13 - Encinitas Station Parking	0	San Dieguito W19 (San Dieguito) (Release 1 anticipated 2016; Release 2 anticipated 2017)*	9.6	19.8	8.82*						
	16 - Solana Beach Station Parking	0										
	17 - San Dieguito Bridge/Double Track, includes San Dieguito Bridge Replacement (2016)	0.01										
	TOTAL IMPACT (2016)	9.41	MITIGATION RELEASED BY YEAR (2016-2020)				8.82		1.01	5.2		
	TOTAL AVAILABLE MITIGATION (2016-2020)									15.03		
	AVAILABLE MITIGATION SUBTOTAL (2015 ROLLOVER + 2016-2020)									13.33		
	TOTAL ROLLOVER MITIGATION AVAILABLE (AFTER IMPACTS SUBTRACTED)									3.92		
INITIAL-TERM TOTAL IMPACT		32.55	INITIAL-TERM TOTAL MITIGATION								74.3	
2021-2030	2 ML from I-5/I-805 to SR 56, including new Sorrento Valley Road bike/maintenance vehicle bridge, trails under I-5 at Carmel Creek, widening of I-5 at Carmel Creek, and trail under merge (Phase 2A: 2020-2022)	0.99	Deer Canyon II (Los Penasquitos) Dean Family Trust (San Dieguito) Hallmark (Agua Hedionda) San Dieguito W19 (San Dieguito)	Ongoing		Full mitigation /sign-off anticipated by 2021						
	2 ML from SR 56 to Lomas Santa Fe Dr, including San Dieguito River Bridge Widening and bike paths/trails (Phase 2B: 2020-2025)	20.6										
	2 ML from Union St to Palomar Airport Rd (Phase 2C: 2025-2030)	3.28										
	5b - Oceanside Station Parking	0										
	7 - Carlsbad Village Station Parking	0										
	9 - Carlsbad Poinsettia Station Parking	0										
	14 - CP Moonlight to CP Swami Double Track	0										
	18 - Del Mar Fairgrounds Platform	0										
	MID-TERM TOTAL IMPACT		24.87	MID-TERM TOTAL AVAILABLE MITIGATION								41.75
TOTAL MID-TERM ROLLOVER MITIGATION AVAILABLE (AFTER IMPACTS SUBTRACTED)										16.88		

Table 5b: Permanent Upland Habitat Impacts vs. No Net Loss Mitigation (By Year/Phase)

Phase	Transportation Improvements	Impacts (Acres)	Mitigation Site	Upland Habitat Establishment (Acres)	Upland Habitat Restoration (Acres)	Total Available No Net Loss Mitigation (Releases 1 & 2 @ 30%)	Total Available No Net Loss Mitigation (Release 3 @ 10%)	Total Available No Net Loss Mitigation (Release 4 @ 10%)	Total Available No Net Loss Mitigation (Release 5 @ 25%)	Total Available No Net Loss Mitigation (Final @ 25%)	Total Mitigation (Acres)
2031-2040	2-4 ML from Palomar Airport Rd to SR 76, includes Agua Hedionda & Buena Vista Lagoon Bridge Replacements (Phase 3A-3C: 2030-2035)	0.77	Deer Canyon II (Los Penasquitos) Dean Family Trust (San Dieguito) Hallmark (Agua Hedionda)	Ongoing		Full mitigation /sign-off anticipated by 2021					
	Construct Braided Ramps from Roselle to Genesee (Phase 3D: 2030-2035)	5.57	San Dieguito W19 (San Dieguito)								
	LONG-TERM TOTAL IMPACT		6.34	LONG-TERM TOTAL AVAILABLE MITIGATION							16.88
	TOTAL LONG-TERM ROLLOVER MITIGATION AVAILABLE (AFTER IMPACTS SUBTRACTED)										10.54
NCC TOTALS (ALL PHASES EXCLUDING VISION PHASE¹)		63.76	Sites identified above.	27.1	47.2	74.3					
2041-2050	11 - Leucadia Blvd Grade Separation	0	Deer Canyon II (Los Penasquitos)	Ongoing		Full mitigation /sign-off anticipated by 2021					
	20/21 - Del Mar Tunnel -Camino Del Mar / Penasquitos Double Track Option -I-5 / Penasquitos Option	0.03 - 10.13	Dean Family Trust (San Dieguito) Hallmark (Agua Hedionda) San Dieguito W19 (San Dieguito)								
	22b - Penasquitos Double Track	0									
	I-5/SR-78	0									
	VISION PHASE¹ TOTAL IMPACT		0.03 - 10.13	VISION PHASE TOTAL AVAILABLE MITIGATION							10.54
	TOTAL “ENHANCEMENT” FOLLOWING PROGRAM IMPLEMENTATION										0.41 - 10.51

Note:

1.
- “Vision” Phase projects are programmatic in nature, and currently scheduled for implementation in years 2041 to 2050. At a future date and prior to their implementation, project-specific information would be made available to further refine the impact estimates presented herein.

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b. Habitat Establishment and Restoration

Mitigation credits available for no net loss compensatory mitigation are based on the number of acres available for each established (created) or restored habitat type on the proposed mitigation sites, to be finalized pursuant to final site-specific HMMPs to be reviewed through subsequent agency reviews, and final PWP/TREP project submittals to the Coastal Commission (NOIDs, CDPs, or federal consistency submittals, as applicable). The REMP includes a performance-based crediting and release system to ensure mitigation credits can be available for PWP/TREP project impact mitigation at incremental and measurable stages. The performance-based crediting and release system will ensure resource establishment/restoration/enhancement activities occur in advance of transportation infrastructure and community enhancement impacts to the maximum extent possible, while achieving a balance of transportation infrastructure and community enhancement projects in each phase. Under these procedures, a percentage of mitigation credits will be released at the time the final site-specific HMMP and LTMPs (draft and/or final) are approved by resource and regulatory agencies and site protections and funding mechanism is secured. Additional percentages of mitigation credits will be released after site grading and planting is complete (as-builts) and when annual performance standards, identified in the HMMP, have been successfully met on an annual basis.

c. Habitat Preservation/Enhancement

Long-term temporary (> 12 months) impact areas will be revegetated and returned to pre-existing conditions or better at a 1:1 ratio. Short-term temporary construction-related impact areas will be returned to pre-existing conditions (grades and vegetated condition). Mitigation credits for the temporal loss of habitat from long-term temporary impacts are based, in part, on acquisition of parcels containing existing high-value habitat areas within the coastal zone area and where permanent preservation of habitat is ensured. Compensatory mitigation for these long-term temporary impacts to uplands would include either revegetation with native habitat of other nonnative temporary impact areas (at a 1:1 ratio of replacement to impacts) or the preservation of high quality habitat under the threat of development (a 2:1 ratio of preservation to impacts). The suite of activities proposed in the “enhancement pool” listed previously would be used to mitigate any additional compensatory mitigation requirements for long-term temporary impacts to wetlands. The credits will be finalized pursuant to final HMMPs to be reviewed through subsequent NOID, coastal development permit or federal consistency submittals, as applicable, and the credits released for mitigation once the sites are deeded to an approved local land management agency that is acceptable to the resource and regulatory agencies. Habitat preservation credits will mitigate for long-term temporary impacts resulting from PWP/TREP project impacts by ensuring long-term preservation of upland ESHA and/or wetland and other aquatic resources in advance of construction impacts occurring.

d. Lagoon Restoration

Additional mitigation credits available for no net loss compensatory mitigation for permanent and temporary wetland and other aquatic habitat impacts are based on the number of acres potentially available for wetland and other aquatic habitat re-establishment as part of the San Elijo and Buena Vista Lagoon Restoration projects. The mitigation credits available to compensate for impacts to wetlands, other waters, and riparian habitat will be finalized pursuant to final restoration plans for San Elijo Lagoon and/or Buena Vista Lagoon, to be reviewed through subsequent coastal development permits and the federal consistency review process. These wetland and other aquatic habitat mitigation credits will be released through the performance-based crediting and release system identified above.

to ensure mitigation credits can be available for PWP/TREP project impact mitigation at incremental and measurable stages.

In addition to establishing credits for compensatory mitigation for permanent and temporary wetland and other aquatic impacts, the REMP projects will also facilitate and achieve ecological lift of corridor lagoon systems through the identified large-scale restoration plans. Therefore, the lagoon restoration projects included in the REMP are considered appropriate for mitigating PWP/TREP project impacts. The ecological lift that will occur as a result of implementing one of these large-scale lagoon restoration plans will serve as additional mitigation for all PWP/TREP project impacts, including long-term temporary impacts, shading impacts, indirect and potential temporal wetland and other aquatic habitat impacts.

e. Bridge Optimization (Achieving Hydraulic Lift in Lagoons)

REMP projects involving lagoon bridge lengthening and lagoon channel dimension expansion through optimized designs will result in benefits to wetland resources, water quality, tidal range, flood control, groundwater recharge and recreation. Lagoon optimization studies were completed for San Elijo, Batiquitos, and Buena Vista lagoons to inform the design of the I-5 and LOSSAN railroad bridges and lagoon channel dimensions to optimize tidal flow, fluvial flow, and sediment transport. Optimized bridge lengths and lagoon channel dimensions were also identified for Coast Highway and inlets within San Elijo and Buena Vista lagoons to maximize system benefits. The studies conclude that constructing longer bridges and/or deeper channels at these lagoon locations will improve water quality, increase the quality of coastal wetland habitat, increase tidal range, decrease flood impacts, and improve the overall health and function of the lagoon systems. These REMP projects are not subject to a specific credit calculation; however, because optimized bridge lengths have been identified as necessary for the success of proposed lagoon restoration projects at San Elijo and Buena Vista lagoons, and construction of identified optimized bridges is intended to specifically avoid and minimize impacts and enhance coastal resources and will result in a significant additional cost to the PWP/TREP program, they are a contributing enhancement element for all PWP/TREP project impacts. These REMP projects will offset water quality, shading, and eel grass impacts, and potential temporal impacts associated with areas impacted by temporary construction activities.

f. Lagoon Management/Endowments – Contingency Mitigation Credit

The resource agencies have indicated that an endowment for dredging to maintain the openings at the mouths of Batiquitos and Los Peñasquitos Lagoons is an important resource protection measure within the NCC. Ten million dollars has been determined to be adequate to maintain these lagoon mouths in perpetuity if set aside in a non-wasting endowment with a reasonable rate of return (approximately 5% annually). Development of LTMPs for use of the funds at Batiquitos and Los Peñasquitos Lagoons would identify specific tasks covered by the proposed endowment, and would support establishment of long-term goals to ensure appropriate triggers for dredging activities such that adequate funds are released from the endowment at appropriate times. A performance evaluation of the endowment would also occur at the end of the first phase of the PWP/TREP Implementation Phasing Plan (approximately 10 years) to ensure adequate financial contingencies are in place to cover activities in perpetuity. It is anticipated that the \$10 million endowment would need to accrue interest for at least 1 year prior to use of funds.

Los Peñasquitos Lagoon has 25 years of maintenance dredging operation information and the numbers have remained relatively consistent with a cost of approximately \$150,000 per year for the project.

Batiquitos Lagoon has more varied costs for its maintenance over the last 15 years (see Table 6, below). California Department of Fish and Wildlife identified that the mobilization and demobilization were not included in the overall cost and that the 1998 and 1999 costs were anomalies. If those two years are removed, the average annual cost per year is \$308,854. Of note, Batiquitos Lagoon also has a \$5.5 million dollar endowment for maintenance which is not generating enough interest (1%) because of how the State invests the monies.

Table 6. Costs for Previous Dredging Projects at Batiquitos Lagoon

Cycle	Mobilizations	Disposal Locations	Volume (cy)	Cost-not including Mobilization/ Demobilization (\$)	Mobilization/ Demobilization (\$)	Total Cost (\$)
98/99	1	South Ponto	10,562	98,187	75,000	173,187
99/00	1	South Ponto	4,268	21,910	75,000	96,910
00/01	2	South Ponto, W2	50,374	322,877	75,000	397,877
02/04	2	W1, E2 and E3	77,378	1,165,582	150,000	1,315,582
06/07	1	North and South Ponto	65,574	342,784	150,000	492,784
11/12	1	South Ponto	112,000	1,050,000	450,000	1,500,000
		Annual Average Cost	22,868	214,381	69,643	284,024
		Average Cost from 2000-2012	25,444	240,104	68,750	308,854

If we assume \$350,000 annual cost for maintenance dredging for Batiquitos Lagoon and \$150,000 annual cost for maintenance dredging of Los Peñasquitos Lagoon, there should be adequate funds, \$500,000 annually, from a non-wasting endowment originally established with a 10 million dollar fund.

SANDAG proposes to work with a community investment foundation to establish an endowment that will generate on average \$500,000 a year. The endowment will be non-wasting and only the interest will be available for use. The REMP Working Group will meet annually to discuss the interest generated over the year and the distribution of any funds from the accumulated interest.

Caltrans and SANDAG will work with resource and regulatory agencies to establishment compensatory mitigation credits for this endowment to help offset PWP/TREP project impacts. The following is an estimation of potential credits for maintenance of the lagoon mouths, similar to the 35 acres allotted to the SONGs mitigation for maintenance of the San Dieguito Lagoon mouth.

Batiquitos Lagoon comprises approximately 581 acres of coastal wetlands, with approximately 107 acres in the central basin, 450 acres in the eastern basin and the remainder (24 acres) in the western basin. Based on modeling of tidal ranges of the shoaled versus dredged condition in each basin there will be an increase in tidal range between 1 and 9 percent. When the percent increase in tidal range in each basin is multiplied by the acreage in each basin, there is a change of 0.24 acres in the western

basin, 6.42 acres in the central basin, and 40.5 acres in the western basin. The total percent change is equal to 47.2 acres immediately following a dredging event, but the benefits will be reduced as the sediments redeposit and mute the tides until the next cycle. Once dredging is completed, sediment will again begin to settle out in the lagoon inlet. Overtime this sediment accumulates until a time when significant shoaling requires another dredging be initiated (approximately 3 years for Batiquitos Lagoon). To adjust for the muting that occurs during the three years between dredging events the percent change will be reduced by one-third (see Table 7, below). Therefore, the amount of credit available for the Batiquitos endowment would be 15.7 acres. SANDAG and Caltrans propose that funding an endowment for lagoon mouth maintenance at Batiquitos Lagoon should qualify for credit, or it should be agreed that it will serve as contingency credits for any deficits of credit release between beginning construction of the wetland mitigation sites and impacts from the LOSSAN and I-5 PWP/TREP projects, as necessary.

Table 7. Batiquitos Lagoon Tidal Range Percent Change Following a Dredging Event

BASIN	TIDAL RANGE						
	Acreage	Existing Shoaled (ft)	Existing Dredged (Ft)	Difference (ft)	Percent Change	0.33 Percent Change	0.33 Percent Change* (Acres)
West Basin (WB2)	24	7.15	7.24	0.09	0.01	0.003	0.07
Central Basin (CB2)	107	6.8	7.23	0.43	0.06	0.02	2.14
East Basin (EB1)	450	6.47	7.12	0.65	0.09	0.03	13.5

* Acreage X Percent Change = Percent Change in Acres

Los Peñasquitos Lagoon is located along the northwest border of the City of San Diego, just south of the City of Del Mar. There are approximately 463 acres of tidal wetlands within the lagoon and it extends inland approximately 2.04 miles. One of the major issues facing the lagoon is the rate of increased sedimentation from the alteration of the existing tidal prism (with the construction of the railroad bridge) and the urbanization of the watershed. Additionally, due to the increase in freshwater runoff from landscaping, wastewater treatment and hardpan (cement lining), far more freshwater and associated sediment enters the lagoon year-round than it did historically, causing sedimentation and the saltmarsh to convert to freshwater marsh. Because of these issues, the lagoon mouth began to close seasonally. This can reduce the health of an estuary by limiting the amount of sediment it can remove from the system and causes significant changes in salinity levels. Evaporation reduces the amount of water within the closed lagoon and increases the concentration of salt, which can rise to lethal levels for many of the organisms that live within the water and mudflats of the lagoon, and thereby impact the entire area's food web. In an effort to mitigate for this, the Los Peñasquitos Lagoon Enhancement Plan was developed in 1985 by the Coastal Commission. Adaptive management included monitoring of the lagoon water quality and of the mechanical opening of the mouth of the lagoon before water quality became poor enough to kill organisms (PERL 2004).

Future restoration activities for the Los Peñasquitos Lagoon have focused on the reduction of sediment to the system, curtailing freshwater input, and maintaining the opening of the lagoon mouth. Therefore, maintenance of the Los Peñasquitos Lagoon mouth has been identified as a compensatory mitigation opportunity within the REMP. There are no modeling data for Los Peñasquitos Lagoon; however, since the mouth closes completely, the tidal range is eliminated at certain times of the year. If we assume a 1 percent benefit (least benefit seen at Batiquitos) to the tidal wetlands of the lagoon that would result in 4.6 acres of credit.

It is generally agreed that maintenance of the mouths of both of these lagoons is important to estuary functions and services. Quantifying the benefits of the maintenance is a difficult thing to do. However, with some lag time between the sign off on all wetland mitigation sites and some first phase impacts to the lagoons, Caltrans and SANDAG propose that establishing the \$10 million dollar endowment should either be granted compensatory mitigation credit, or it should be agreed to that it will serve as contingency credits for any deficits of credit release between beginning construction of the wetland mitigation sites and impacts from the LOSSAN and I-5 NCC projects, as necessary. SANDAG and Caltrans also propose that 10 percent of this mitigation credit (0.46 acres for Los Peñasquitos Lagoon and 1.57 ac for Batiquitos Lagoon of the 4.6 and 15.7 acres identified above, respectively) would be available upon establishment of the endowment and the funding strategy. The remaining balance of the available credits for each lagoon would be available when the interest of the endowment exceeds \$500,000, and when the first dredging activities have been completed at each lagoon system.

V. Mitigation Phasing

Advance resource enhancement activities are assigned specific no net loss mitigation credits based on the type of habitat established and/or restored from implementation of individual REMP projects, and/or for establishing the endowment for maintenance activities that sustain lagoon functions and services. Once established, mitigation credits are available to mitigate any PWP/TREP transportation infrastructure and/or community enhancement project impacts included in an active phase of the PWP/TREP Implementation Phasing Plan (i.e., 2010-2020; 2021-2030; 2031-2040; or 2041-2050). Where habitat mitigation credit exceeds the cumulative project impacts of any particular project phase, habitat mitigation credit would be made available to mitigate impacts associated with project implementation of the following phases.

Advance resource enhancement activities also include projects that provide enhancement and/or preservation of sensitive coastal resources, and facilitate and achieve ecological lift of corridor lagoon systems, specifically large-scale restoration plans for San Elijo Lagoon and Buena Vista Lagoon, and hydraulic lift associated with bridge optimization projects for San Elijo Lagoon, Batiquitos Lagoon, and Buena Vista Lagoon. The San Elijo and Buena Vista Lagoon Restoration Plans will potentially establish a specific amount of wetland/other aquatic habitat mitigation credits dependent on the final alternative design selected. REMP projects that would facilitate and achieve ecological/hydraulic lift of corridor lagoon systems through large-scale restoration plans are generally not subject to a specific credit calculation by the Coastal Commission, but nevertheless will result in significant enhancement of corridor resources and are considered appropriate for mitigating PWP/TREP project impacts. The Corps will determine specific compensatory mitigation credits based on acreage and functional lift for San Elijo and Buena Vista Lagoon Restoration Projects if the final restoration alternatives chosen by the REMP Working Group meet the standards set forth by the Corps and EPA in the Mitigation Rule (2008).

VI. Habitat Mitigation and Monitoring Plans

Site-specific HMMPs are required for all REMP compensatory mitigation sites, with the exception of purely preservation sites, whereas Long Term Management Plans (LTMPs) are required for all mitigation sites. Mitigation Site Assessments (see Appendix B) have been developed for resource and agency approval prior to developing detailed HMMPs and associated grading, planting, irrigation and other implementation plans, as appropriate. The HMMPs will be developed in compliance with the Corps and EPA Mitigation Rule (2008), but also include sections and supplemental documents that will allow for use of the Advance Permittee-Responsible Mitigation Guide (2012)⁷ or comparable approaches by the Corps Los Angeles District and meet Coastal Commission and other resource agency permitting needs. These HMMPs will include the information agreed upon in this REMP for determination of a Service Area (NCC), defining the number and type of credits and methodology used to determine crediting, a credit release schedule based on performance standards, a credit ledger to track PWP/TREP project implementation, and the projected permanent and temporary impacts from PWP/TREP transportation infrastructure and community enhancement projects intended to be mitigated by the compensatory mitigation site.

Each site-specific HMMP shall include an itemized cost estimate for implementing the mitigation site activities. In accordance with 33 CFR §332.3(n) of the Mitigation Rule (2008), prior to initiating impacts for each PWP/TREP project phase, the permittee(s) shall post financial assurance ("financial assurance") in an amount and form approved by the Corps and other agencies as appropriate. The cost estimate will be the basis for providing the required financial assurance until the site achieves its ecological performance standards and other site protection requirements have been achieved. The financial assurance amount shall include the estimated cost for replacement mitigation, including costs for land acquisition, planning and engineering, legal fees, mobilization, construction, monitoring, maintenance, and adaptive management for the required 5 to 10-year short-term monitoring period and a 20% contingency. The purpose of this financial assurance is to guarantee the successful implementation, maintenance, and monitoring of the wetland and non-wetland waters preservation, establishment, restoration, and enhancement work. The financial assurance may be in the form of a performance bond, irrevocable letter of credit, or escrow agreement.

A draft LTMP will be prepared along with a final HMMP for each mitigation site for review and approval by the resource and regulatory agencies. Per 33 CFR §332.4 (c)(11) of the Mitigation Rule, the LTMP shall be based on the habitats approved in the final site-specific HMMP and developed to ensure the long-term sustainability of the site, describing how the compensatory mitigation site will be managed and monitored after performance standards have been achieved and mitigation credits have been released. The LTMP shall include a description of the baseline environmental conditions of the site, protection, signage, and other management and monitoring activities anticipated to maintain the current ecological condition (preservation only) or projected ecological condition (establishment, restoration, and enhancement sites) and the estimated cost of implementing the annual maintenance and management activities set forth in the LTMP. The LTMP shall include a description of the long-term site protection mechanism, the financing mechanism, and the proposed 3rd party responsible for LTMP. The

⁷ Interagency Regulatory Guide, Advance Permittee-Responsible Mitigation by U.S. Army Corps of Engineers Seattle District, Department of Ecology State of Washington, and Washington Department of Fish and Wildlife, December 2012, Ecology Publication no. 12-06-015

final LTMP must be updated and approved by the resource and regulatory agencies prior to the final credit release for each compensatory mitigation site. This allows for modification of the management needs and associated financing mechanism, as necessary, if compensatory mitigation site needs are different from those originally anticipated prior to implementation and short term monitoring period.

Once secured, mitigation credits for preservation only sites will be formalized with the development and approval of a final LTMP, which includes all the information as described above.

Long-term protection mechanisms must be described in the final HMMP and are required for every REMP compensatory mitigation site. The long-term protection mechanism must be provided for review and approval by the applicable agencies prior to implementation of final HMMP. Protection mechanisms can include a conservation easement, restrictive covenant, or other regulatory agency-approved mechanism. The mechanism must ensure that the permittee, its successors and assigns, are required to protect and maintain the compensatory mitigation site in perpetuity. The conservation mechanism shall preclude establishment of fuel modification zones, additional road crossings or outfalls, paved or unpaved public trails beyond what is approved in the final HMMP and LTMP, maintenance access roads and/or future easements. The conservation mechanism must provide for the long-term management of the compensatory mitigation site. Written approval (by letter or e-mail) from all applicable agencies of the final conservation mechanism must be received prior to it being executed and recorded. A recorded copy of the mechanism must be provided to the Corps and Coastal Commission prior to mitigation credit release, release of final mitigation obligations, and release of the financial assurance.

The HMMPs will formalize how the habitat establishment, restoration, and enhancement activities proposed for each of the compensatory mitigation sites conform to the REMP. Each site-specific HMMP will be submitted to the REMP Working Group for review and approval to ensure fulfillment of requirements with agency permits and consultations prior to any formal submittal to the Corps and Commission (the Commission's submittal process is further detailed in the following sections of Chapter 6 of the PWP/TREP).

Mitigation Site Assessments serve to formalize how the habitat establishment, restoration, enhancement and/or preservation activities proposed for each of the compensatory mitigation sites conform to the REMP goals and criteria described above. MSAs also provide preliminary information to estimate mitigation credits available for each project and to assist in the preparation of final HMMPs that will be subject to further review through subsequent Coastal Commission review (NOIDs, CDPs or federal consistency submittals, as applicable). Initial MSAs for the current package of REMP compensatory mitigation opportunities are included in Appendix B. These will be used to develop final site-specific HMMPs. The MSAs include the following preliminary information, as applicable:

- OVERALL MITIGATION GOALS and OBJECTIVES
- MITIGATION SITE SERVICE AREA AND CREDITS
- BASELINE CONDITIONS
 - Historic and Current Ecological Context
 - Drainage and Hydrology
 - Soils
 - Vegetation (Including Existing Vegetation Map)
 - Wildlife
 - Prior and Current Land Use
 - Existing Utilities/Infrastructure/Easements

- Site Contaminants
- MITIGATION PROGRAM
 - Schedule
 - Hydrology
 - Topographic Modification
 - Soils
 - Target Plant Communities
 - Supportive Measures
 - Performance Standards
- ADAPTIVE MANAGEMENT PLAN
- COST ESTIMATE AND FINANCIAL ASSURANCES
- SITE PROTECTION INSTRUMENT
- LONG-TERM MANAGEMENT PLAN
- ADDITIONAL STUDIES REQUIRED
- REQUIRED PERMITS/APPROVALS

VII. Program Phasing

The REMP is an integral component of the PWP/TREP Implementation Phasing Plan, in which stakeholders and resource and regulatory agencies can track the progress and success of the PWP/TREP. The Phasing Plan reflects the regional priorities relative to identifying resource protection opportunities and implementing REMP projects that address the most significant natural resource needs of the NCC, while respecting the phasing requirements for transportation infrastructure and community enhancement project development further specified in the PWP/TREP. Consistent with Senate Bill 468 (Kehoe), the REMP and the larger PWP/TREP Implementation Phasing Plan collectively provide the framework for the region to allocate *TransNet* EMP funds for regional habitat acquisition, management, and monitoring activities based on the estimated economic benefits derived from permitting and approval efficiencies accomplished through the NCC PWP/TREP process. The funding will be released by SANDAG in phases based on the proportion of PWP/TREP projects that have been issued NOIDs, CDPs and/or federal consistency reviews, as applicable.

The PWP/TREP Implementation Phasing Plan includes specific measures to ensure that REMP projects will be implemented prior to, or concurrent with, PWP/TREP transportation infrastructure and community enhancement projects according to the approved phasing plan. Corps and Coastal Commission submittals (NOIDs, CDPs and/or federal consistency review, as applicable) for transportation infrastructure and community enhancement projects provide the primary mechanism for the regulatory agencies to continuously ensure adequate compensatory mitigation is provided by PWP/TREP phase. Chapter 6, Implementation, of the PWP/TREP requires Coastal Commission submittals (NOIDs, CDPs and/or federal consistency review, as applicable) to provide the following project details (among others) before a submittal will be filed as complete and reviewed by the Coastal Commission for consistency with the approved PWP/TREP:

1. The expected date of commencement of construction
2. A description of the proposed development that is: sufficient to understand its size, location, type, and intensity (including but not limited to site plans, grading plans, and elevations/renderings showing the proposed development, where applicable) sufficient to determine the development is contained in the PWP/TREP.
3. A discussion of the proposed development consistency with the PWP/TREP Implementation Phasing Plan detailed in Section 6.2.1 including details regarding:

- A. The project phase in which the development is included
 - B. The status of implementation of other rail, highway, community and resource enhancement projects included in the same phase
 - C. A brief summary of the proposed development's contribution to the mobility and resource benefits of the project phase
 - D. Description of any project-specific resource impacts and status of corresponding mitigation requirements for the project phase.
 - E. A detailed discussion and justification for any proposed project shift between project phases as provided in the Phasing Plan.
4. Environmental documentation for the proposed development prepared pursuant to CEQA and/or NEPA.
 5. All technical reports associated with the proposed development (such as biological reports, geotechnical reports, traffic analyses, etc.), including all reports, studies, and/or project-specific plans required pursuant to applicable Chapter 5 implementation measures.
 6. The results, including supporting documentation, of consultation with persons and agencies interested in, with jurisdiction over, and/or affected by the proposed development, including consultations with federal and state resource agencies (such as the United States Fish and Wildlife Service, California Department of Fish and Wildlife, Regional Water Quality Control Board, etc.)
 7. All implementing mechanisms associated with the proposed development including, but not limited to, Cooperative Maintenance agreements with affected cities for Community Enhancement Projects, CEQA mitigation monitoring reports, legal documents, lease agreements, etc.

VIII. Supplementing REMP Opportunities – Mitigation Contingencies and Future Opportunities

In the event that there are permanent or temporary impacts to resources beyond those authorized by resource and regulatory agencies either on a whole or by phase, available mitigation credits will be used or additional compensatory mitigation opportunities from the suite in this REMP will be utilized. In the unlikely event a previously identified compensatory mitigation opportunity is no longer feasible or available, SANDAG and Caltrans will be responsible for identifying and advancing additional projects through the REMP Working Group and applicable resource and regulatory agencies to amend the REMP and obtain permit modifications if necessary, pursuant to: 1) the applicable NOID and/or PWP amendment procedures outlined in Chapter 6 of the PWP/TREP, 2) the coastal development permit review process, and/or 3) the federal consistency certification process. The REMP allows for the flexibility necessary to sufficiently balance program impacts and benefits prior to initiating PWP/TREP transportation and community infrastructure projects by phase. Compensatory mitigation opportunities and funding can be moved between phases to account for shortfalls as necessary. Also, if needed, new compensatory mitigation sites can be added to the REMP in consultation with stakeholders and resource and regulatory agencies, if the site has been identified as meeting the category and evaluation criteria identified in the REMP and funds are available.

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Appendix A

Specific USACE Requirements

Establishment and Re-establishment Credits

Establishment and re-establishment compensatory mitigation sites will provide a number of mitigation credits equal to the compensatory mitigation site area or linear feet (e.g. 1 acre of tidal marsh establishment = 1 credit). The number of mitigation credits will also include accounting for native transitional and upland buffer areas defined as described above, but may not be based purely by size (e.g., 1 acre of native transitional habitat may = 0.20 credit and 1 acre of native upland buffer = 0.10 credit). Native transitional habitat areas are defined as floodplains, riparian areas, or contiguous upland habitats anticipated to be inundated due to sea level rise during the next 50 years. Native upland buffer areas are defined as habitats restored, enhanced, and/or preserved within 250 meters of the edge of waters of the U.S., waters of the State, and defined transitional habitat areas. For the purposes of compensatory mitigation credit, native upland buffers must be contiguous with waters of the U.S. and not separated by paved roads, culverts, fencing, or other obstructions that limit wildlife movement and reduce hydrologic and water quality benefits.

Restoration (re-habilitation) and Enhancement Credits

For restoration and enhancement sites, the number of mitigation credits will reflect the difference between pre- and post-mitigation project site conditions, as determined by a functional or condition assessment (HGM or CRAM), or other suitable metrics (e.g. 1 enhancement credit = 10% net increase in CRAM score). The number of mitigation credits may be further refined by utilizing "Level 3" assessment data to further define net increase in "Level 2" functional and conditional assessment scores.

Preservation Credits

The Corps and EPA define preservation as the removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions. Where preservation is used to provide compensatory mitigation, to the extent appropriate and practicable, the preservation shall be done in conjunction with aquatic resource restoration, establishment, and/or enhancement activities.

Preservation may be used to provide compensatory mitigation for activities by the Corps when all of the following criteria are met:

- (i) The resource to be preserved provides physical, chemical, or biological function for the watershed.⁸
- (ii) The resource to be preserved contributes significantly to the ecological sustainability of the watershed
- (iii) The resources are under threat of destruction or adverse modifications

⁸ The watershed in a coastal setting could also be the downstream/downslope receiving water, such as a lagoon.

- (iv) The preserved sites will be permanently protected through a legal instrument.
- (v) The Corps Regulatory Division determines the compensatory mitigation is necessary to offset unavoidable impacts to aquatic habitat.

For waters of the U.S., performance standards will include approved, scientifically based methodology to evaluate current functions or condition of the aquatic resource. A function-based assessment is one where the aquatic resource is compared to similar aquatic resources (reference resources) that are relatively unaltered [e.g. the Hydrogeomorphic (HGM) approach to wetland/waters assessment, which considers functional performance and area. The approach is based on combining variables that are typically structural measures or indicators that are associated with one or more ecosystem functions. Functions fall into one of three major categories: (1) hydrologic (e.g., storage of surface water), (2) biogeochemical (e.g., removal or transformation of elements and compounds), and (3) habitat (e.g., maintenance of characteristic plant or animal communities)]. A condition-based assessment typically combines functions, and specific functions are not assessed (e.g., the California Rapid Assessment Method [CRAM]); whereas most functional assessments allow users to score each function.

HGM or CRAM-based performance standards will be developed based on existing site scores, reference site data and projections for the future scores at the individual compensatory mitigation site. The performance standards will be the variable scores for HGM or the metric and sub-metric scores for CRAM, not the overall site score, for interim and final targets. Interim target functional criteria scores will be used to inform maintenance decisions during the five- to ten-year monitoring and maintenance periods to achieve the final target scores. HGM or CRAM-based performance standards and assessments will be completed pre-construction at the reference site and mitigation site (if currently an aquatic resource), at year 0 immediately following the construction and 120-day plant establishment period (post-construction baseline), year 3, and year 5 to compare with reference site data. Performance standards and assessments would be required in years 7 and 10 at tidal wetland compensatory mitigation sites.

Appendix B

Mitigation Site Assessments

DRAFT

**North Coast Corridor Public Works Plan/Transportation and
Resource Enhancement Program
Mitigation Site Assessment for the San Dieguito Lagoon W19
Restoration Site**

Prepared by:

DUDEK

Prepared for:



JULY 2012

North Coast Corridor Mitigation Site Assessment for the San Dieguito Lagoon W19 Restoration Site

Site Location: The mitigation site is located east of Interstate 5 (I-5), south of Via De La Valle and the San Dieguito River, and west of El Camino Real. The parcel is situated in the eastern portion of San Dieguito Lagoon (see Figure 1).

Latitude/Longitude: 32.9722/-117.2357

APNs: 299-040-300 (1.6 acres) and portions of the following parcels:

- 304-020-1300 (6.2 acres)
- 304-020-1600 (62.7 acres)
- 299-040-4100 (18.0 acres)
- 299-040-4700 (4.6 acres)
- 299-040-3700 (6.2 acres)
- 299-040-3600 (7.2 acres)

Ownership: Owners in the approximate 107 acre mitigation area include the San Dieguito River Park Joint Powers Authority (JPA), Southern California Edison (SCE), and the City of San Diego. San Diego Association of Governments (SANDAG) entered into an agreement with the JPA to secure the rights to restore 107 acres of land east of I-5 and to the south of SCE coastal wetlands restoration project. In addition, the California Department of Transportation (Caltrans) has the rights over the restoration of 6 acres of the City of San Diego property at Caltrans discretion through a separate cooperative agreement.

Correspondence with Resource Agencies: A group of stakeholders, including the RWQCB, ACOE, CCC, CDFG, NMFS, and USFWS, was identified and brought together to discuss the feasibility of the W-19 property to support establishment and restoration of tidal and freshwater wetlands. Three stakeholder meetings were held in March and October 2011 and in April 2012. In February 2012, the agencies met to discuss additional design alternatives, which are currently being evaluated by SANDAG and Caltrans. The stakeholder meetings resulted in no major disagreement regarding the feasibility of the site to be used as mitigation; coordination with the stakeholders will be ongoing as hydrologic and sediment transport modeling and design alternatives become devised.

MITIGATION GOAL

The SANDAG and Caltrans propose to mitigate impacts to sensitive wetlands habitats associated with the projects covered under the North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program (PWP/TREP) by creating and managing high quality tidal wetland and upland habitat on the referenced parcels located on the eastern side of San Dieguito

North Coast Corridor Mitigation Site Assessment for the San Dieguito Lagoon W19 Restoration Site

Lagoon. In addition, the City of San Diego will be mitigating impacts from the El Camino Real Bridge Replacement Project on a portion of the site in exchange for use of 14 acres of their property for salt marsh establishment. The goal of the mitigation project is to create new tidal wetlands and expand the tidal wetlands complex associated with the SCE San Dieguito Lagoon mitigation project, to create adjacent uplands habitat, and to ensure long-term management of the parcels in perpetuity.

This site assessment is largely based on information contained in the San Dieguito Lagoon W19 Restoration Project Feasibility Study (Dokken Engineering, December 2011). Excerpts from the San Dieguito Lagoon W19 Restoration Project Feasibility Study (Feasibility Study) are incorporated throughout this site assessment as noted in the following sections.

The Feasibility Study identifies the primary purpose of the mitigation site as follows:

The primary purpose of the proposed project is to restore the habitats that historically occurred within this coastal area, taking into consideration the constraints now imposed by existing adjacent land uses. In light of permanent losses of adjacent wetlands and aquatic areas in addition to permanent hydrologic modifications, and urbanization surrounding San Dieguito over the last century, complete restoration of wetland and aquatic functions to historical levels is not possible. However, there is opportunity for the establishment and/or substantial restoration of large portions of the area that historically supported coastal wetlands. In addition, recent public acquisitions of the western river valley's floodplain areas and surrounding uplands provides many opportunities for restoration of native grasslands, coastal sage scrub, and other upland habitats, as well as brackish habitats that support light-footed clapper rail. Finally, the project offers opportunities for public access and interpretation/education including trail links to the Coast to Crest Trail along the southern edge of the project area.

The proposed mitigation project will complement the SCE San Dieguito Wetland Restoration Project and contribute to achieving the overall vision of the restored San Dieguito Lagoon system. The Feasibility Study identifies the San Dieguito Lagoon W19 Restoration Project's ultimate goal as achieving the establishment of at least 50 acres of tidal wetland area to the west of the utility corridor and to the east of I-5 and at least 14 acres of brackish wetland area to the east of the utility corridor and to the west of El Camino Real Road. For purposes of the North Coast Corridor PWP/TREP, the proposed mitigation is intended to create 48.4 acres of wetland habitat and to establish 19.8 acres of high quality upland habitat within the mitigation area, which will provide new and improved ecosystem continuity through connectivity between coastal wetlands and native uplands. Any sections of the proposed link to the Coast to Crest Trail along the southern edge of the project area are not included in the restoration totals of the site.

North Coast Corridor Mitigation Site Assessment for the San Dieguito Lagoon W19 Restoration Site

Table 1
Habitat Mitigation Goals

Habitat Types	Mitigation Type	Mitigation Acreage
Coastal Wetlands	Establishment	48.4 ac.
Uplands	Rehabilitation	19.8 ac.

EXISTING CONDITIONS

Ecological Context

The San Dieguito Lagoon W19 mitigation site is located in the San Dieguito River Valley, within the northern portion of the City of San Diego. The mitigation site is located within the Focused Planning Area of the JPA's San Dieguito River Park, and is located within the City of San Diego Multiple Habitat Planning Area (MHPA). The majority of the mitigation site was previously disturbed by agricultural activities (see Figure 2). Nonetheless, the California Natural Diversity Database (CNDDDB) indicates numerous sensitive plant and wildlife species are present in the vicinity of the San Dieguito Lagoon W19 mitigation site (see Figures 3 to 5).

The Feasibility Study notes that although San Dieguito Lagoon has suffered damage as a result of human alteration, the lagoon's existing non-tidal wetlands and flats provide regionally important feeding and resting areas for migratory birds along the Pacific Flyway. The lagoon's tidal open water, mudflat, and salt marsh habitats also support a variety of birds, fishes, and invertebrates. Restoration of the lagoon would substantially improve the biological value of this resource. The Feasibility Study further notes that within the Del Mar USGS 7.5' Quadrangle surrounding the project area, there are 28 species that are either federally or state-listed as threatened or endangered and many other species that are listed as species of concern or California Native Plant Society sensitive species. The federally and state threatened or endangered species include 17 plant species and other wildlife including: western snowy plover (*Charadrius alexandrinus nivosus*), California black rail (*Laterallus jamaicensis coturniculus*), Belding's savanna sparrow (*Passerculus sandwichensis beldingi*), coastal California gnatcatcher (*Poliophtila californica californica*), light-footed clapper rail (*Rallus longirostris levipes*), California least tern (*Sternula antillarum browni*), least Bell's vireo (*Vireo bellii pusillus*), and Pacific pocket mouse (*Perognathus longimembris pacificus*) (CNDDDB Rarefind 4 Query, 2011). There is no critical habitat in the project area.

North Coast Corridor

Mitigation Site Assessment for the San Dieguito Lagoon W19 Restoration Site

Drainage and Hydrology

Jurisdictional waters associated with the San Dieguito Lagoon system occur in the project area. Groundwater occurs at depths between 7.0 and 9.5 feet below the existing grade. Various drainages exist throughout the site including man-made drainages associated with past agricultural land uses.

Soils

The Feasibility Study indicates that soils at the mitigation site consist generally of alluvial deposits consisting of very soft to soft sandy silt, loose to medium dense silty sand, and occasional gravel and pockets of clayey sand. A limited amount of beach quality sand has also been observed within the mitigation area.

Vegetation

The majority of the mitigation site has been previously disturbed by agricultural activities. The Feasibility Study identifies vegetation communities occurring on the site, as illustrated in Figure 2, and describes the communities as follows.

Disturbed habitat: The majority of the site is considered disturbed and occurs in areas impacted by SCE's restoration or in areas of former agricultural activities. A mixture of non-native invasive species as well as native species dominates these areas. Non-native dominants include prickly Russian-thistle (*Salsola tragus*), five-hook bassia (*Bassia hyssopifolia*), tree tobacco (*Nicotiana glauca*) and non-native grasses, e.g., bromes (*Bromus* spp.). Native species include coyote brush (*Baccharis pilularis*), broom baccharis (*Baccharis sarothroides*), and scattered mule-fat (*Baccharis salicifolia*).

Disturbed coyote brush scrub: This habitat occurs in drainage ditches on the former tomato fields that comprise the former Boudreau property. The dominant species is coyote brush with broom baccharis, prickly Russian thistle and five-hook bassia.

Disturbed high salt marsh/mule fat scrub: This habitat has developed in low lying areas that were disturbed by the SCE project. These areas are low enough to pond water during winter. They support a mixture of native wetland species as well as invasive non-native species. Dominant native species include Pacific pickleweed (*Sarcocornia pacifica*), bush seepweed (*Suaeda nigra*), alkali heath (*Frankenia salina*) and mule-fat. Non-natives include five-hook bassia, and prickly Russian thistle.

Arrow weed scrub: Arrow weed scrub consists of monotypic arrow weed (*Pluchea sericea*).

North Coast Corridor Mitigation Site Assessment for the San Dieguito Lagoon W19 Restoration Site

Brackish marsh: Brackish marsh occurs in the north/south trending man-made channel associated with former agricultural activities. It is typified by elements of both salt marsh and freshwater marsh. Dominant species include Pacific pickleweed, California bulrush (*Schoenoplectus californicus*) and Olney's bulrush (*Schoenoplectus americanus*).

Disturbed brackish marsh: Disturbed brackish marsh is similar to undisturbed brackish marsh except that it supports more weedy species. Dominant weedy species observed included curly dock (*Rumex crispus*) and annual beard grass (*Polypogon monspeliensis*).

Salt marsh: Undisturbed salt marsh occurs in two areas within the project footprint; both in association with the San Dieguito River. Salt marsh habitat on-site is dominated by Pacific pickleweed.

Disturbed salt panne: Disturbed salt panne is primarily unvegetated but shows evidence of vehicles having recently accessed the site for the SCE project. Those vehicles have left tracks and ruts that impound water resulting in invasion by non-native grasses, such as bromes.

Disturbed mule-fat scrub: Undisturbed mule-fat scrub is typically composed of scattered Mulefat with little understory. Disturbed mule-fat scrub differs from undisturbed mule-fat scrub by supporting a high percentage of invasive weedy species, including, five-hook bassia, tree tobacco and prickly Russian thistle.

Disturbed seasonal high salt marsh: Seasonal high salt marsh differs from salt marsh by its hydraulic regime. Salt marsh as defined here, is connected hydraulically to the river and is inundated by tides, at least intermittently if not daily. Seasonal high salt marsh is isolated from tidal flows and represents as relic conditions from before this area of the lagoon was disturbed. Seasonal high salt marsh relies on rainfall for its persistence. Disturbed seasonal high salt marsh supports a high percentage of non-native invasive species including non-native grasses (e.g., bromes) and crystalline iceplant (*Mesembryanthemum crystallinum*).

North Coast Corridor

Mitigation Site Assessment for the San Dieguito Lagoon W19 Restoration Site

Wildlife

The Feasibility Study identifies wildlife species occurring on the site including song sparrow (*Melospiza melodia*), common yellowthroat (*Geothlypis trichas*), American crow (*Corvus brachyrhynchus*), Anna's hummingbird (*Calypete anna*), goldfinch (*Carduelis* spp.), kingbird (*Tyrannus* sp.), and black phoebe (*Sayornis nigricans*).

Prior and Current Land Use

The majority of the mitigation site has been previously disturbed by agricultural activities. The site now primarily consists of open space, and is zoned as open space within the City of San Diego's General Plan. The SCE San Dieguito Wetland Restoration Project, involving a comprehensive restoration project for approximately 150 acres of land in the western end of the San Dieguito River Valley, is located just north and west of the proposed mitigation site. Land uses surrounding the site largely include Open Space Reserves and Preserves followed by water. Open Space Reserves and Preserves consist of areas to be retained in their natural state and protected from future encroachment, disturbance, or degradation (City of San Diego, 2007). Water areas consist of the San Dieguito Lagoon, bays and the San Dieguito River.

Constraints/Existing Utilities/Infrastructure/Easements

Preparation of the Feasibility Study included review of right of way maps, as-built records, and design drawings from recently completed construction projects to determine the existence of utilities within the project vicinity (see Figure 6). Preliminary investigation indicated that the following utility companies have facilities within the project vicinity:

- AT&T
- Cox Communications
- Kinder Morgan
- NEXTG Networks
- SDG&E Electric
- SDG&E Gas
- City of Del Mar

The Feasibility Study notes that a 150-foot wide San Diego Gas and Electric (SDG&E) utility corridor separates the proposed tidal wetland area from the proposed brackish wetland area. Within the project area there is also an existing SDG&E electrical overhead line which runs north-south over the project area. A 10-inch abandoned steel pipe located within a 10-foot City of Del Mar easement was encountered and removed during the construction of the SCE

North Coast Corridor Mitigation Site Assessment for the San Dieguito Lagoon W19 Restoration Site

Restoration Project. Approximately 2,600 feet of the 10-inch abandoned steel pipe is located within the mitigation site and will require removal for the San Dieguito Lagoon W19 Restoration Project. An extensive investigation into the utilities on the site will occur through the NOID process.

Any sections of the proposed link to the Coast to Crest Trail along the southern edge of the project area are not included in the restoration totals of the site. The proposed trail will be clearly defined and mapped, and the trail acreages not counted toward mitigation. Additional limitations involving the trail use, including hours of use, fencing and signage, will be detailed in the Conceptual Mitigation Plan for the San Dieguito Lagoon W19 Restoration Site, through the NOID process and/or Coastal Development Permit.

Site access is via existing dirt roads that connect to El Camino Real on the south.

MITIGATION PROGRAM

The San Dieguito Lagoon W19 mitigation site presents an opportunity to create tidal and brackish wetland and native upland habitats which will complement the SCE San Dieguito Wetland Restoration Project and contribute to achieving the overall vision of the restored San Dieguito Lagoon system. Depending on the restoration option selected and implemented for the site, restoration activities would involve modification to the site's existing hydrology, topography and vegetation communities to varying degrees; however, all options involve establishing a tidal wetland area west of the SDG&E utility corridor and a brackish wetland area east of the SDG&E utility corridor. In addition, creating native upland vegetation communities would support and maximize sensitive biological resources onsite, and create a seamless connection to restored wetland areas and adjacent open space lands.

Schedule

The Feasibility Study provides a concept for the mitigation design, and a schedule for further development of the design, permitting and implementation (Table 2). Design and planning are ongoing with the development of more detailed alternatives analysis and an Environmental Assessment/Environmental Impact Report (EA/EIR) that will further develop these concepts. The ACOE is the federal lead agency and JPA is the CEQA lead agency. All resource agencies have been involved in these discussions and will continue to be involved as alternatives are developed. Detailed design will be provided through the Notice of Intent to Develop (NOID) approval process during the first phase of implementation of the North Coast Corridor PWP/TREP. As discussed in Section 6.5.3 of the PWP/TREP, the results of the consultations with persons and agencies interested in, with jurisdiction over, and/or affected by the proposed

North Coast Corridor Mitigation Site Assessment for the San Dieguito Lagoon W19 Restoration Site

development, including consultations with federal and state resource agencies (e.g., Army Corps, USFWS, CDFG, RWQCB, etc.), as well as all supporting documentation are required to be submitted along with the NOID project report. Accordingly, all design and related project reporting would be submitted to the permitting agencies for consultation as part of the NOID review and approval process.

Table 2
Mitigation Project Schedule

Project Phase	Anticipated Start-Completion Date
Preliminary Design Engineering	12/11-12/13
CEQA/NEPA & PWP/TREP Preparation/Approval	12/11-12/13
Final Design/Project Report & Permitting (NOID/CDP/Federal Consistency & Agency Permits)	12/13-12/14
Implementation/Construction	01/15-01/17

Mitigation Goal and Purpose

The goal of the mitigation project for the PWP/TREP is to create approximately 48.4 net acres of tidal wetland area, with rehabilitation of about 19.8 net acres of native upland habitat also occurring. The Feasibility Study describes the various habitat establishment benefits as follows:

The created wetland habitats, in particular salt marsh, are highly productive and efficient in transferring the energy produced by primary producers to higher trophic levels. Coastal wetlands, in particular salt marshes, are among the most productive systems in the world. The reason for this high productivity is that there are two major groups of primary producers (i.e., organisms that produce energy from sunlight) at the base of the food chain – algae (including phytoplankton and macro-algae) and vascular plants. The food chain in salt marshes is shortened which makes primary productivity available directly to other trophic levels. For example, the California horned snail (*Cerethidia californica*) feed, directly on macro-algae and, in turn are preyed upon by higher order consumers, such as the endangered light footed clapper rail (*Rallus longirostris levipes*). In this example, the food chain is a three-step process and is very efficient at transferring energy from one trophic level to the next. (Nordby Biological Consultants et al, 2008).

The interface between tidal channel and salt marsh interface increase energy transfer by making algae and detritus available to invertebrates and small fishes. Tidal channels with an edge to length ratio of 50% or greater have been positively correlated with fish standing crop (Adamus et al 1980). The irregular plant/water interface also provides structure and

North Coast Corridor

Mitigation Site Assessment for the San Dieguito Lagoon W19 Restoration Site

protection for juvenile fishes, thereby serving a nursery ground for many fish species. The habitats that comprise a coastal wetland provide habitat and refuge for a number of taxa. These habitats intergrade and, as a result, their habitat functions overlap to some degree. (Nordby Biological Consultants et al, 2008).

The project would also create subtidal, mudflat, and transitional habitats. The values of these habitats include:

Subtidal: Habitat for fishes and invertebrates. Important links between fish and piscivorous birds (diving and wading) and between higher trophic order fishes (predators such as halibut) and lower trophic order fishes, such as arrow goby.

Mudflat: Mudflats are the feeding grounds for shorebirds. The invertebrate fauna, primarily polychaete worms and molluscs, are available with each receding tide. Fish also feed on mudflats while they are submerged. In terms of trophic relevance, the detritus and algae from the highly productive marsh provides energy to invertebrates, which in turn, transfer energy to birds and higher trophic order fish.

Transition to upland: Transitional habitat is the least known habitat associated with wetlands in southern California, as most of this habitat has been lost to development. Some of the values ascribed to transition include:

- Provide an area of potential habitat transgression given predicted sea level rise due to global climate change;
- Provide important upland refuge for shorebirds and other species during extreme high tides and/or storm events;
- Provide important interface between wetland and upland for foraging bird species and other species, i.e. energy transfer;
- Provides a unique habitat where wetland and upland plant species co-occur; and
- Provide important habitat for pollinators, such as ground-nesting bees.

Hydrology

Tidal salt marsh hydrology will be established through topographic modification of the site that will create tidal connections to the portion of the San Dieguito River channel at the west end of the site and south of the SCE and 22nd District Agricultural Association's least tern nesting island. The goal is to design the site to have similar tidal range as the SCE salt marsh wetland east of I-5 and north of San Dieguito River. In addition, the goal is to have no negative effect on

North Coast Corridor Mitigation Site Assessment for the San Dieguito Lagoon W19 Restoration Site

the SCE mitigation site or downstream sediment transport. Fluvial hydraulics are also being modeled to ensure that there are no downstream floodplain impacts to structures or sediment transport.

Topographic Modification

The project will grade up to approximately one million cubic yards of soil from the abandoned agricultural fields. It is necessary to grade channels to allow water to flow into the created salt marsh habitat and allow for functioning low salt marsh and mud flat with mid to high marsh habitat. Depending on the restoration option selected, berms may be constructed to separate the San Diego River hydrology from the tidal hydrology, similar to the berm implemented by the SCE project.

Soils

Based on soil textural analysis and the lack of sand suitable for beach replenishment, the site appears to have suitable soils that will support salt marsh habitat. In addition, the adjacent SCE wetlands mitigation project was built on similar soil and has demonstrated soil suitability for the intended mitigation project.

Target Plant Communities

The target plant communities include lower, middle and upper salt marsh habitat and transitional and upland habitat. The design and plant palette will be determined during the development of the design for the environmental document.

SITE PROTECTION

The mitigation site is located within the San Dieguito River Valley. The JPA is the agency responsible for creating a natural open space park in the San Dieguito River Valley and is empowered to acquire, plan, design, improve, operate, and maintain the San Dieguito River Park. The mitigation parcels will add additional habitat to the restored San Dieguito Lagoon system and improved ecosystem continuity through connectivity between additional coastal wetlands and native uplands habitat to be maintained, managed, and protected in perpetuity by the JPA.

LONG TERM MANAGEMENT

A Habitat Management Plan (HMP) will be prepared to define the long term management responsibilities to maintain the biological resources that are established through the mitigation project. The JPA will assume long term management responsibilities in association with other restoration properties within San Dieguito Lagoon (see Figure 7). Funds for long term

North Coast Corridor Mitigation Site Assessment for the San Dieguito Lagoon W19 Restoration Site

management will be provided by SANDAG/Caltrans and placed into a non-wasting endowment. Endowment funds will be established using a Property Assessment Report that is based on the approved HMP.

ADDITIONAL STUDIES

The preliminary engineering and alternatives development is ongoing and will be documented in the environmental documents.

REQUIRED PERMITS

A Coastal Commission approved NOID and/or coastal development permit with accompanying project report will be required for project implementation. In addition, there are existing waters of the U.S. and State present within the project area. All potential options would require dredging and/or filling to convert the jurisdictional areas into marsh and upland habitat. The extent to which the various options will dredge and/or fill depends on several factors including the presence and size of the berms as well as the amount of land converted. Additional waters of the U.S. and State will be created through the project. As such, it is anticipated that the following additional agency permits will be required for implementation of the mitigation project:

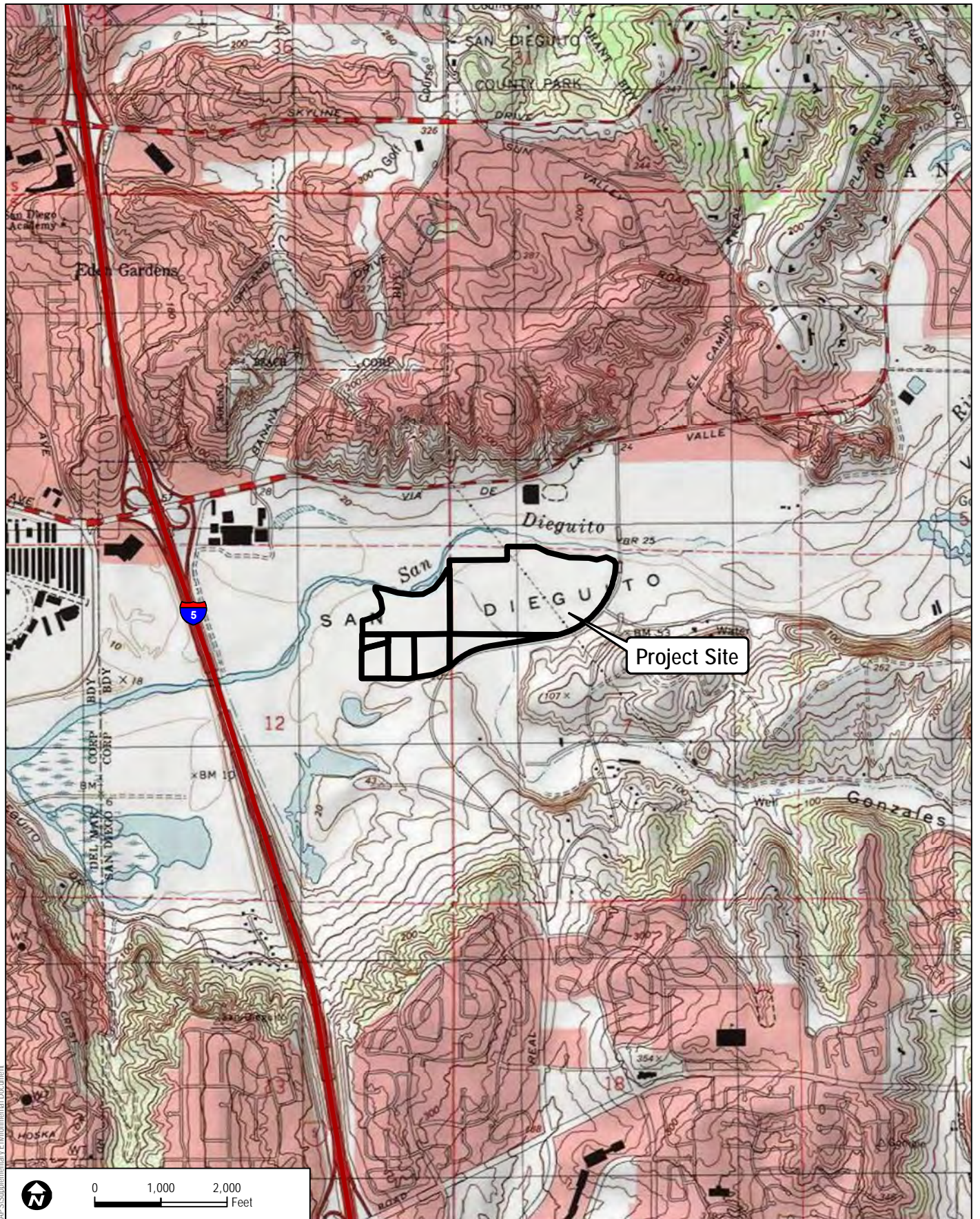
- Clean Water Act 404 from ACOE;
- Clean Water Act 401 from RWQCB;
- Clean Water Act 402 from State Water Resources Control Board (SWRCB);
- 1602 Streambed Alteration Agreement with CDFG; and
- Endangered Species Act Section 7 Consultation with USFWS.

REFERENCES

Dokken Engineering, 2011. San Dieguito Lagoon W19 Restoration Project Feasibility Study. December 2011.

**North Coast Corridor
Mitigation Site Assessment for the San Dieguito Lagoon W19
Restoration Site**

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SOURCE: USGS Topo 7.5 min Quads

North Coast Corridor Transportation and Resource Enhancement Program and Highway Public Works Plan

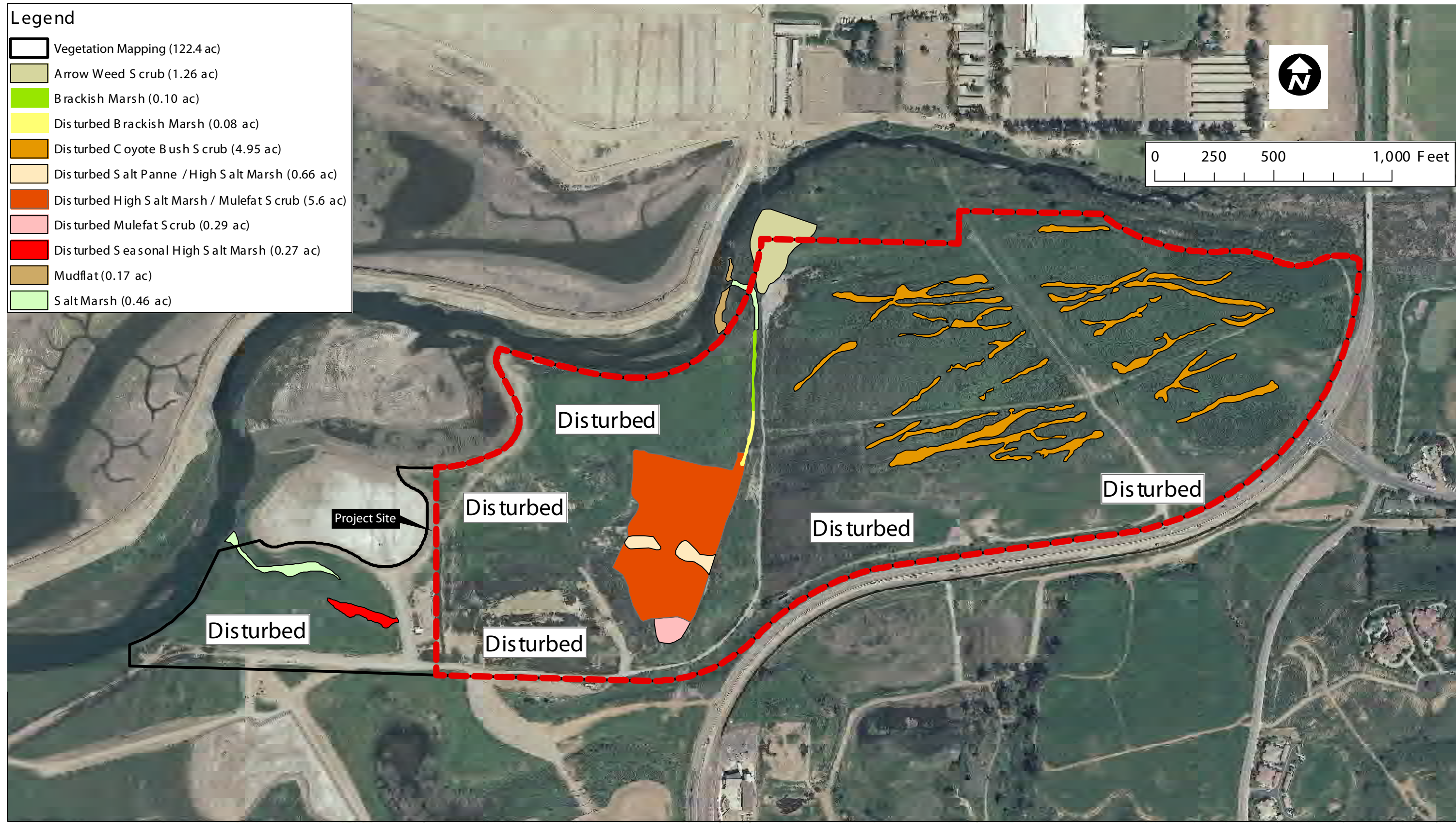
FIGURE 1

San Diegoito - Vicinity Map

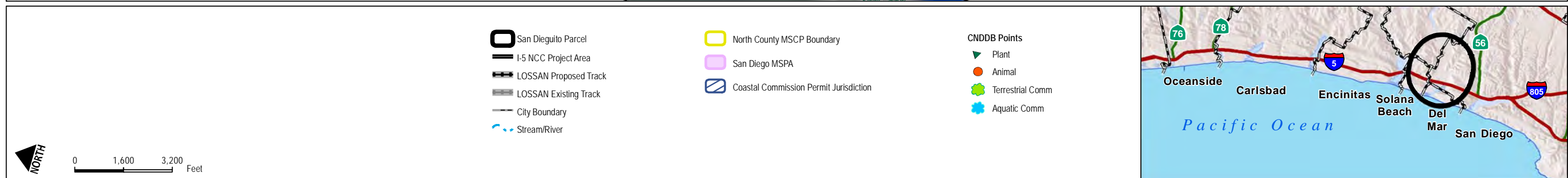
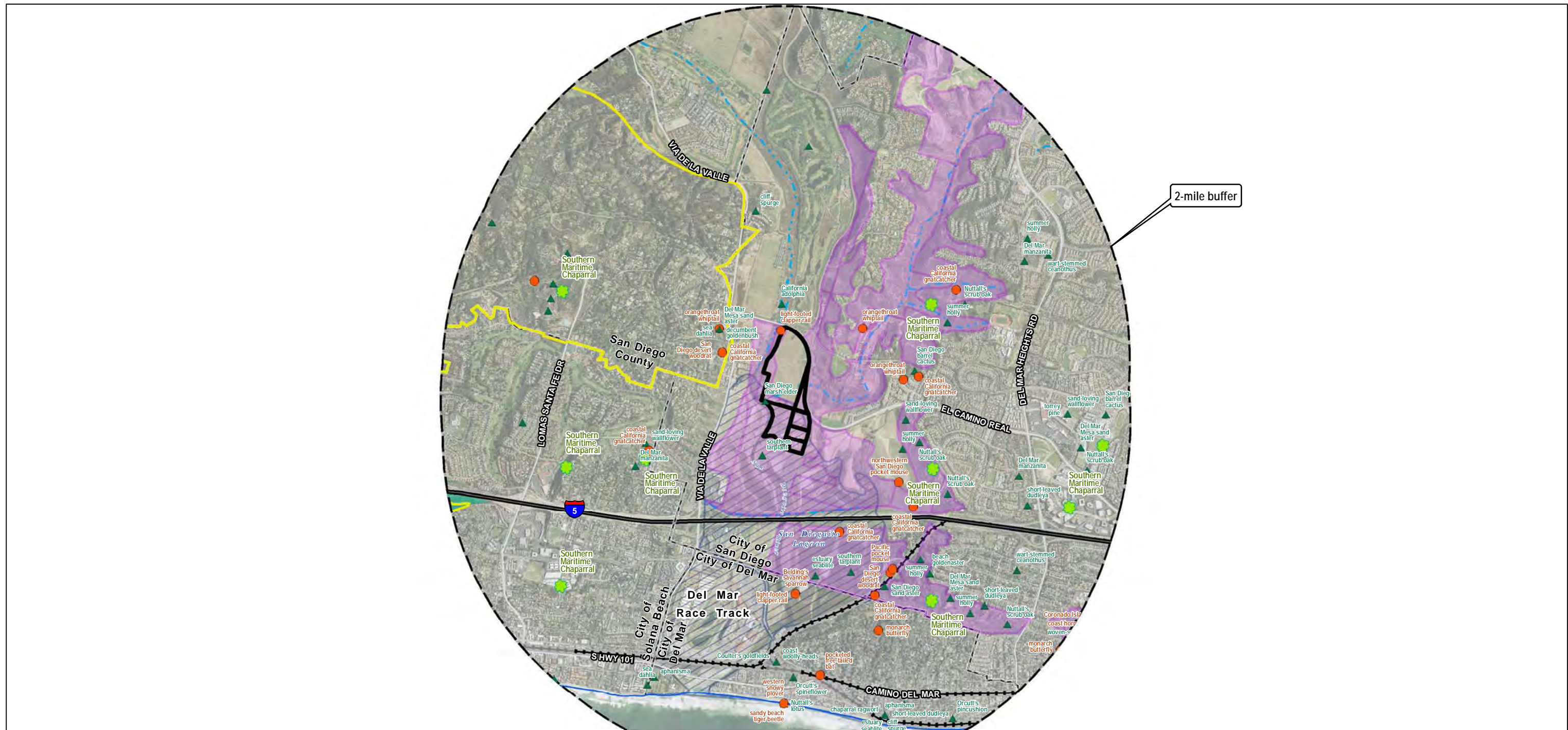
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Legend

- Vegetation Mapping (122.4 ac)
- Arrow Weed S crub (1.26 ac)
- Brackish Marsh (0.10 ac)
- Disturbed Brackish Marsh (0.08 ac)
- Disturbed Coyote Bush S crub (4.95 ac)
- Disturbed Salt Panne / High Salt Marsh (0.66 ac)
- Disturbed High Salt Marsh / Mulefat S crub (5.6 ac)
- Disturbed Mulefat S crub (0.29 ac)
- Disturbed Seasonal High Salt Marsh (0.27 ac)
- Mudflat (0.17 ac)
- Salt Marsh (0.46 ac)



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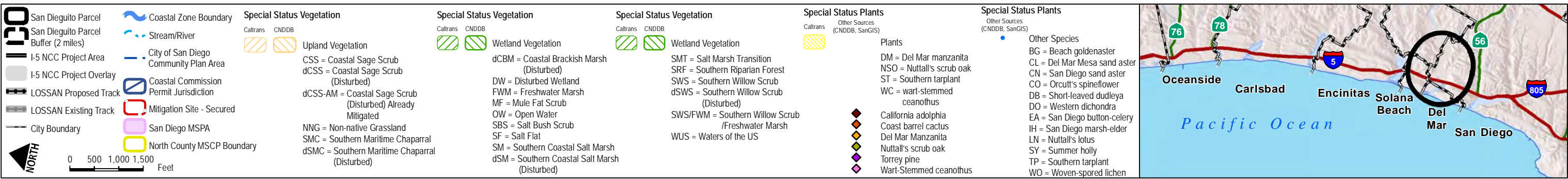
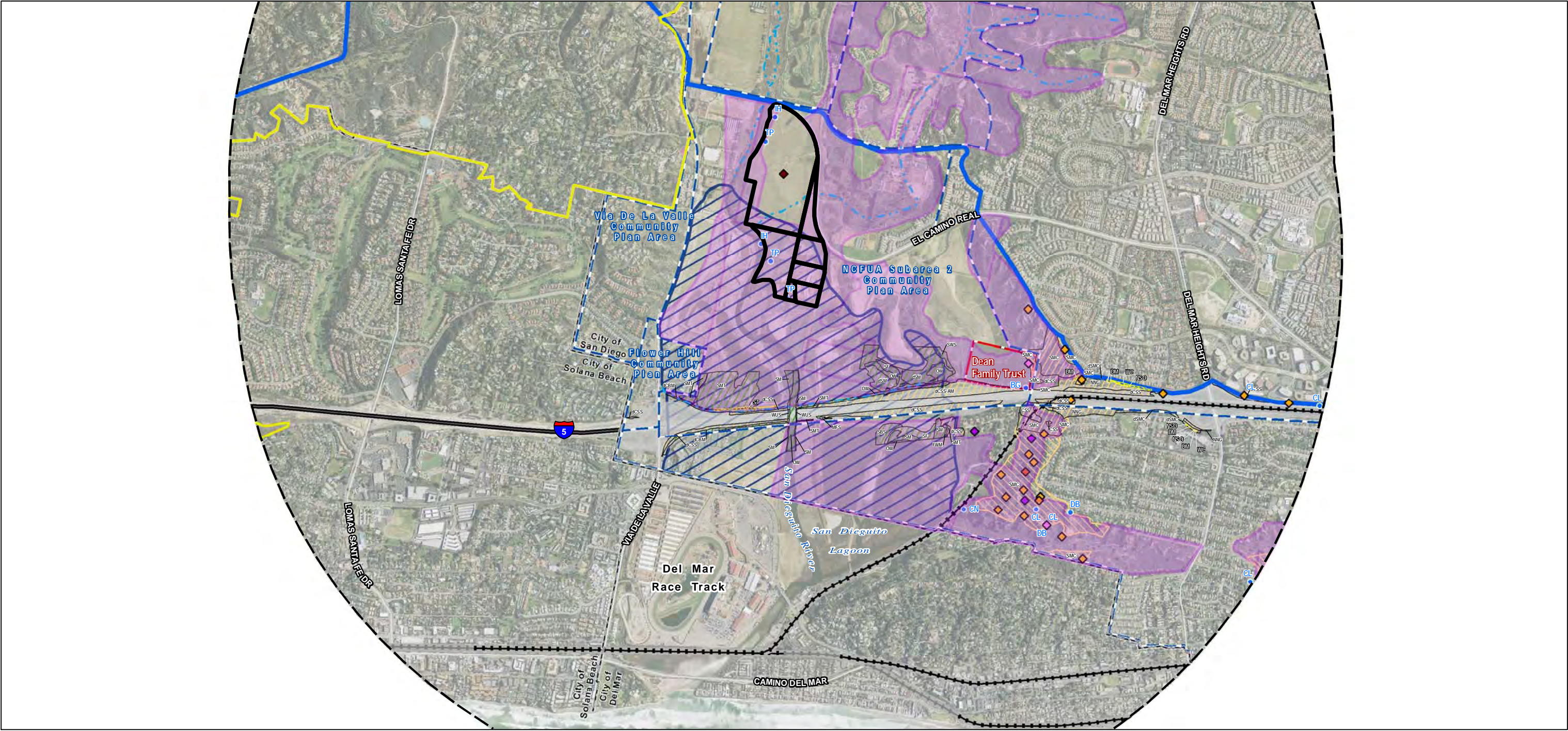
DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, CDFG, USFWS, CNDDDB, Imagery: DigitalGlobe March 2008

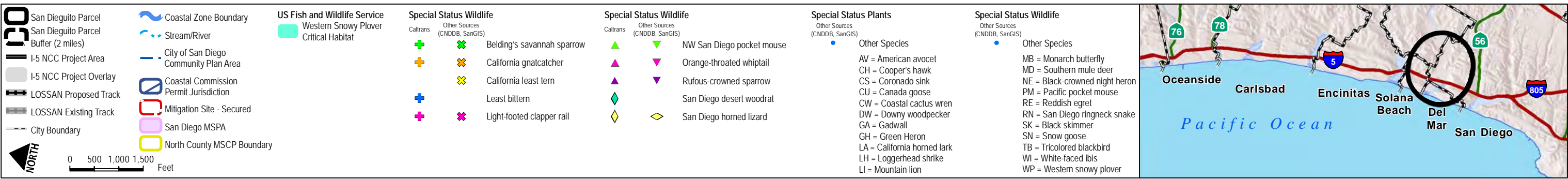
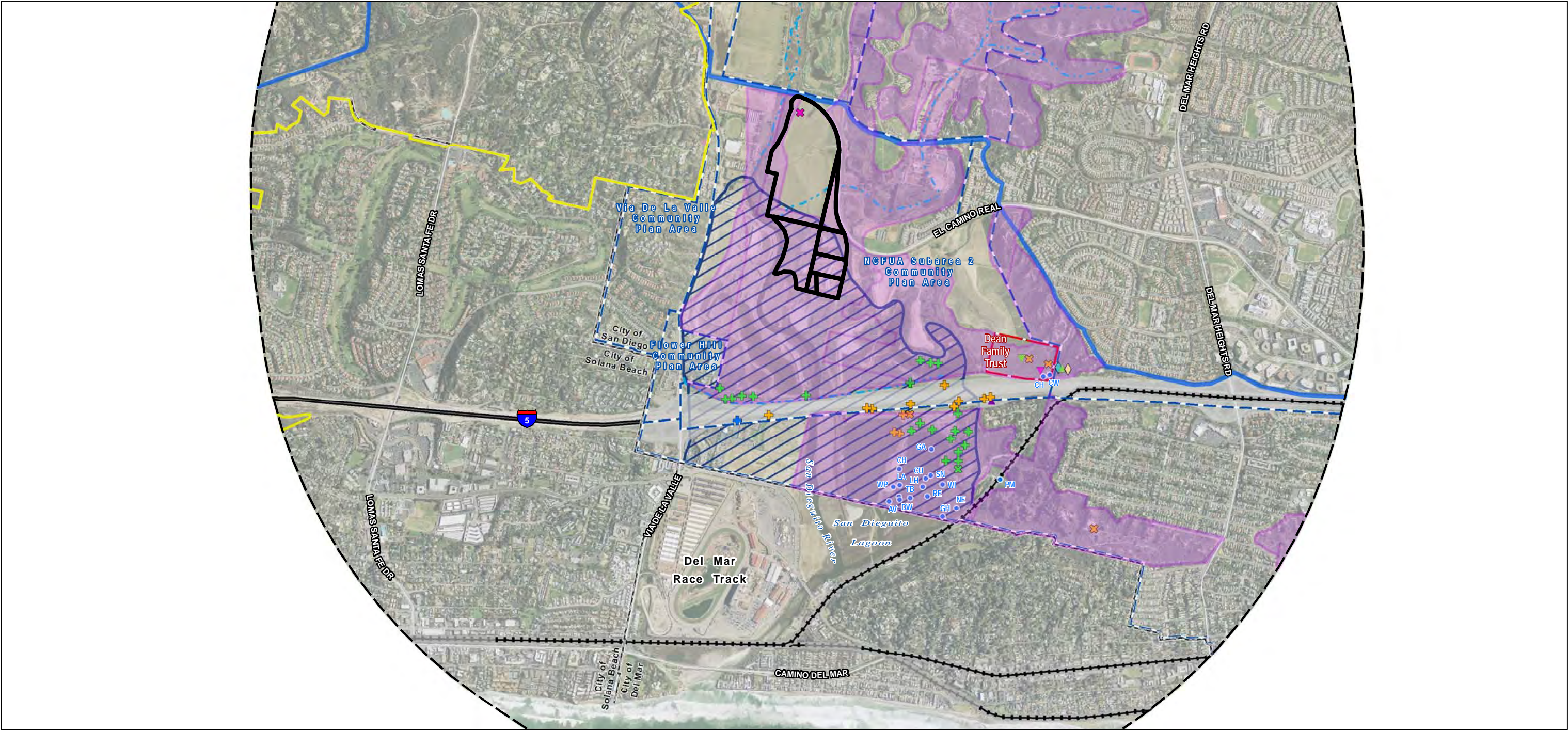
The Coastal Zone boundary, jurisdiction and Local Coastal Program data in this map are for planning and engineering study purposes only. Data are derived from multiple sources. The digital Coastal Zone boundary, jurisdiction and Local Coastal Program data in this map have not been adopted by the Coastal Commission, and do not supersede the official versions certified by the Coastal Commission as may be amended from time to time.
Disclaimer: The State of California makes no representations or warranties regarding the accuracy or completeness of the files or the data from which they were derived. The State shall not be liable under any circumstances for any direct, indirect, special, incidental or consequential damages with respect to any claim by any user or any third party on account of or arising from the use of these Coastal Zone boundary, jurisdiction and Local Coastal Program files or the data from which they were derived. Because the Coastal Zone boundary, jurisdiction and Local Coastal Program data files are merely representational, they and the data from which they were derived are not binding and may be revised at any time.

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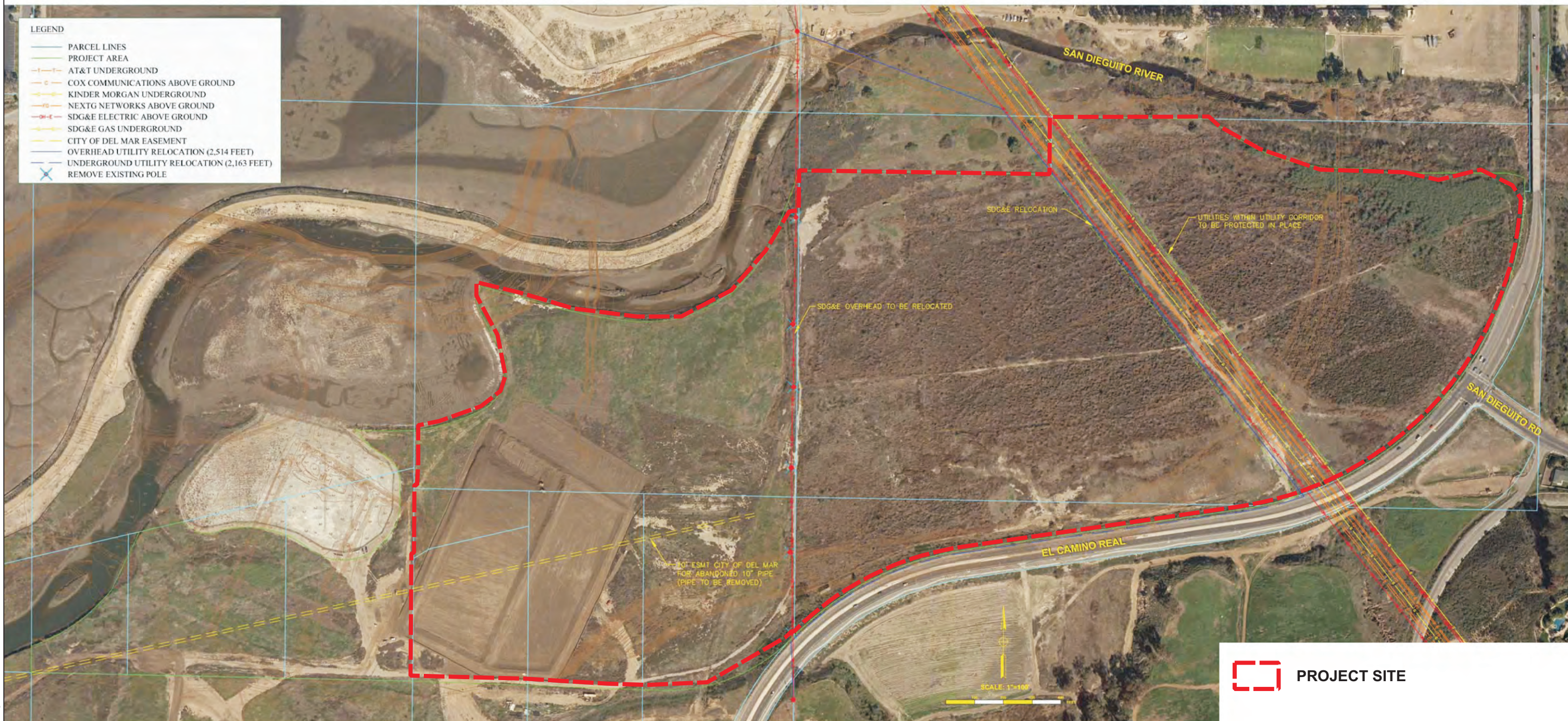
FIGURE 3
San Dieguito Parcel CNDDDB Resources within 2 miles

North Coast Corridor Transportation and Resource Enhancement Program and Highway Public Works Plan





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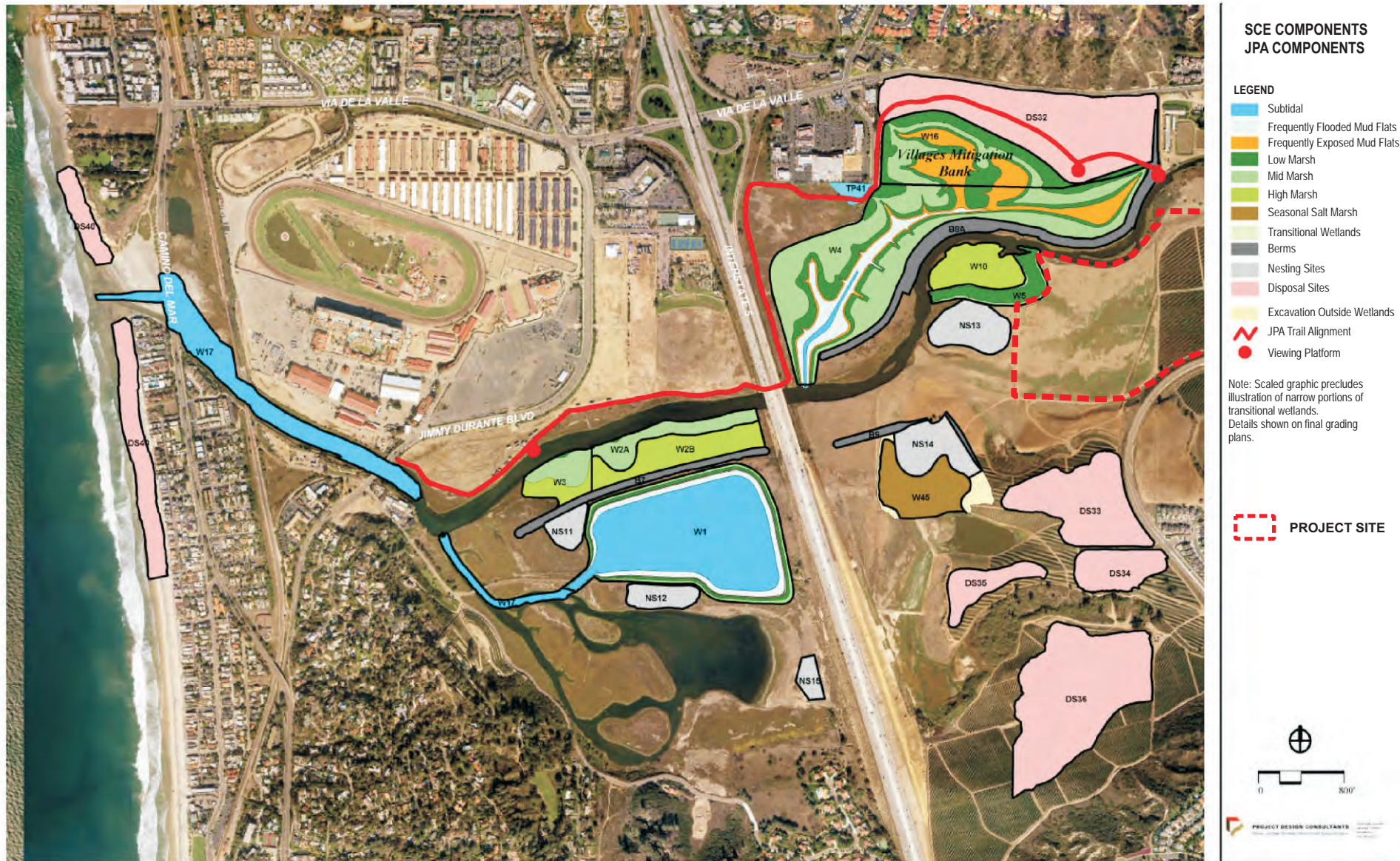
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SOURCE: DOKKEN ENGINEERING 2011

San Dieguito Lagoon Mitigation Parcels—North Coast Corridor Transportation and Resource Enhancement Program and Highway Public Works Plan

FIGURE 6
Constraints - Utility Location



GIS exhibits may be composed from various sources with different levels of accuracy. For details on accuracy of this exhibit please refer to Meta Data provided.

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SOURCE: DOKKEN ENGINEERING 2011

FIGURE 7
Existing Restoration Areas

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San Dieguito Lagoon Mitigation Parcels—North Coast Corridor Transportation and Resource Enhancement Program and Highway Public Works Plan

DRAFT

**North Coast Corridor Public Works Plan/Transportation and
Resource Enhancement Program
Mitigation Site Assessment for the Hallmark Parcels**

Prepared by:

DUDEK

Prepared for:



JULY 2012

North Coast Corridor Mitigation Site Assessment for the Hallmark Parcels

Site Location: The Hallmark Properties are located along the margins of the northeastern portion of Agua Hedionda Lagoon. The properties consist of three parcels of land; a western parcel and two adjoining eastern parcels. The western parcel (Hallmark West) is approximately 11.1 acres in size and is located between Park Drive and Agua Hedionda Lagoon. The other two parcels (Hallmark East) are next to one another between the lagoon and the neighborhoods along Via Hinton and Via Marta (Figure 1); these parcels comprise approximately 8.2 acres.

Latitude/Longitude: West Parcel 33.1428/-117.3174, East Parcels 33.1479/-117.3063

APNs: 207-101-34-00, 207-101-33-00, and 208-020-43-00

Ownership: Caltrans currently owns these parcels

Correspondence with Resource Agencies: June 2008, Resource agencies receive request from Caltrans and SANDAG to approve site for acquisition; Letters acknowledging consideration of site for mitigation received from CCC March 2009, CDFG July 2008, USFWS August 2008, and NMFS July 2008.

MITIGATION GOAL

The San Diego Association of Governments (SANDAG) and California Department of Transportation (Caltrans) propose to mitigate impacts to Army Corps jurisdictional and State wetlands, as well as sensitive upland habitats associated with the North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program (PWP/TREP) by creating salt marsh habitat and restoring and preserving coastal sage scrub habitat on the Hallmark Parcels along the northern shore of Agua Hedionda Lagoon. The goal of the mitigation is to permanently retire development potential of the sites, preserve existing wetland and upland habitat through site protection (easements and fence), enhance existing upland habitat through exotics removal, and to create tidal salt marsh habitat. The proposed mitigation treatments and native vegetation community establishment as indicated in Table 1 will provide the following benefits for:

- California gnatcatcher; by increasing resources within and adjacent to existing occupied gnatcatcher territories;
- *Atriplex pacifica*; by preserving coastal sage scrub (CSS) habitat where it presently occurs and limiting unauthorized site access and the associated disturbance regime;
- Shorebird populations that utilize the Pacific flyway and Agua Hedionda Lagoon salt marsh habitat areas in particular by expanding tidal salt marsh habitat.
- Upland refugia for wildlife in the event of sea level rise.

North Coast Corridor Mitigation Site Assessment for the Hallmark Parcels

- Wetlands migration opportunities for salt marsh habitat in the event of sea level rise.

West Parcel

This parcel is immediately adjacent to the ecological reserve owned by the California Department of Fish and Game (CDFG). There is the potential to create additional salt marsh habitat on the disturbed fingers of fill and natural headlands that extend into the tidal lagoon area. In addition, fencing and access control has discouraged bicycles and off road vehicles that have made bike jumps and have driven into the marsh areas. With exotic removal and some planting, the upland areas could also be restored to a more natural condition. Restoration of tidal salt marsh will expand existing tidal wetlands providing important biological resources for shorebirds and aquatic species that are dependent upon the lagoon for spawning and nursery habitat. Upland areas will provide important opportunities for the slow upward migration of tidal saltmarsh vegetation communities as sea level rise gradually occurs.

East Parcel

This parcel is also immediately adjacent to the Agua Hedionda Lagoon Ecological Reserve owned by the CDFG. The eastern end of this parcel is already deed restricted and it is unlikely any work would take place at this end due to access restrictions; however, some exotic control may be completed along the riparian forest at this end of the parcel. Treatment of the slopes below the homes will be consistent with fire protection standards for plant density, vegetation height, and reduced cover using appropriate fire resistant plantings. Deed restricted and fuel/fire zone areas would not be included in the restoration totals of the site. The remainder of the slope parcel will be restored to CSS and the wetlands enhanced through removal of exotics and planting with native species.

Table 1
Habitat Mitigation Goals

Habitat Types	Mitigation Parcel	Mitigation Type	Mitigation Acreage
Coastal Sage Scrub	East/ West	Preservation/Enhancement	1.8
Coastal Sage Scrub	East/ West	Enhancement	6.6
Coastal Sage Scrub	East/West	Establishment	3.5
Riparian Wetland	East	Preservation/Enhancement	0.32
Freshwater Marsh	East/ West	Restoration/Enhancement	0.52
Brackish Marsh	East	Enhancement	0.45
Riparian	East	Establishment	0.17
Tidal Salt Marsh	West	Establishment	4.2
Tidal Salt March	West	Preservation	0.12

North Coast Corridor

Mitigation Site Assessment for the Hallmark Parcels

EXISTING CONDITIONS

Hallmark West Parcel

Ecological Context

The Hallmark West parcel is situated adjacent to Agua Hedionda Lagoon. The site supports a combination of salt marsh vegetation, coastal sage scrub vegetation, and disturbed areas (see Figures 2 and 4). Mitigation on this site will enhance biological resources within the lagoon ecosystem and provide greater synergistic ecological benefits in association with the larger ecological system such as water quality, wildlife, and habitat continuity on the north lagoon shoreline. The project will establish new tidal salt marsh habitat that provides biological resources and ecological functions used by salt marsh species and shorebirds that utilize the Pacific flyway. Upland mitigation will directly benefit California gnatcatcher and *Atriplex pacifica* through habitat enhancements and preservation as provided by site restoration and enhancement, access restrictions, and long-term management.

Drainage and Hydrology

Overland drainage (sheet flow) generally occurs from the upland area into the adjacent salt marsh vegetation that is associated with Agua Hedionda lagoon. The overland flow has been modified into more concentrated flow patterns due to a lack of vegetation from a derelict revegetation effort on the upland slopes and at an old road cut where soil excavation previously occurred. The concentrated flow has resulted in erosive conditions that are transporting sand to the lagoon.

The lagoon is subject to tidal hydrology (ebb and flow) that effect lagoon shoreline areas below the high tide elevation. These areas typically support salt marsh vegetation.

A storm drainage from the adjacent neighborhood and Park Avenue drains through a culvert into a disturbed wetland at the eastern end of the parcel.

Soils

Upland and soils within the proposed salt marsh creation area are Huerhuero loam associated with marine terraces. Parent material is calcareous alluvium derived from sedimentary rock. The typical soil profile is loam within 0-10 inches below land surface (bls), clay loam/clay from 10-50 inches bls, and stratified sand to sandy loam from 50-60 inches bls (NRCS, soil survey maps). Due to past grading activities, most soils within disturbed habitat areas and the proposed salt marsh mitigation area are sand to sandy loam. Soil within the non-graded and intact habitat areas retain the topsoil characteristics of Huerhuero loam.

North Coast Corridor Mitigation Site Assessment for the Hallmark Parcels

Vegetation

The Hallmark West Parcel is composed of coastal sage scrub, salt marsh, salt marsh transition, freshwater marsh, southern willow scrub, disturbed habitat, and bare ground (see Figures 2, 4 and 5). Table 2 presents a summary of existing vegetation communities and land covers present on Hallmark West.

The coastal sage scrub (CSS) habitat is dominated by coastal sage brush (*Artemisia californica*), coyote bush (*Baccharis pilularis*) and goldenbush (*Isocoma menziesii*). Other common species found in the coastal sage scrub on site include prickly pear (*Opuntia littoralis*), lemonadeberry (*Rhus integrifolia*), and laurel sumac (*Malosma laurina*). The disturbed CSS contains up to 35 percent nonnative exotic species including black mustard (*Brassica nigra*), pampas grass (*Cortaderia* sp.), ice plant (*Carpobrotus edulis*), and nonnative grasses. Sparse CSS on slopes facing southwest have extensive rilling of the sandstone and now support less than 40 percent CSS species, with the remainder as bare ground.

Table 2
Existing Vegetation Communities for Hallmark West

Community Name/Land Cover	Map Code ¹	Acreage
Bare Ground	BG	1.98
Coastal Sage Scrub	CSS	1.04
Disturbed Coastal Sage Scrub	CSS-D	4.28
Sparse Coastal Sage Scrub	CSS-S	0.90
Disturbed Habitat	DH	0.64
Freshwater Marsh	FWM	0.18
Salt Bush Scrub	SBS	0.31
Salt Marsh	SM	0.12
Salt Marsh Transitional	SMT	0.96
Disturbed Salt Marsh Transitional	SMT-D	0.64

¹ See Figure 2 for mapped vegetation communities.

CSS is located on a small knoll and slope on the north side of the parcel. Patches of CSS habitat are high quality, relatively intact habitat with minor trails and openings. These patches have high

North Coast Corridor Mitigation Site Assessment for the Hallmark Parcels

native cover, low weed cover, and high diversity. California gnatcatchers present on site are utilizing the higher quality habitat patches for nesting and forage. Disturbed CSS (dCSS) is present in areas where soil was dug from the hillside and in fingers of habitat that extend out from the toe of slope toward the lagoon. The sparse CSS areas have low native cover and high representation of bare ground (exposed sandstone). Weed cover is low due to the lack of top soil and highly erosive condition as demonstrated by sediment flowing from the excavated area. Habitat occurring on flat areas is degraded by past public uses that promoted non-native vegetation along numerous redundant trails.

The salt marsh (SM) habitat is present in small fingers that extend back toward the parcel boundaries from the lagoon. The salt marsh habitat is dominated by pickleweed (*Salicornia virginica*), and cord grass (*Spartina foliosa*) with some alkali heath (*Frankenia salina*), saltwort (*Batis maritima*) and saltgrass (*Distichlis spicata*). Only a small amount of this habitat is within the parcel and extends out toward the lagoon.

Between the SM and CSS is salt marsh transition (SMT) community that has components of both the salt marsh and CSS. This transition habitat is dominated by saltgrass, coyote bush, goldenbush, and alkali heath. Other species in this transition habitat include spiny rush (*Juncus acutus*), pickleweed, fennel (*Foeniculum vulgare*), and cholla (*Cylindropuntia prolifera*). Much of the SMT habitat is disturbed with black mustard, slender-leaf ice plant (*Mesembryanthemum nodiflorum*), and nonnative grasses.

There is a small drainage running from Park Drive into the lagoon at the eastern end of the west parcel. This drainage is an incised channel that supports freshwater marsh (FWM). The FWM is dominated by cattails (*Typha* sp.), with saltgrass, myoporum (*Myoporum laetum*), western ragweed (*Ambrosia psilostachya*), tobacco tree (*Nicotiana glauca*), and marsh fleabane (*Pluchea odorata*). Immediately surrounding the freshwater marsh area is coastal brackish marsh dominated by spiny rush with some pickleweed, saltgrass, and alkali heath. In one corner of the marsh there is a small patch of disturbed SWS dominated by sandbar willow (*Salix exigua*), with mulefat (*Baccharis salicifolia*), a few tamarisk (*Tamarix* spp.), and pampas grass.

The remainder of the West parcel is composed primarily of bare ground (BG) and disturbed habitat (DH). Bare ground areas are found on trails, and on fingers of fill that extend out into the area that was formerly wetland. These areas have less than 10 percent cover and most of what does grow on these compacted soils are weedy species. However, *Atriplex pacifica* also occurs within and immediately adjacent to these disturbance areas. The disturbed habitat is dominated by black mustard, ice plant, slender-leaf ice plant, and yellow sweet clover (*Melilotus indica*).

North Coast Corridor Mitigation Site Assessment for the Hallmark Parcels

Wildlife

Protocol surveys of the parcel identified two pairs of federally threatened coastal California gnatcatchers (*Poliophtila californica californica*) on site (see Figures 2 and 6). One of the pairs had at least one fledgling in May 2008. Other bird species that commonly occur on site include California towhee (*Pipilo crissalis*), Bewick's wren (*Thryothorus bewickii*), song sparrow (*Melospiza melodia*), Anna's hummingbird (*Calypte anna*), lesser goldfinch (*Carduelis psaltria*), common yellowthroat (*Geothlypis trichas*), bushtit (*Psaltiriparus minimus*), and northern harrier (*Circus cyaneus*). Other wildlife species observed on site include coyote (*Canis latrans*), western fence lizard (*Sceloporus occidentalis*), desert cottontail (*Sylvilagus audubonii*), and California ground squirrel (*Spermophilus beecheyi*). Several shorebirds were observed adjacent to the site including black-necked stilt (*Himantopus mexicanus*), American avocet, willet (*Catoptrophorus semipalmatus*), marbled godwit, and great egret (*Casmerodius albus*).

Two pairs of federally threatened coastal California Gnatcatcher were identified at the west parcel (see Figures 2, 4 and 6). *Atriplex pacifica* was observed on site. *A. pacifica* is a CNPS List 1B.2 species: a rare, threatened, or endangered in California and elsewhere that is fairly endangered in California.

Prior and Current Land Use

The site is highly disturbed from a period of time when the land was planned for development. Prior to 2009, there were illegal trails, dumping, bike jumps, fire pits and other trespassing on site. In 2009, 2,025 feet of fencing was replaced on site with 735 feet of that fence replaced on CDFG land east of the site to limit access and illegal activities onsite. The proposed land use for the site will be for open space and habitat preservation and management.

Existing Utilities/Infrastructure/Easements

There are no known utilities, infrastructure and easements on site that would constrain the mitigation project (Figure 7).

Hallmark East Parcel

Ecological Context

The Hallmark East Parcel lies between some residential housing and riparian habitat associated with Agua Hedionda Creek that is owned and managed by the CDFG (see Figures 3 and 4). The east parcel is 0.8 mile upstream of the Agua Hedionda lagoon. The mitigation site presents an opportunity to establish and enhance brackish marsh into the low lying area of the mitigation

North Coast Corridor Mitigation Site Assessment for the Hallmark Parcels

site. Slope restoration and enhancement are proposed that would create a habitat buffer between existing residential land use and fuel modifications zones and the existing riparian habitat.

The existing riparian habitat sliver is the edge of a larger stand of riparian forest associated with Agua Hedionda Creek. The riparian vegetation extends downstream toward the lagoon until saltwater influences cause the vegetation to transition to brackish marsh and tidal salt marsh, mud flats and salt panne.

Drainage and Hydrology

Drainage on site is heavily modified and dictated by adjacent residential development. Drainage from streets and residential lots occurs through sheet flow and concentrated flow from the road edge. A storm drain outfall is present at the bottom of the existing road slope. The drainage settles in a low area on site as evidenced by a patch of disturbed freshwater marsh vegetation. The eastern end of the parcel is deep restricted habitats located along the slopes of drainages.

Soils

The central area of the mitigation site is flat to gently sloping toward the riparian area. Manufactured slopes approximately 20 feet tall with a 2:1 gradient surround the low lying area and mitigation area to the east and west of this parcel.

Soil within the east parcel is mapped as Las Flores loamy fine sand in the NRCS soil survey. These soils are derived from sandstone parent material. Water capacity is low. The typical soil profile includes loamy fine sand from 0-14 inches bls, sandy clay/sand from 14-38 inches bls, and loamy coarse sand from 38-48 inches bls.

Vegetation

Existing habitats on the Hallmark East parcel are CSS, Baccharis scrub, FWM, coastal brackish marsh, riparian forest, non-native woodland, ornamental, DH, and BG (see Figures 3-5). Table 3 presents a summary of the existing vegetation communities and land covers found on Hallmark East.

North Coast Corridor Mitigation Site Assessment for the Hallmark Parcels

Table 3
Existing Vegetation Communities for Hallmark East

Community Name/Land Cover	Map Code ¹	Acreage
Bare Ground	BG	0.44
Disturbed Baccharis Scrub	BBS-D	0.28
Coastal Brackish Marsh	CBM	0.32
Disturbed Coastal Brackish Marsh	CBM-D	0.13
Coastal Sage Scrub	CSS	0.78
Disturbed Coastal Sage Scrub	CSS-D	1.14
Disturbed Habitat	DH	0.96
Freshwater Marsh	FWM	0.34
Non-Native Woodland	NNW	0.17
Ornamental	ORN	3.16
Riparian Forest	RF	0.25
Salt Marsh Transitional	SMT	0.05
Disturbed Southern Willow Scrub	SWS-D	0.07

¹ See Figure 3 for mapped vegetation communities.

The CSS is similar in composition to the West parcel with coastal sage brush and coyote bush as the dominant components. The slopes in the center of the parcel off Via Hinton are good quality habitat with trails through the habitat. Further to the west the CSS is disturbed with at least 50 percent of the area either bare ground or annual exotic species including black mustard, pampas grass, myoporum, and sour grass (*Oxalis* sp.).

The disturbed Baccharis scrub (BBS-D) is dominated by coyote bush and mustard with pampas grass and fennel. It occurs at the eastern end of the parcel at the end of the drainage down the canyon.

Brackish marsh (BM) dominated by cattails is found in a drainage in the center of the parcel. This marsh appears to be fed by a combination of urban runoff from the surrounding neighborhood and groundwater from Agua Hedionda Creek. Immediately surrounding the

North Coast Corridor Mitigation Site Assessment for the Hallmark Parcels

freshwater marsh area is coastal brackish marsh dominated by spiny rush with some pickleweed, saltgrass, and alkali heath.

Riparian forest (RF) habitat occurs at the base of the slopes east of the sewer easement (Figure 3). This habitat consists of large mature willows (*Salix* spp.) with western sycamore (*Platanus racemosa*) and a few nonnative trees. The understory of this habitat is a mixture of spiny rush, cattails, small willows, and herbaceous plants. There is only a small sliver of riparian forest within the parcel.

Between the houses and the CSS habitats are slopes dominated by ornamental vegetation (ORN) including ice plants (*Malephora* sp. and *Lampranthus* sp.) with mustard, African fountain grass (*Pennisetum setaceum*), fan palm (*Washingtonia robusta*), pampas grass, and wild oats (*Avena* sp.).

Nonnative woodland (NNW) habitat is found between the freshwater marsh and disturbed habitat off Via Hinton and on the slopes at the eastern end of the parcel. The nonnative woodland is a combination of eucalyptus trees (*Eucalyptus* sp.), Brazilian pepper (*Schinus terebinthifolius*), Peruvian pepper (*Schinus molle*), and palms (*Washingtonia* sp. and *Phoenix* spp.). There is one arroyo willow (*Salix lasiolepis*) in the middle of the nonnative woodland off Via Hinton.

DH and BG habitats are similar to those habitats in the Hallmark West parcel. The BG occurs along trails and on the sewer access road at the base of the slope and up to Via Hinton where parent sandstone is exposed. The DH is found between the NNW and ORN, and consists primarily of black mustard.

Wildlife

Birds observed on site were the California towhee, spotted towhee (*Pipilo erythrophthalmus*), common yellowthroat, Nuttall's woodpecker (*Picoides nuttallii*), lesser goldfinch, Anna's hummingbird, and wrentit (*Chamaea fasciata*). In the adjacent riparian forest a number of riparian bird species were detected including yellow-breasted chat (*Icteria virens*), black-headed grosbeak (*Pheucticus melanocephalus*), and brown-headed cowbird (*Molothrus ater*) (see Figures 4 and 6).

One pair of California gnatcatchers was identified on this parcel (see Figures 3, 4 and 6).

Prior and Current Land Use

There has been motorcycle, bicycle, and pedestrian trespassing throughout the properties in the past. This has resulted in erosion, creation of bike jumps on site and degradation of the habitats on site. Neighborhood pets may use the area for foraging. The slopes down from the residential

North Coast Corridor Mitigation Site Assessment for the Hallmark Parcels

lots are maintained as fire buffers for the development. Required fire buffers are 100-feet wide in San Diego County.

Existing Utilities/Infrastructure/Easements

There is a sewer easement on the southern edge of the site along the boundary between the CDFG land and the Caltrans parcel, and also through the middle of the site that connects to Via Hinton. These easements must be maintained for utilities access. In addition to underground sewer utilities and facilities access, the easements are informally used by the public for hiking and dog walking. The slopes below the houses have ornamental landscapes and many have deed restrictions. These slopes appear to be managed fire buffer zones (see Figure 8).

MITIGATION PROGRAM

A brief conceptual plan for wetland creation and upland restoration was drafted to get preliminary concurrence from the CDFG that wetland creation on their lands are acceptable to be able to restore areas of the Hallmark West Parcel. The conceptual plan is described below and shown on Figure 9. Detailed conceptual mitigation plans for the East and West parcels will be prepared following additional site investigations. The report will be submitted as part of the Notice of Impending Development (NOID) for review and approval. The detailed conceptual plan will include plant palettes for target vegetation communities and specify material type (container plant, seed, etc.), container sizes and density of planting. Seed mixes will specify species and seed quality by the minimum percentage of pure live seed per pound. Site-specific functions-based performance criteria will be presented based on local reference vegetation of the same vegetation community to be restored and functional data from proposed impact areas.

Hallmark West Parcel

Schedule

Design of the wetland mitigation plan will begin when approval is received from the resource agencies that mitigation is appropriate and will be counted toward mitigating the North Coast Corridor multi modal transportation project impacts. Detailed design will be provided through the NOID approval process during the first phase of implementation of the North Coast Corridor PWP/TREP. As discussed in Section 6.5.3 of the PWP/TREP, the results of the consultations with persons and agencies interested in, with jurisdiction over, and/or affected by the proposed development, including consultations with federal and state resource agencies (e.g., Army Corps, USFWS, CDFG, RWQCB, etc.), as well as all supporting documentation are required to be submitted along with the NOID project report. Accordingly, all design and related project reporting would be submitted to the permitting agencies for consultation as part of the NOID review and approval process.

North Coast Corridor Mitigation Site Assessment for the Hallmark Parcels

Mitigation Goal and Purpose

The total created salt marsh area would equal 4.2 acres, 1.3 acres on Caltrans property and 2.9 acres on CDFG property. Creation of salt marsh in the existing fill would enhance flow and habitat quality of the adjacent salt marsh habitat on CDFG land. The additional sub-tidal channels and low marsh/mudflat would increase flushing and provide important foraging habitat for a number of bird species. The additional mid and high marsh will form contiguous salt marsh habitat with the adjacent habitats. Created tidal salt marsh will have similar species composition and structure as observed in representative salt marsh habitat found within Agua Hedionda lagoon near the mitigation site.

Upland mitigation will restore and enhance existing disturbed CSS habitat (4.28 acres) and sparse CSS (0.9 acre) onsite, and preserve extant occupied CSS habitat (1.04 acre). Enhancement will occur through site access restriction to reduce the disturbance regime associated with unauthorized site entry, seed applications, and weed control during a 5-year maintenance period corresponding with the saltmarsh establishment period, and long term management for site protection and weed control.

Establishment of CSS on some bare ground and disturbed habitat areas (approximately 2.0 acres) would include exotic control, container planting and seeding and possibly temporary irrigation.

After approval of the proposed salt marsh and upland mitigation area and proposed work on CDFG property, Caltrans will begin developing a detailed mitigation plan for the sites. The resource agencies will be consulted during the design process to ensure that plans account for any concerns with grading, types of habitats created, and potential temporary impacts to adjacent habitats.

Hydrology

Tidal salt marsh hydrology will be established through topographic modification of the site that will create tidal connections to Agua Hedionda Lagoon and existing adjacent salt marsh habitat. The created salt marsh would have a series of channels to bring flow into the three areas with a combination of low, middle, and high marsh habitats with some mud flats (Figure 9).

Upland hydrology will primarily be maintained as overland sheet flow, terminating at the lagoon/saltmarsh edge. However, some minimal topographic modifications will be implemented in upland areas where erosion has occurred to reduce concentrated runoff and erosive conditions.

North Coast Corridor Mitigation Site Assessment for the Hallmark Parcels

Topographic Modification

SANDAG/Caltrans propose to grade the disturbed peninsulas of fill that extend out in between the existing CDFG owned salt marsh habitat. In addition, SANDAG/Caltrans propose to grade additional filled areas owned by the CDFG that are between Caltrans property and the lagoon proper. It is necessary to grade channels to allow water to flow into the created salt marsh habitat and allow for functioning low salt marsh and mud flat with mid to high marsh habitat. The berms that create barriers to water flow will be partially graded to allow water to flow into the creation areas.

Within the upland area, old road cuts and excavation areas will be smoothed to re-establish overland sheet flow. These grade modifications are intended to stabilize the soil surface to reduce erosion and allow the areas to be restored to native CSS vegetation.

Soils

Soil testing would be completed during the design process to determine what soils and groundwater are expected onsite to help in designing the salt marsh restoration. Any soil deficiencies or issues will be examined to ensure that plans take into account soils found onsite.

Soil testing will be conducted in the upland areas where topographic modification is proposed to determine the need for soil amendments that will promote soil and vegetation community restoration.

Target Plant Communities

Coastal sage scrub will be established in uplands areas outside the salt marsh habitat areas that are not deed restricted or are fuel modification zones. Target plant communities in the salt marsh mitigation site include upper and mid salt marsh vegetation communities. Sub-tidal channels and associated low marsh/mudflat will be incorporated into the final design to facilitate tidal flushing and hydrology that will support the target plant communities. Table 4 presents the expected dominant species that will be present within each of these plant communities. Additional herbaceous and annual species will be added to the plant palette in the NOID submittal to provide appropriate species diversity that is typical of comparable adjacent existing habitat.

North Coast Corridor Mitigation Site Assessment for the Hallmark Parcels

Table 4
Target Dominant Species by Vegetation Community

Vegetation Community	Botanical Name	Common Name
Coastal Sage Scrub	<i>Artemisia californica</i>	California Sagebrush
	<i>Baccharis pilularis</i>	coyote bush
	<i>Distichlis spicata</i>	saltgrass
	<i>Encelia californica</i>	California encelia
	<i>Eriogonum fasciculatum</i>	flat-top buckwheat
	<i>Isocoma menziesii</i> var. <i>vernonoides</i>	coast goldenbush
	<i>Opuntia littoralis</i>	prickly-pear cactus
Upper Marsh	<i>Batis maritima</i>	saltwort
	<i>Jaumea carnosa</i>	fleshy jaumea
	<i>Juncus acutus</i>	spiny rush
	<i>Limonium californicum</i> var. <i>mexicanum</i>	San Diego rosemary
	<i>Monanthochloe littoralis</i>	salt-cedar
	<i>Salicornia subterminalis</i>	Parish's glasswort
	<i>Sueda taxifolia</i>	woolly sea-blite
Middle Marsh	<i>Frankenia salina</i>	alkali-heath
	<i>Salicornia virginica</i>	pickleweed

Coastal sage scrub will be established mainly through removal of exotic species and the application of a non-irrigated seed mix. Container planting will be added in areas where construction activities disturb soils and where no existing native vegetation is present (i.e., disturbed habitat/ornamental). Salt marsh vegetation communities will be established using small-size (i.e., flats, rose pots and liners) container plantings. No seed mix is proposed for salt marsh mitigation areas.

Supportive Measures

Limited temporary irrigation may be installed to facilitate vegetation establishment in transitional areas between the tidal limits of the salt marsh mitigation and upland areas. Upland areas lacking existing native cover and areas disturbed by construction of the mitigation site (e.g. access routes, staging areas, etc.) will be temporarily irrigated to increase the certainty of mitigation performance and success. No irrigation is proposed in upland areas with existing disturbed or undisturbed CSS vegetation. Areas with tidal influence will not be irrigated. All

North Coast Corridor Mitigation Site Assessment for the Hallmark Parcels

temporary irrigation will cease after 1-3 years depending upon vegetation establishment as determined by the project biologist.

Performance Criteria

Performance criteria will be developed from reference sites within or adjacent to the mitigation parcel. Existing CSS vegetation on site will be sampled using vegetation transects to establish appropriate vegetation cover and species diversity criteria. Other performance criteria will include native seedling recruitment, non-native vegetation cover, soil stability (lack of erosion), and wildlife use of the area. Criteria will be established that provides a high level of confidence that, once performance criteria are achieved, the resultant vegetation communities will be resilient and persistent as a demonstration of self-sustainability under a long term management program.

Mitigation results for uplands on the west parcel are expected to increase native cover and species diversity to around 85% of adjacent undisturbed habitat, while reducing non-native cover to 5% or less of total vegetation cover. The specifics of the performance criteria will be detailed in the Conceptual Mitigation Plan for the Hallmark Parcels, through the NOID process and/or Coastal Development Permit. Erosive slope areas will be stabilized through grading, long term Best Management Practices mainly in the form of bioengineered solutions, and vegetation establishment to re-establish overland sheet flow. Stabilization of disturbed slopes will improve water quality in the lagoon by reducing elevated sediment transport into upland terraces and tidal wetlands.

Saltmarsh performance criteria will be similarly based on a local reference site. Criteria appropriate to each salt marsh habitat type (e.g., middle/upper salt marsh, mud flat, etc.) will include appropriate tidal hydrology (prism), native vegetation cover and species diversity, native seedling recruitment, microtopographic variation, tidal channel stability, biochemical activity, wildlife use, and benthic macro-invertebrate diversity.

Comparative analysis of pre-and post-mitigation site conditions will demonstrate the anticipated improvements in biological resources and ecological function. A description of the pre- and post-mitigation condition is listed below to demonstrate the benefits anticipated from the proposed mitigation.

- Tidal hydrology is absent at the proposed salt marsh mitigation site. Site grading to elevations within the tidal prism will establish tidal hydrology that will support salt marsh habitat.
- No salt marsh vegetation is present within the mitigation areas. Therefore, a significant increase in vegetation resources can be expected in the post-project condition. Salt marsh

North Coast Corridor Mitigation Site Assessment for the Hallmark Parcels

vegetation provides forage, cover, and nesting opportunities for numerous avian species, and biological resources (habitat) for aquatic species.

- Exotic, perennial non-native vegetation will represent less than 0% relative vegetation cover at the end of the mitigation maintenance and monitoring period. This low level of non-native vegetation will result in high-quality, self-sustaining habitat that can transition into long term management.
- Implementation of the proposed mitigation treatment will substantially change soil texture characteristics that will directly benefit macro-invertebrate populations where none presently exist. Macro-invertebrates will provide expanded forage for shorebird and fish populations that utilize the lagoon.

Criteria metrics will be developed in accordance with functional analysis methodologies to establish interim and final functional criteria. Interim target functional criteria scores will be used to inform maintenance decisions and regimes during the five-year monitoring and maintenance period to achieve the final target functional criteria scores.

Hallmark East Parcel

Schedule

Design of the wetland mitigation will begin when approval is received from the resource agencies that mitigation is appropriate and will be counted toward mitigating the North Coast Corridor multi modal transportation project impacts. Detailed design will be provided through the NOID approval process, during the first phase of implementation of the North Coast Corridor PWP/TREP. As discussed in Section 6.5.3 of the PWP/TREP, the results of the consultations with persons and agencies interested in, with jurisdiction over, and/or affected by the proposed development, including consultations with federal and state resource agencies (e.g., Army Corps, USFWS, CDFG, RWQCB, etc.), as well as all supporting documentation are required to be submitted along with the NOID project report. Accordingly, all design and related project reporting would be submitted to the permitting agencies for consultation as part of the NOID review and approval process.

Mitigation Goal and Purpose

SANDAG and Caltrans propose to mitigate impacts to Army Corps jurisdictional and State wetlands, as well as sensitive upland habitats associated with the North Coast Corridor PWP/TREP by rehabilitating and restoring (0.45 acres) of brackish marsh habitat, and establishing southern willow scrub in a drainage which is currently nonnative woodland (0.17 acre). Approximately 1.5 acre of CSS will be established in areas that are currently disturbed/ornamental, but are not deed restricted or located within fire buffer areas. The existing

North Coast Corridor Mitigation Site Assessment for the Hallmark Parcels

good quality CSS (0.78 acres) will be preserved, and disturbed CSS (1.14 acre) and *Baccharis* scrub (0.28 acre) will be enhanced. In addition, the project will enhance the functions and services of the wetland buffer that separates residential development from the adjacent riparian habitat on Agua Hedionda Creek. CSS vegetation will be created and enhanced to provide greater resources for California gnatcatcher and other sage scrub obligate species. Nonnative trees and perennial plants in the wetland in the middle of the parcels and annual and perennial exotic plants within the CSS on site will be removed.

Hydrology

Existing hydrology is sufficient to support wetlands as evidenced by the presence of existing wetlands vegetation. Upland hydrology via sheet flow also is sufficient to support CSS as evidenced by existing habitat on the slopes that is occupied by one California gnatcatcher.

Topographic Modification

No grading is proposed to lower site elevations to alter site hydrology. Minor re-contouring may help to disperse concentrated flows. These modifications would provide greater distribution of runoff through the wetland areas and would facilitate wetlands enhancement and rehabilitation.

No grading is proposed in upland areas.

Soils

Soils are suitable for the proposed upland and wetlands mitigation. Soil amendments may be recommended based on test results.

Target Plant Communities

Coastal sage scrub will be established in all upland areas between the established 100-foot wide fire buffer and existing wetlands habitat. Target plant communities in the wetlands mitigation site include coastal brackish marsh and southern willow scrub, and buffer plantings of transitional vegetation communities on the surrounding slopes. Table 5 presents the expected dominant species that will be present within each of these plant communities. Additional herbaceous and annual species will be added to the plant palette in the NOID submittal to provide appropriate species diversity that is typical of comparable adjacent existing habitat.

North Coast Corridor Mitigation Site Assessment for the Hallmark Parcels

Table 5
Target Dominant Species by Vegetation Community

Vegetation Community	Botanical Name	Common Name
Coastal Sage Scrub	<i>Artemisia californica</i>	<i>California Sagebrush</i>
	<i>Baccharis pilularis</i>	<i>coyote bush</i>
	<i>Distichlis spicata</i>	<i>saltgrass</i>
	<i>Encelia californica</i>	<i>California encelia</i>
	<i>Eriogonum fasciculatum</i>	<i>flat-top buckwheat</i>
	<i>Isocoma menziesii</i> var. <i>vernonoides</i>	<i>coast goldenbush</i>
	<i>Leymus condensatus</i>	<i>Giant wild rye</i>
	<i>Opuntia littoralis</i>	<i>prickly-pear cactus</i>
Coastal Brackish Marsh	<i>Frankenia salina</i>	<i>alkali-heath</i>
	<i>Distichlis spicata</i>	<i>saltgrass</i>
	<i>Juncus acutus</i>	<i>spiny rush</i>
	<i>Salicornia subterminalis</i>	<i>Parish's glasswort</i>
	<i>Salicornia virginica</i>	<i>pickleweed</i>
Southern willow scrub	<i>Juncus acutus</i>	<i>spiny rush</i>
	<i>Platanus racemosa</i>	<i>sycamore</i>
	<i>Pluchea sericera</i>	<i>arrowweed</i>
	<i>Salix exigua</i>	<i>sandbar willow</i>
	<i>Salix lasiolepis</i>	<i>arroyo willow</i>

Coastal sage scrub will be enhanced mainly through exotic removal and the application of a non-irrigated seed mix. Container planting and seeding will be used in areas where construction activities disturb soils and where no existing native vegetation is present (i.e., disturbed habitat). Coastal brackish marsh vegetation will be established using small-size (i.e., flats, rose pots and liners) container plantings. Southern willow scrub habitat will be established through the installation of 1-gallon container trees, willow cuttings, and smaller containers for understory species.

Supportive Measures

An irrigation system may be required to supplement natural rainfall in the first few growing seasons after initial installation. Maintenance and monitoring will be performed during the 5-year monitoring period to guide the emerging native vegetation toward meeting performance standards. Primary maintenance activities will be to apply seasonally appropriate supplemental irrigation water and weed control activities, and removal of exotic plant species by hand or through spraying with herbicides (glyphosate).

North Coast Corridor Mitigation Site Assessment for the Hallmark Parcels

Performance Criteria

Performance criteria will be developed from reference sites within or adjacent to the mitigation parcel. Existing CSS vegetation on site will be sampled using vegetation transects to establish appropriate vegetation cover and species diversity criteria. Other performance criteria will include native seedling recruitment, non-native vegetation cover, soil stability (lack of erosion), and wildlife use of the area. Criteria will be established that provides a high level of confidence that, once performance criteria are achieved, the resultant vegetation communities will be resilient and persistent as a demonstration of self-sustainability under a long term management program.

Mitigation results for uplands on the east parcel are expected to increase native cover and species diversity to around 85% of adjacent undisturbed CSS habitat, while reducing non-native cover to 5% or less of total vegetation cover. The specifics of the performance criteria will be detailed in the Conceptual Mitigation Plan for the Hallmark Parcels, through the NOID process and/or Coastal Development Permit. Presently, slopes are dominated by non-native and ornamental vegetation. Lower sloped areas will be type converted from non-native vegetation to CSS in support existing California gnatcatchers.

Wetlands performance criteria will be based on existing on site wetlands vegetation of similar vegetation communities. In addition to native wetlands vegetation cover, structure, and species diversity, performance criteria will include evidence of appropriate hydrology, biochemical processes, non-native cover cap, micro-topographic variation and wildlife use.

Pre-and post-mitigation site conditions will demonstrate the anticipated improvements in biological resources and ecological function. A description of the pre- and post-mitigation condition is listed below to demonstrate the benefits anticipated from the proposed mitigation.

- Existing wetlands vegetation is degraded by exotic species within and surrounding the wetlands. The post-mitigation vegetation will include no more than 0% relative cover of non-native perennial vegetation. Native wetlands vegetation cover will achieve a minimum of 70% of adjacent brackish marsh habitat by the end of the 5-year maintenance and monitoring period.
- Existing native wetlands are separated from the adjacent riparian open space by non-native vegetation. Removal of exotic vegetation and replacement with appropriate native vegetation will increase wildlife connectivity within the area.
- Hydrology that is presently constrained by site topography can be spread with minor re-contouring to expand wetlands vegetation. These additional resources will provide increased biological resources for native wildlife species.

North Coast Corridor Mitigation Site Assessment for the Hallmark Parcels

Criteria metrics will be developed in accordance with functional analysis methodologies to establish interim and final functional criteria. Interim target functional criteria scores will be used to inform maintenance decisions and regimes during the five-year monitoring and maintenance period to achieve the final target functional criteria scores.

SITE PROTECTION

Caltrans will deed all three Hallmark Parcels to the CDFG with an endowment, once the creation and restoration projects are complete. These parcels will add to the CDFGs habitat along Agua Hedionda Lagoon creating a more continuous property boundary with upland buffer habitat to the marsh habitat.

Existing fencing will be maintained. No additional fencing is proposed for the eastern parcels.

LONG TERM MANAGEMENT

A Habitat Management Plan (HMP) will be prepared to define the long term management responsibilities to maintain the biological resources that are established through the mitigation project. CDFG will assume long term management responsibilities in association with other CDFG properties around Agua Hedionda Lagoon (see Figure 10). Funds for long term management will be provided by SANDAG/Caltrans and placed into a non-wasting endowment. Endowment funds will be established using a Property Assessment Report that is based on the approved HMP.

ADDITIONAL STUDIES

Further studies will be required to support the design that will be presented in the NOID submittal. These studies include a tidal hydrology study to establish target grade elevations that will create appropriate tidal inundation to support and sustain salt marsh habitat.

Soils testing will be needed to determine the appropriateness of existing soils for salt marsh mitigation and need for soil import in salt marsh mitigation areas. A topographic survey is required to support construction grading design and construction plans. In addition, deed restricted, easement, and fuel / fire zone areas will need to be quantified to determine boundaries and acreages that can be counted toward mitigation credit.

The location of culverts, stormwater outfalls, or low areas where runoff from the adjacent community is flowing onto the property shall be mapped and analyzed to determine how flows onsite may affect restoration efforts.

North Coast Corridor Mitigation Site Assessment for the Hallmark Parcels

Additional field surveys will also need to occur to determine a more accurate plant palette to be installed at both the East and West Parcels.

REQUIRED PERMITS

404, 401, 1602, and a NOID and accompanying project report would likely be required for connection of the proposed wetland creation areas to the existing wetlands of Agua Hedionda Lagoon.



Figure 1. Hallmark Parcel Locations





Figure 2. Biological Resources on Hallmark West

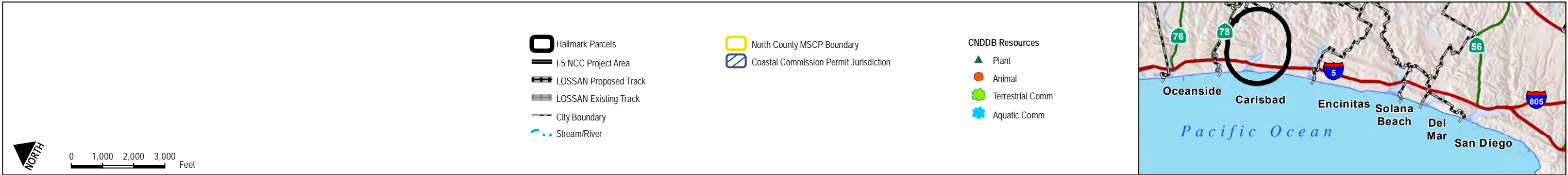
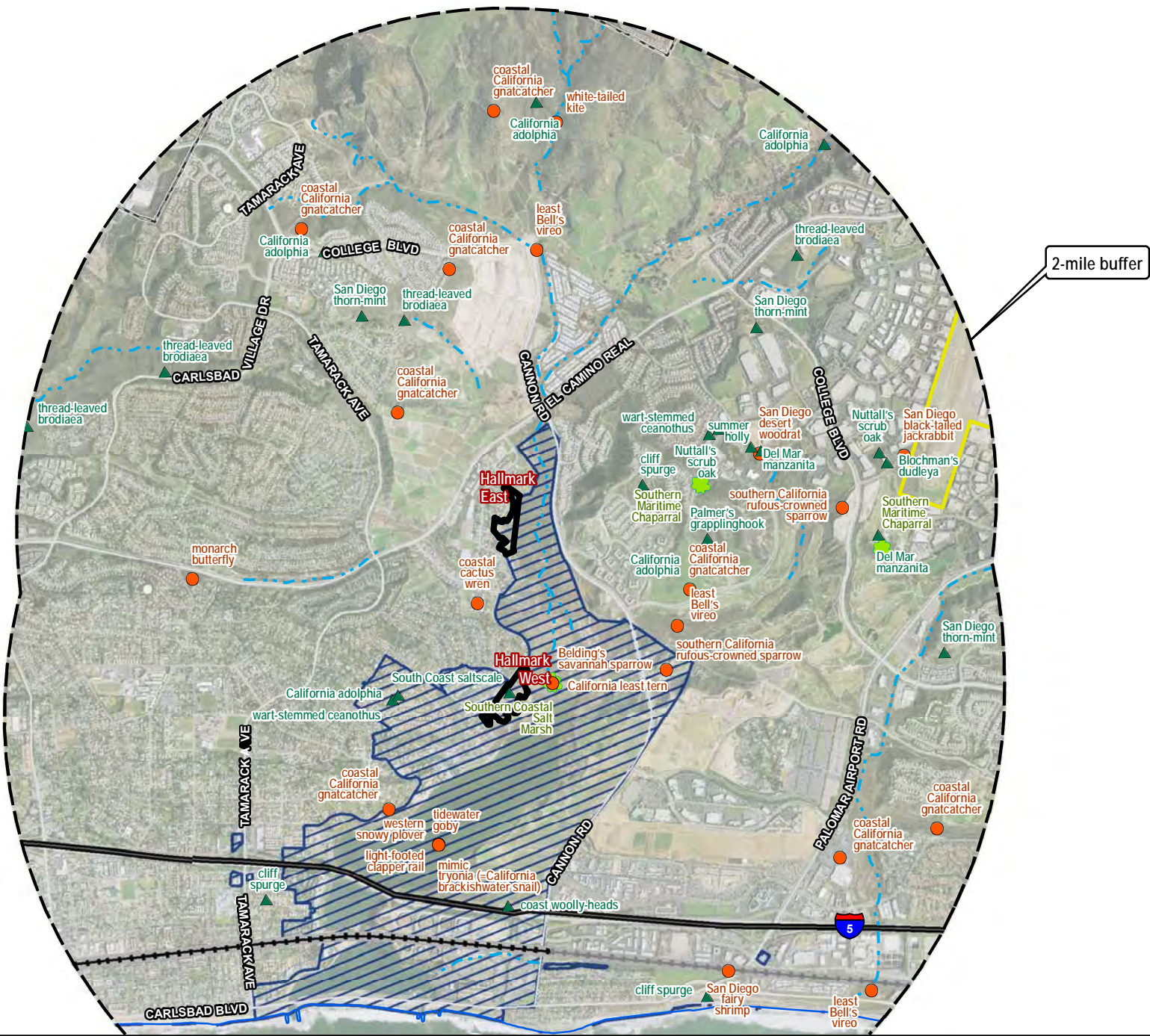
★ California gnatcatcher





Figure 3. Biological Resources on Hallmark East



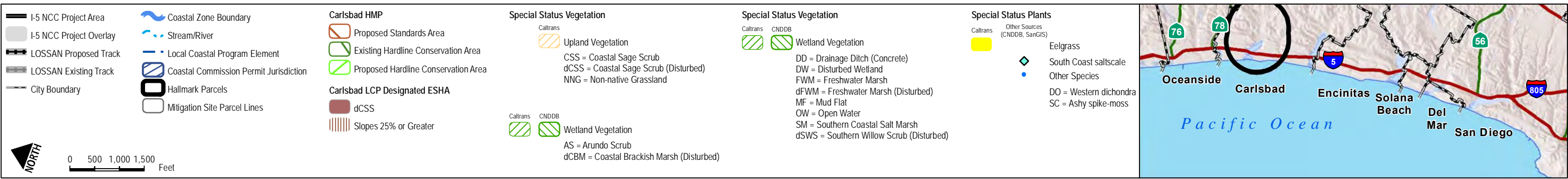
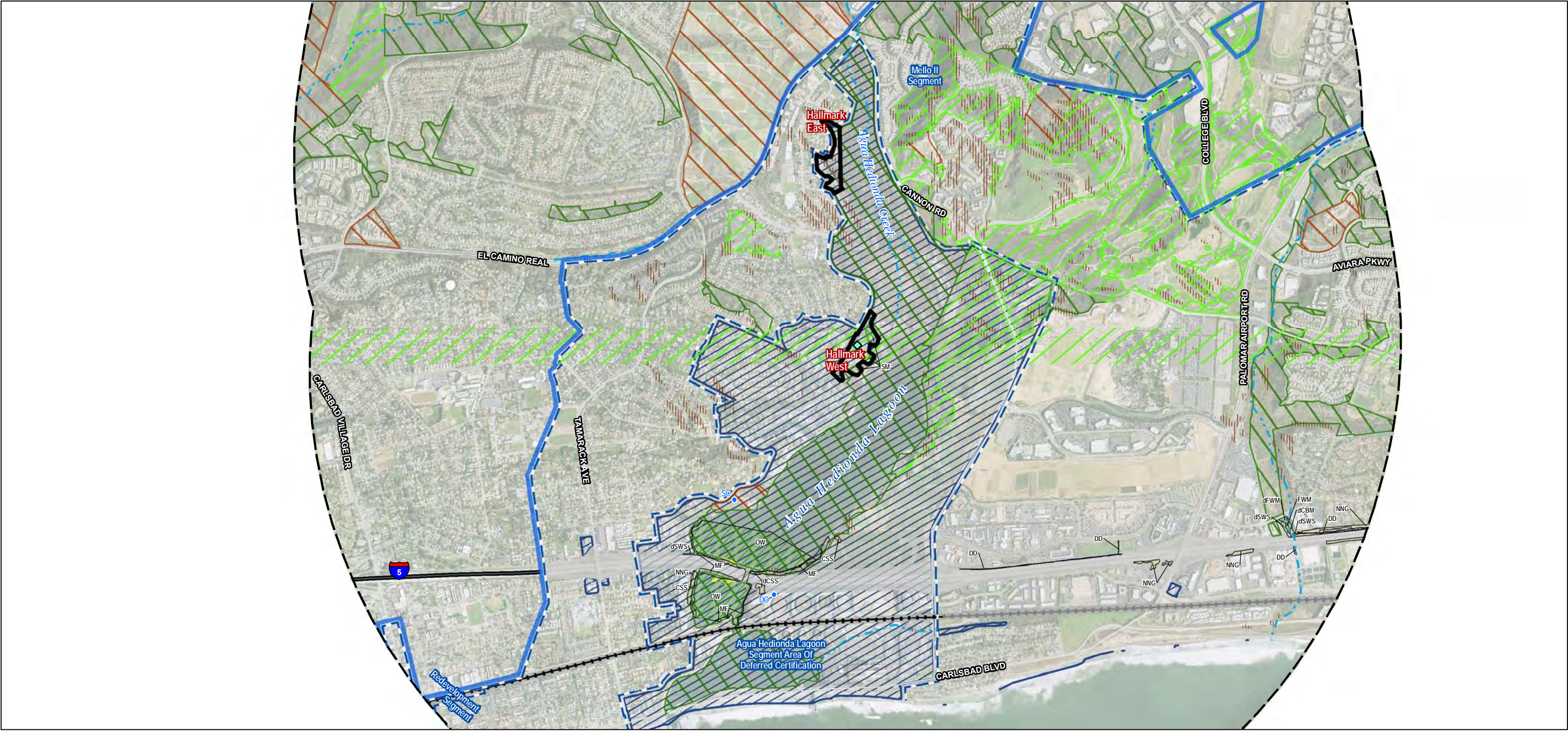


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FIGURE 4
Hallmark Parcels CNDDDB Resources within 2 miles

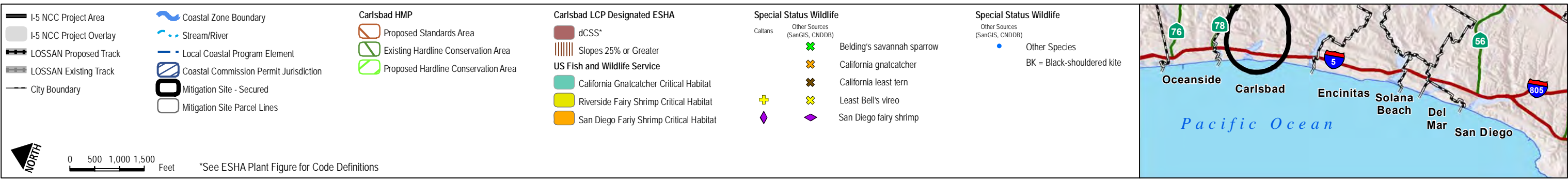


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FIGURE 5
Hallmark Parcels Special Status Plant Resources



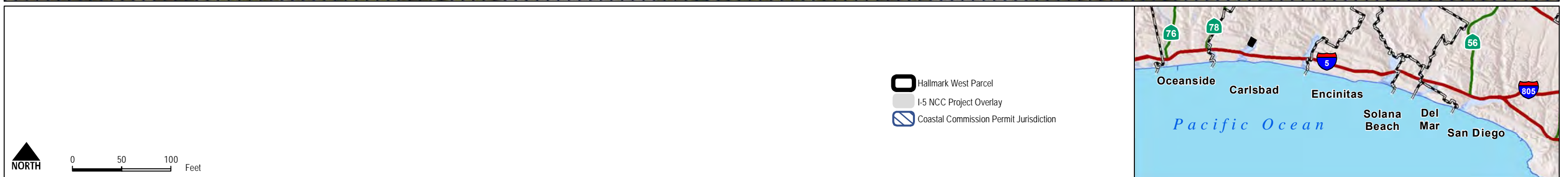
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FIGURE 6
Hallmark Parcels Special Status Wildlife Resources

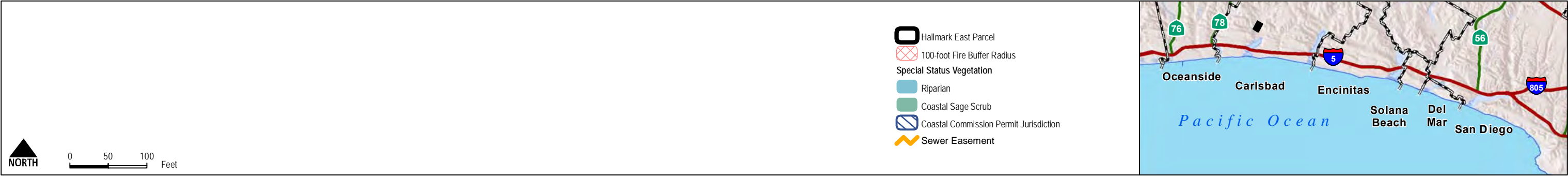
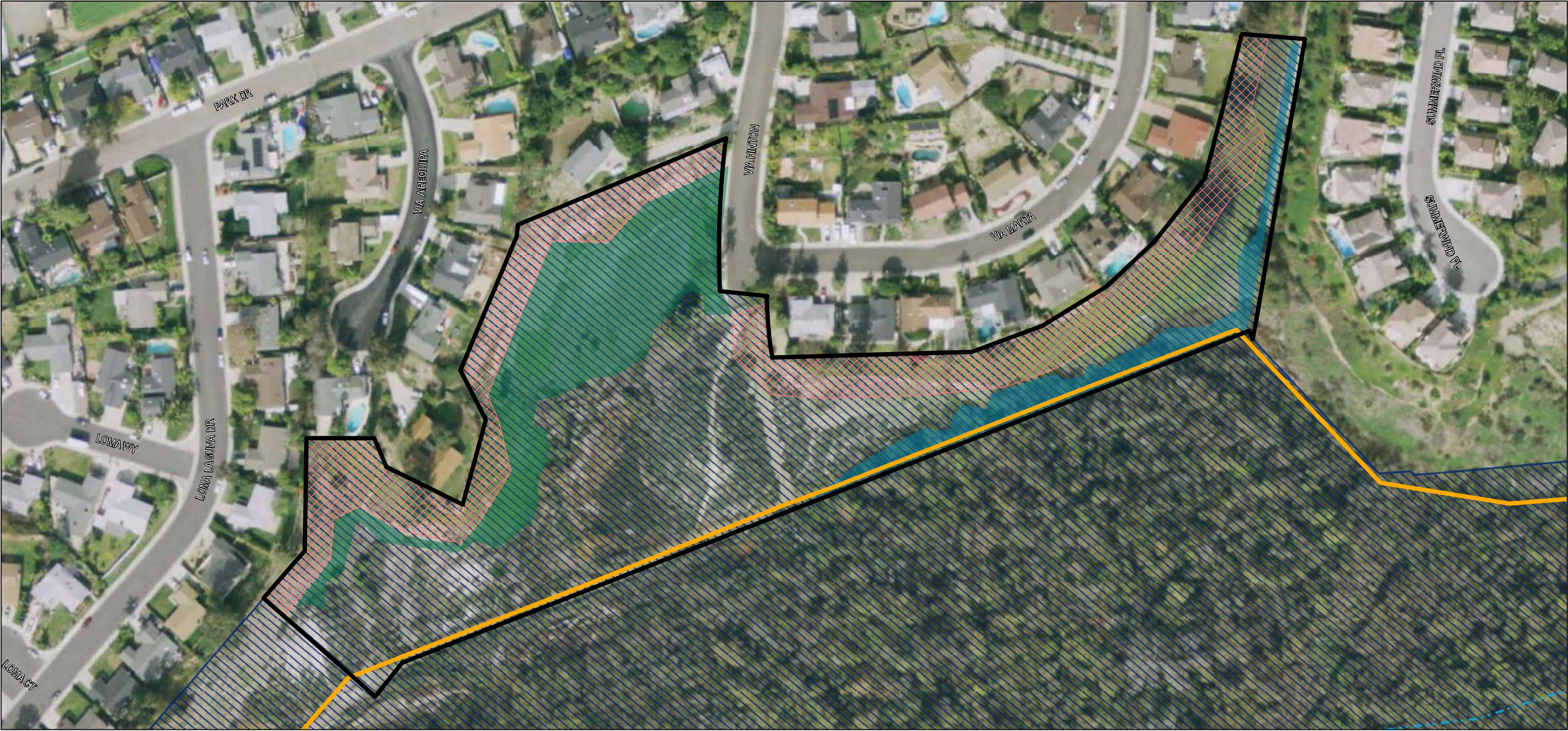


DATA SOURCES: Caltrans, California Coastal Commission, Local Jursidictions, SanGIS, SANDAG, CDFG, USFWS, Imagery: DigitalGlobe March 2008

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FIGURE 7
Hallmark West Parcel Constraints Map



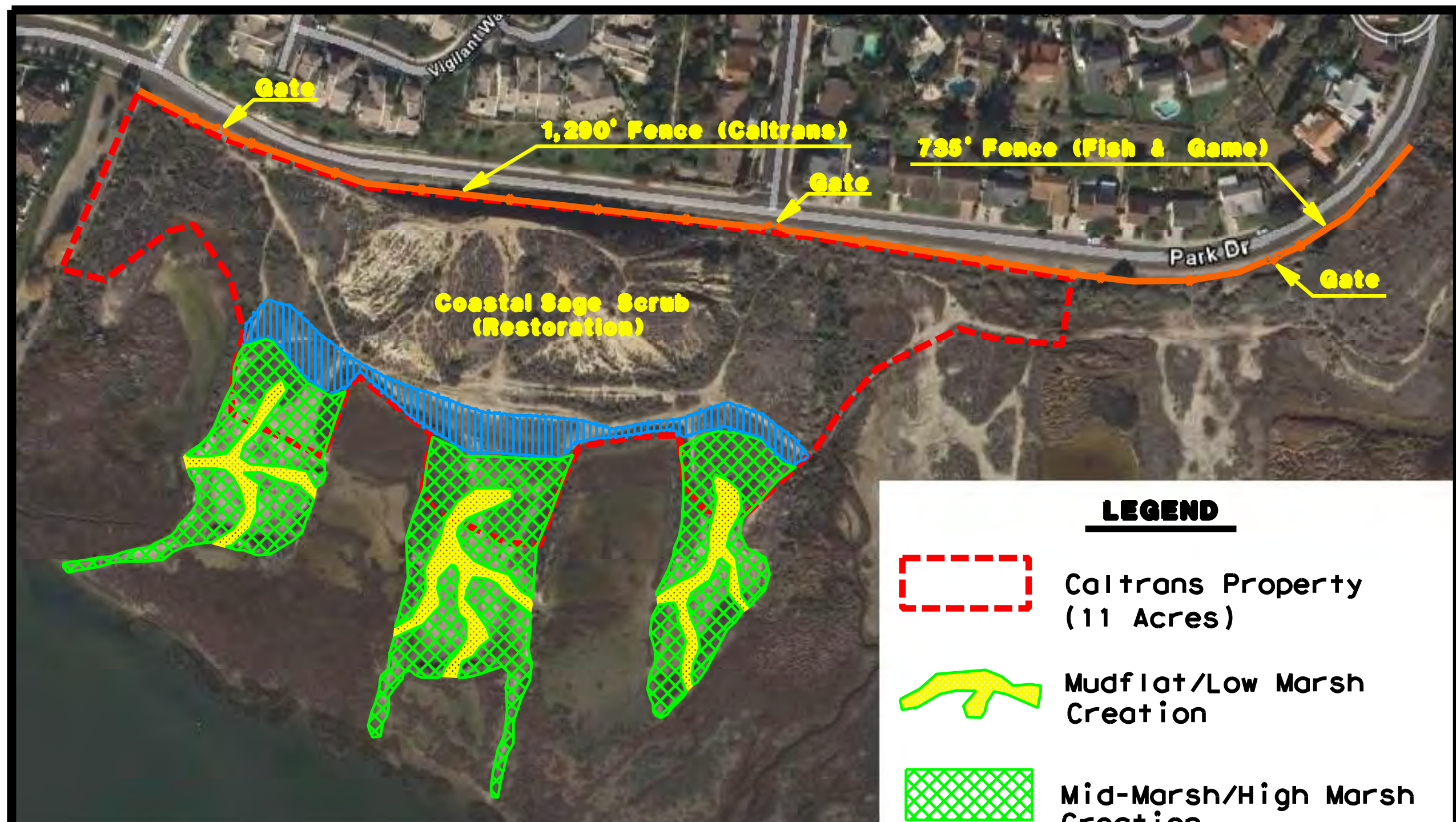
DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, CDFG, USFWS, Imagery: DigitalGlobe March 2008

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FIGURE 8
Hallmark East Parcel Constraints Map



LEGEND

-  Caltrans Property (11 Acres)
-  Mudflat/Low Marsh Creation
-  Mid-Marsh/High Marsh Creation
-  Upland

NOTES

- 1.3 acres creation (Caltrans property)
- 2.9 acres creation (Fish & Game property)
- 9.7 acres restoration (Caltrans property)
- All fence and gates installed by Caltrans.

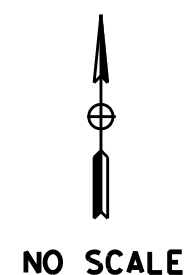


FIGURE 9
PRELIMINARY CONCEPT PLAN
HALLMARK MITIGATION

02/26/09

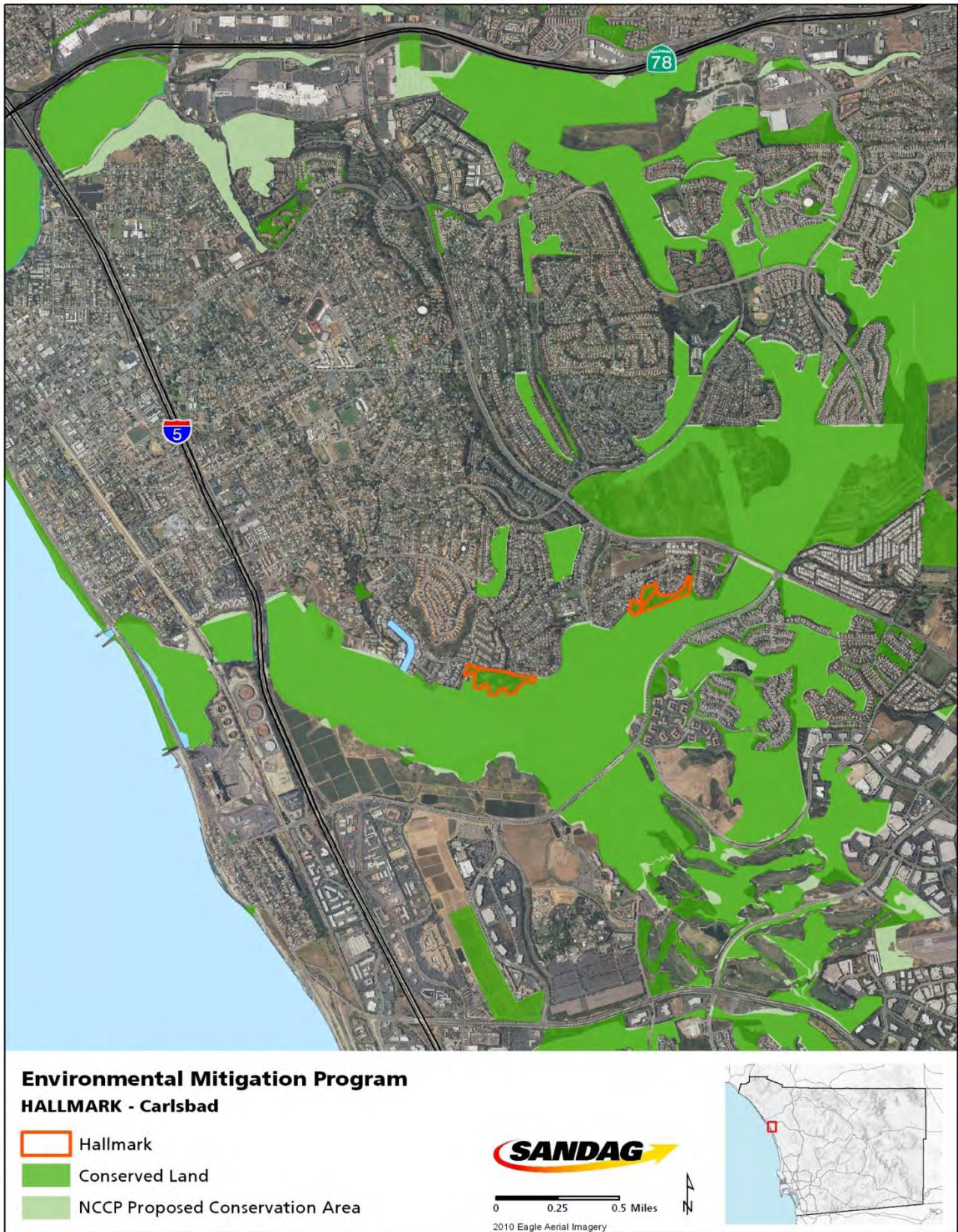


FIGURE 10

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**North Coast Corridor Public Works Plan/Transportation and
Resource Enhancement Program
Mitigation Site Assessment for the Batiquitos Bluffs**

Prepared by:

DUDEK

Prepared for:



TBD

DRAFT

**North Coast Corridor Public Works Plan/Transportation and
Resource Enhancement Program
Mitigation Site Assessment for the Dean Parcel**

Prepared by:

DUDEK

Prepared for:



JULY 2012

North Coast Corridor Mitigation Site Assessment for the Dean Parcel

Site Location: The Dean Family Partnership Parcel is located along and immediately east of the Interstate 5 (I-5) right-of-way between Del Mar Heights Road and the I-5/San Dieguito Lagoon Bridge (Figure 1).

Latitude/Longitude: 35.9572/-117.2399

APNs: Within Caltrans right-of-way ownership; previous APN: 304-090-02 (23.11 ac)

Ownership: Caltrans currently owns this parcel

Correspondence with Resource Agencies: June 2008, Resource agencies received request from Caltrans and SANDAG to approve site for acquisition; Letters acknowledging consideration of site for mitigation received from CCC March 2009, CDFG July 2008, USFWS August 2008, and NMFS July 2008.

MITIGATION GOAL

The San Diego Association of Governments (SANDAG) and California Department of Transportation (Caltrans) propose to mitigate impacts to sensitive upland habitats associated with the projects covered under the North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program (PWP/TREP) by restoring and establishing coastal sage scrub and enhancing and preserving southern maritime chaparral on the Dean Family Partnership Parcel (Dean parcel; see also Figure 2 and Table 1).

The goal of the mitigation site is to permanently retire development potential of the site, preserve existing high quality upland habitat through site protection (easements and fence), and restore existing disturbed upland habitat through exotics removal and active restoration to increase native species cover and diversity.

The proposed mitigation treatments and native vegetation community establishment will improve habitat adjacent to the San Onofre Nuclear Generation Station (SONGS) San Dieguito Wetland Restoration Project. The Dean parcel is situated between SONGS and existing high quality uplands on slopes located south of the lagoon. Therefore, restoration of this site will strengthen the wetlands/uplands connection, which is especially important given the difficulties experienced on the SONGS project to restore uplands habitat on dredged lagoon materials south of the lagoon and immediately east of the Dean parcel.

North Coast Corridor Mitigation Site Assessment for the Dean Parcel

Table 1
Habitat Mitigation Goals

Habitat Types	Mitigation Type	Mitigation Acreage
Coastal sage scrub	Creation and Restoration	20.8 ac.
Southern maritime chaparral/Coastal sage scrub	Preservation	1.45ac.

EXISTING CONDITIONS

Ecological Context

The 23.1 acre property is immediately north of the City of San Diego's Crest Open Space and west of fallow agricultural fields that are being restored to coastal sage scrub by the SONGS San Dieguito Wetland Restoration Project. The Dean parcel is located within the City of San Diego Multi-Habitat Planning Area (MHPA). Most of the San Dieguito Lagoon, San Dieguito River Valley, and Crest Open Space are also within the MHPA (see Figure 3). The California Natural Diversity Database (CNDDB) indicates numerous sensitive plant and wildlife species are present in the vicinity of the Dean parcel and on analogous upland areas west of I-5 and south of the lagoon. In addition to coastal California gnatcatcher (*Polioptila californica californica*) that presently occupies the Dean parcel, other sensitive wildlife species that could utilize a restored Dean parcel include northwestern San Diego pocket mouse (*Perognathus fallax fallax*), San Diego desert woodrat (*Neotoma lepida intermedia*), and orange-throated whiptail (*Cnemidophorus hyperythrus*) (Figure 4). Sensitive plant species that could become established in the long term include Del Mar sand aster (*Lessingia filaginifolia* var. *linifolia*), Nuttall's scrub oak (*Ceanothus verrucosus*), and southern tarplant (*Centromadia parryi*).

Drainage and Hydrology

Overland drainage (sheet flow) is generated from the watershed area that occupies the steeper slopes to the south within the City of San Diego's Crest Open Space. These slopes are mostly undisturbed vegetated sandstone bluffs. The overland flow was modified into more concentrated flow patterns by a dirt road that was graded in the early 1990's.

There is one large and several small erosion gullies through the site where water has flowed downhill while the site has laid fallow. These gullies are actively down-cutting and have likely carried sediment downhill toward the lagoon. The largest of these gullies aligns with an old farm road that is visible in 2004 aerial imagery. Prior to this date, agricultural practices appear to have maintained dispersed runoff and kept erosion from occurring. Concentrated runoff created by the access road and farm road are the likely source of these gullies

North Coast Corridor Mitigation Site Assessment for the Dean Parcel

that first appear on aerial photographs from 2004 after farm activities ceased. The road collects and concentrates flows that are discharged in the southeast corner of the parcel. From that point, the water flows down the alignment of the old farm road.

Based on site topography, hydrology, and historic land use, erosion appears to be caused by the road on the south side of the project. A thorough evaluation of the gullies will need to occur to determine whether the erosional issues could affect restoration efforts made in this area. A thorough evaluation of the gullies will be detailed and provided through the Notice of Intent to Develop (NOID) approval process during the first phase of implementation of the North Coast Corridor PWP/TREP. The findings will assist in the design and implementation of the rehabilitation of the gullies.

Soils

Two soil types are present onsite: Terrace escarpments occupy the relatively steep, undisturbed slopes on the southeast portion of the parcel (NRCS, Web Soil Survey), and the remainder of the site where agricultural land use historically occurred is Corralitos loamy sand. These soils are essentially an alluvial fan from natural bluff erosion off of the Terrace escarpments.

Vegetation

This parcel is dominated by disturbed habitat and disturbed baccharis scrub with a small area of coastal sage scrub/southern maritime chaparral in the southeastern corner of the parcel and some bare ground on the road around the perimeter (Figure 5). The coastal sage scrub/southern maritime chaparral habitat is dominated by lemonadeberry (*Rhus integrifolia*), chamise (*Adenostoma fasciculatum* var. *fasciculatum*), and black sage (*Salvia mellifera*) with wart-stemmed ceanothus (*Ceanothus verrucosus*), sea dahlia (*Coreopsis maritima*), Mohave yucca (*Yucca schidigera*), and scrub oak (*Quercus berberidifolia*). There is approximately 1.45 acres of this habitat above the road at the southeastern end of the parcel. It has very little disturbance except along the edges and is contiguous with the same habitat upslope in the Crest Open Space.

North Coast Corridor Mitigation Site Assessment for the Dean Parcel

The main portion of the parcel is fallow agricultural field that is now either dominated entirely by exotic species or is dominated by coyote bush (*Baccharis pilularis*) with weedy species. Bare ground consists of the hard packed cleared road on the southern and western ends of the parcel. Disturbed habitat onsite is dominated by a thick layer of filaree (*Erodium spp.*) and black mustard (*Brassica nigra*), with scattered tamarisk (*Tamarix sp.*), tree tobacco (*Nicotiana glauca*), pampas grass (*Cortaderia sp.*), goldenbush (*Isocoma menziesii*) and ice plant (*Carpobrotus edulis*). Disturbed Baccharis scrub is dominated by coyote bush with twiggy leaf plant (*Stephanomeria spp.*), deerweed (*Lotus scoparius*), filaree, miniature lupine (*Lupinus bicolor*), acacia (*Acacia latifolia*), and Mexican elderberry (*Sambucus mexicanus*). There is approximately 0.85 acres of bare ground, 8.5 acres of disturbed baccharis scrub, and 12.3 acres of disturbed habitat onsite. A summary of existing habitat types and acreage on the Dean parcel is provided in Table 2, below.

Table 2
Existing Vegetation Communities

Habitat Type	Acreage
Coastal sage scrub / Southern maritime chaparral	1.45
Disturbed baccharis scrub	8.5
Disturbed habitat	12.3
Bare ground	0.85
TOTAL	23.1

Wildlife

Bird species that were observed onsite include California towhee (*Pipilo crissalis*), song sparrow (*Melospiza melodia*), Anna's hummingbird (*Calypte anna*), bushtit (*Psaltirparus minimus*), Say's phoebe (*Sayornis saya*), and American kestrel (*Falco sparverius*). Other wildlife species observed onsite include coyote (*Canis latrans*), western fence lizard (*Sceloporus occidentalis*), desert cottontail (*Sylvilagus audubonii*), and California ground squirrel (*Spermophilus beecheyi*).

Prior and Current Land Use

The majority of the parcel was farmed for tomato crops until 2003. Since that time the land has been fallow, and was later abandoned. A small amount of coastal sage scrub/southern maritime chaparral exists at the southeastern corner of the parcel. The proposed land use for the entirety of the site will be for open space, habitat preservation, and management.

North Coast Corridor Mitigation Site Assessment for the Dean Parcel

Constraints/Existing Utilities/Infrastructure/Easements

There are utilities (cable lines) located along the fence line at the western end of the parcel, as well as existing access roads through the site for maintenance purposes that could minimally constrain the mitigation project.

A small area of the Dean Parcel could potentially be impacted by the eventual widening of Interstate 5. Any portion of the property affected by future widening of Interstate 5 will not be included in the restoration totals of the site.

MITIGATION PROGRAM

There is potential onsite to create and restore coastal sage scrub and possibly some maritime succulent scrub, as well as enhance southern maritime chaparral. Creation and restoration activities onsite would include a significant weed eradication program with container planting and seeding of native species, along with some temporary irrigation. In areas where erosion gullies exist, the reestablishment of target native vegetation communities within the gullies would also assist in stabilizing the area, as well as the implementation of an upstream Best Management Practices (BMPs) and/or installed check dam or drop structures at the downstream end of the gullies.

Schedule

Design of the mitigation plan will begin when approval is received from the resource agencies that mitigation is appropriate and will be counted toward mitigating the North Coast Corridor multi modal transportation program impacts. Detailed design will be provided through the NOID approval process during the first phase of implementation of the North Coast Corridor PWP/TREP. As discussed in Section 6.5.3 of the PWP/TREP, the results of the consultations with persons and agencies interested in, with jurisdiction over, and/or affected by the proposed development, including consultations with federal and state resource agencies (e.g., Army Corps, USFWS, CDFG, RWQCB, etc.), as well as all supporting documentation are required to be submitted along with the NOID project report. Accordingly, all design and related project reporting would be submitted to the permitting agencies for consultation as part of the NOID review and approval process.

Mitigation Goal and Purpose

A total of 12.3 acres of coastal sage scrub could be established. An additional 8.5 acres of coastal sage scrub could also be restored by increasing species diversity within the existing disturbed *Baccharis* scrub onsite. Existing high quality coastal sage scrub/maritime chaparral

North Coast Corridor Mitigation Site Assessment for the Dean Parcel

(1.45 acre) would be preserved. The existing dirt roads would be minimized, but maintained for utility access.

Hydrology

In areas where erosional gullies exist, several stabilizing solutions may be explored including redirecting flows from the adjacent road through upstream BMPs, and/or installing check dam or drop structures at the downstream end of the gullies to prevent future headcutting. Reestablishing target native vegetation communities within the gullies would also assist in stabilizing the area, support and maximize sensitive biological resources on-site, and create a seamless connection to adjacent open space lands.

Mapping, measurements, and a thorough evaluation of the gullies will need to occur in order to determine whether erosional gullies are conveying ephemeral flows, and how restoration efforts in the area would be affected by the flows. A thorough evaluation of the gullies will occur through the NOID approval process. The findings of the gully evaluations will assist in the design and implementation of the restoration and rehabilitation of the gullies.

A small sediment basin at the lower (north) edge of the parcel could also be constructed to minimize sedimentation into the lagoon, and to act as a transition to adjacent property where a significantly larger (i.e., deeper) erosion gully is present.

Topographic Modification

SANDAG/Caltrans does not propose to re-contour or grade the site, but would instead redirect flows from the adjacent road through appropriate BMPs, and/or install check dam or drop structures at the downstream end of the gullies to prevent future headcutting. In addition to corrections of the erosion gullies, appropriate BMPs would be implemented on site to minimize sedimentation and re-establishment of erosion gullies during the restoration process.. BMPs may include temporary or permanent sediment basins, use of fiber rolls, erosion control textiles, and fiber mulch products to hold soil in place until vegetation density and cover are established.

Soils

Based on past agricultural activities, adjacent restoration activities, and the presence of natural recruitment of native and non-native vegetation, it appears that soils are suitable for habitat establishment. Soil testing would be conducted to determine the need for soil amendments to promote soil and vegetation community restoration.

North Coast Corridor Mitigation Site Assessment for the Dean Parcel

Target Plant Communities

Coastal sage scrub will be established in all disturbed areas. In addition, the same species will be used to restore species diversity and vegetation structure within the existing disturbed Baccharis Scrub. Table 3 presents the expected dominant species that will establish resources within the plant community.

Table 3
Target Dominant Species by Vegetation Community

Vegetation Community	Botanical Name	Common Name
Coastal Sage Scrub	<i>Artemisia californica</i>	California Sagebrush
	<i>Cylindropuntia prolifera</i>	Coastal cholla
	<i>Encelia californica</i>	California encelia
	<i>Eriogonum fasciculatum</i>	flat-top buckwheat
	<i>Isocoma menziesii</i> var. <i>vernonoides</i>	coast goldenbush
	<i>Leymus condensatus</i>	Giant wild rye
	<i>Lotus scoparius</i>	deerweed
	<i>Heteromeles arbutifolia</i>	toyon
	<i>Nassella pulchra</i>	Purple needlegrass
	<i>Opuntia littoralis</i>	prickly-pear cactus
	<i>Rhus integrifolia</i>	lemonadeberry
	<i>Salvia mellifera</i>	Black sage
	<i>Sambucus mexicana</i>	elderberry

Coastal sage scrub will be established mainly through planting of container stock and the application of a seed mix. A significant weed eradication program will be needed due to the high concentration of weedy species and seed existing onsite.

Supportive Measures

Limited temporary irrigation may be installed to facilitate vegetation establishment. The system will be used to increase the certainty of mitigation performance and success. All temporary irrigation will cease after 1-3 years depending upon vegetation establishment as determined by the project biologist.

Performance Criteria

Performance criteria will be developed from reference sites within or adjacent to the mitigation parcel. Nearby reference coastal sage scrub vegetation within the San Dieguito Lagoon complex will be identified and sampled using vegetation transects to establish appropriate vegetation cover and species diversity criteria. Other performance criteria will include native seedling

North Coast Corridor Mitigation Site Assessment for the Dean Parcel

recruitment, non-native vegetation cover, soil stability (lack of erosion), and wildlife use of the area. Criteria will be established that provides a high level of confidence that, once performance criteria are achieved, the resultant vegetation communities will be resilient and persistent as a demonstration of self-sustainability under a long term management program.

Mitigation results for uplands are expected to increase native cover and species diversity to around 85% of reference habitat, while reducing non-native annual cover to 5% or less of total vegetation cover. The specifics of the performance criteria will be detailed in the Conceptual Mitigation Plan for the Dean Parcel, through the NOID process and/or Coastal Development Permit. Presently, the mitigation site is dominated by non-native and/or disturbed native vegetation. Disturbed areas will be type converted from non-native vegetation to coastal sage scrub in support of existing California gnatcatchers.

Criteria metrics will be developed in accordance with functional analysis methodologies to establish interim and final functional criteria. Interim target functional criteria scores will be used to inform maintenance decisions and regimes during the five-year monitoring and maintenance period to achieve the final target functional criteria scores.

SITE PROTECTION

Caltrans will deed the Dean parcel to an approved land manager with a fully funded endowment, once the mitigation projects have reached the end of interim maintenance period and satisfy established performance criteria. This parcel will add to open space along the edges of the San Dieguito Lagoon creating a more continuous property boundary with upland buffer habitat to the marsh habitat.

No new fencing is anticipated at the project site assuming access continues to be restricted along El Camino Real and from I-5 via the existing freeway right-of-way fence.

LONG TERM MANAGEMENT

A Habitat Management Plan (HMP) will be prepared to define the long term management responsibilities to maintain the biological resources that are established through the mitigation project. Primary management issues to be addressed in the HMP include site access and security, trash and weed control, and erosion control. Funds for long term management will be provided by SANDAG/Caltrans and placed into a non-wasting endowment. Endowment funds will be established using a Property Assessment Report that is based on the approved HMP.

North Coast Corridor Mitigation Site Assessment for the Dean Parcel

ADDITIONAL STUDIES

Further studies will be required to support the final design to be presented in the NOID submittal. Mapping, measurements, and a thorough evaluation of the erosional gullies will need to occur in order to determine how restoration efforts in the area would be affected by the flows onsite. A thorough evaluation of the gullies will occur through the NOID approval process. The findings of the gully evaluations will assist in the design and implementation of the restoration and rehabilitation of the gullies.

Other additional studies include soils testing to determine the appropriateness of existing soils for the target vegetation community, as well as potential archaeological testing and/or monitoring due to the potential for cultural resources.

In addition, a reference site with appropriate coastal sage scrub will be identified and sampled using line-transect methods to obtain vegetation community data such as cover, density, and species diversity. The specifics of the performance criteria will be investigated and detailed in the Conceptual Mitigation Plan for the Dean Parcel.

If some portion of the Dean Property may be affected by the future widening of Interstate 5, mitigation acreages available on the property should be adjusted to remove impact areas. This acreage change will be clearly documented in the text and figures of the Conceptual Mitigation Plan for the Dean Parcel.

REQUIRED PERMITS

A City of San Diego Site Development Permit and NOID with accompanying project report will likely be required for project implementation.

Figure 1. Dean Mitigation Parcel





Legend

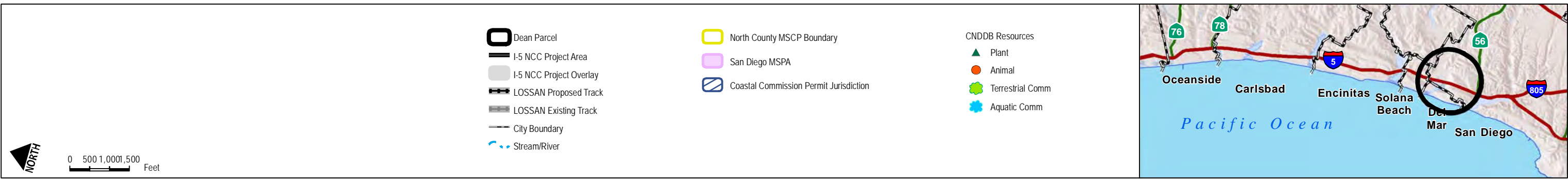
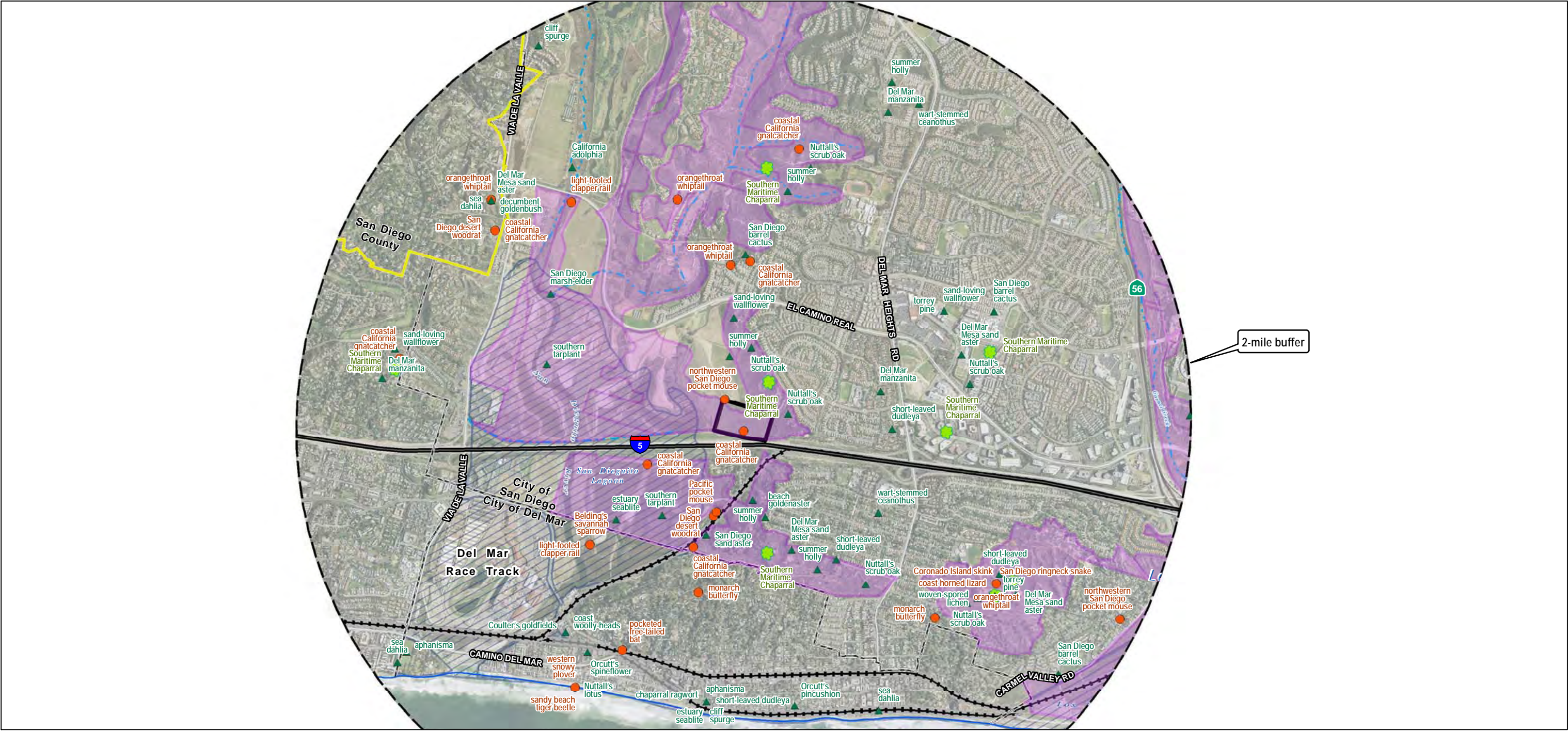
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Vegetation

- Bare Ground
- Disturbed Baccharis Scrub
- Coastal Sage/Southern Maritime Chaparral
- Disturbed Habitat

FIGURE 2
VEGETATION AND CALIFORNIA GNATCATCHERS ONSITE





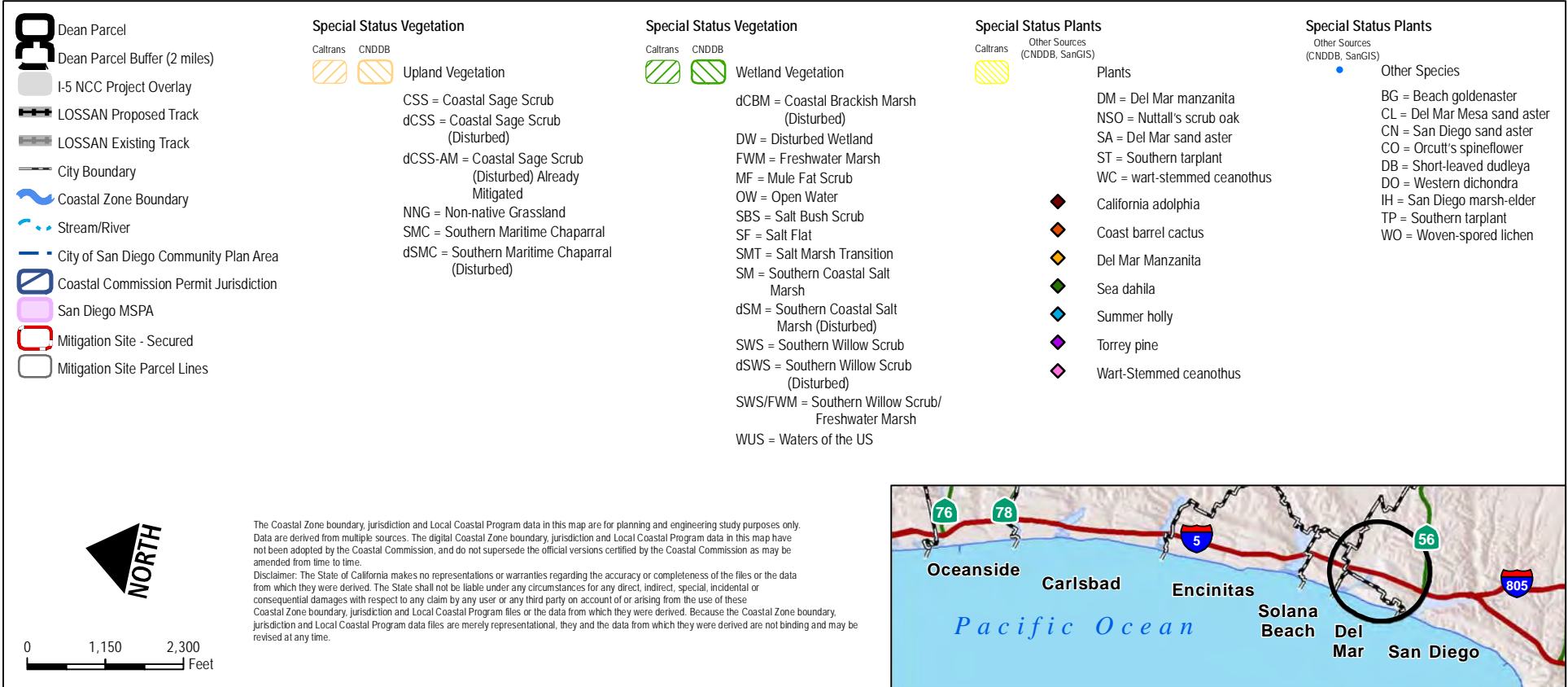
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FIGURE 3
Dean Parcel CNDDDB Resources within 2 miles

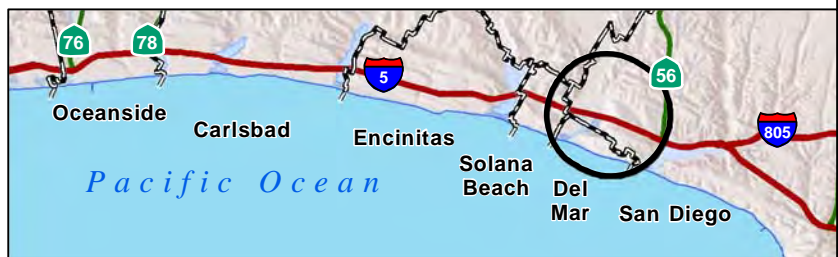
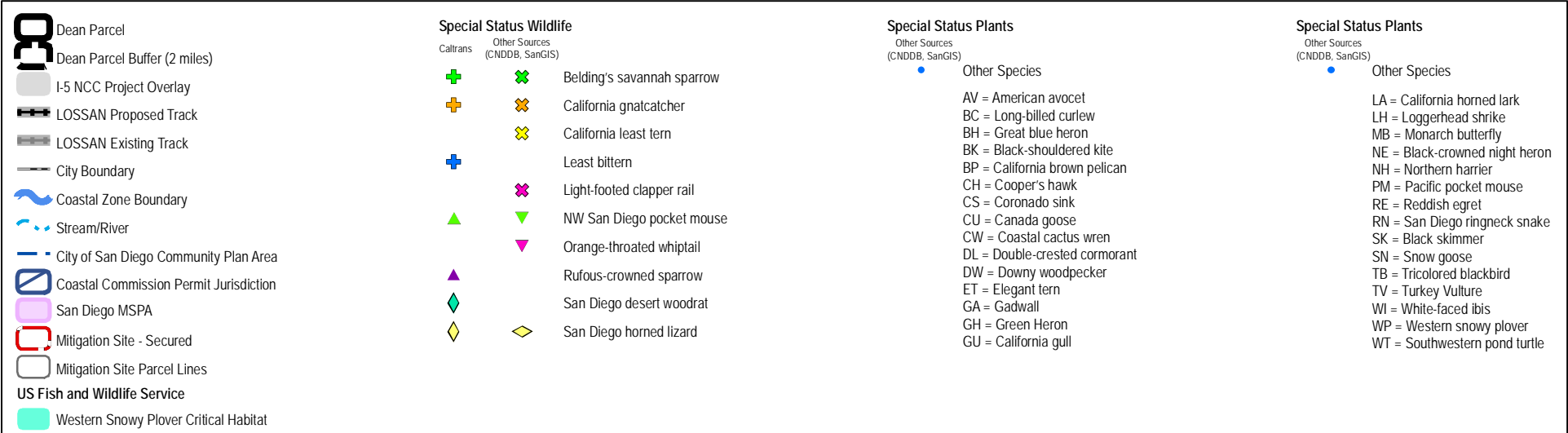


DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, CDFG, USEWS, Imagery: DigitalGlobe March 2008

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FIGURE 4
Dean Parcel Special Status Plant Resources

North Coast Corridor Transportation and Resource Enhancement Program and Highway Public Works Plan



DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, CDFG, USEWS, Imagery: DigitalGlobe March 2008.

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FIGURE 5
Dean Parcel Special Status Wildlife Resources

North Coast Corridor Transportation and Resource Enhancement Program and Highway Public Works Plan

DRAFT

**North Coast Corridor Public Works Plan/Transportation and
Resource Enhancement Program
Mitigation Site Assessment for the Deer Canyon II Site**

Prepared by:

DUDEK

Prepared for:



JULY 2012

North Coast Corridor Mitigation Site Assessment for the Deer Canyon II Site

Site Location: The Deer Canyon II mitigation site is located south of State Route (SR) 56 and south of McGonigle Canyon (see Figure 1).

Latitude/Longitude: 32° 57' 1.2443 north and -117° 11' 13.8728 west

APN: Portions of 305-031-20 and 305-040-23 (22.2 acres)

Ownership: California Department of Transportation (Caltrans) and San Diego Association of Governments (SANDAG) are currently in negotiations to purchase the property from the owner. Purchase of the upper slope parcel has an agreed upon price, is currently in escrow, and is anticipated to be complete in 2012.

Correspondence with Resource Agencies: Agencies have approved wetland and upland mitigation on the lower parcel, and upland mitigation on portions of the upper parcel.

MITIGATION GOAL

SANDAG and Caltrans propose to mitigate impacts to sensitive upland habitats associated with the North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program (PWP/TREP) by enhancing poor quality upland habitat on the Deer Canyon II mitigation site, located in Deer Canyon adjacent to Deer Canyon Creek. The Deer Canyon II mitigation site consists of approximately 22.2 acres and is located adjacent to lands subject to a separate mitigation proposal for the I-5/Genesee Avenue Interchange Reconstruction Project, I-805 North Managed Lanes Project, Carroll Canyon Road Extension and Direct Access Ramp, and double-tracking projects on the LOSSAN corridor. For the North Coast Corridor PWP/TREP, only the upland creation/restoration located within the Upper Parcel slope of this larger mitigation area will be described herein (see Figure 2).

The goal of the upland creation in Deer Canyon is to create coastal sage scrub habitat in areas that are currently nonnative grassland, and then manage the parcel as open space in perpetuity. The proposed creation and in-perpetuity management of the native uplands vegetation communities will:

- Provide wildlife habitat for the California gnatcatcher (*Polioptila californica californica*) and other native wildlife species habitat by removing nonnative grassland and converting it to high quality coastal sage scrub habitat;
- Improve coastal sage scrub habitat and ecosystem continuity through connectivity between coastal wetlands and native uplands;
- Stabilize slopes in Deer Canyon by converting nonnative grassland habitat to more appropriate coastal sage scrub habitat;

North Coast Corridor Mitigation Site Assessment for the Deer Canyon II Site

- Provide a buffer between the riparian habitat and the surrounding land uses; and
- Preserve the restored areas in Deer Canyon as permanent open space.

**Table 1
Habitat Mitigation Goals**

Habitat Types	Mitigation Type	Mitigation Acreage
Coastal sage scrub	Creation and Restoration	14.6 ac.

EXISTING CONDITIONS

Ecological Context

The Deer Canyon II site is within the Peñasquitos Hydrologic Unit. In total, the Deer Canyon II site is approximately 22.2 acres in size, including the majority of the upper slopes of the larger Deer Canyon Mitigation site. The larger site is split into two parcels: 1) the lower portion that abuts the creek; and 2) the upland slopes to the north, where the upper parcel mitigation described herein is proposed to take place. Approximately 7.6 acres of the 22.2 acre upper parcel is already planned and approved for coastal sage scrub creation and preservation of some nonnative grassland for associated impacts to that habitat on coastal projects.

The Deer Canyon II site is within a Multiple Habitat Planning Area and is identified for preservation. California Natural Diversity Database (CNDDDB) mapped resources for the upper parcel of the Deer Canyon Mitigation Site includes a variety of data points within a 2 mile radius (see Figure 3). Special status plant species identified within the 2 mile radius include California adolphia (*Adolphia californica*), wart stemmed ceanothus (*Ceanothus verrucosus*), summer holly (*Comarostaphylis diversifolia*), Del Mar manzanita (*Arctostaphylos glandulosa ssp. crassifolia*), and others as identified in Figure 4. Numerous special status wildlife species are also identified within a 2 mile radius of the Deer Canyon II site, and include the California gnatcatcher (*Poliophtila californica*) (see Figure 5). No sensitive species currently occur on the upper parcel due to its disturbed nature. However, California adolphia is immediately across (and north of) the dirt road from the upper parcel.

Drainage and Hydrology

Hydrology of the site consists primarily of overland drainage (sheet flow) and a few hillside drainages, which drain site runoff southerly to Deer Canyon Creek. Deer Canyon Creek is a small, ephemeral to intermittent creek that is fed primarily by urban runoff, precipitation, and stormwater flows.

North Coast Corridor Mitigation Site Assessment for the Deer Canyon II Site

Soils

Soils located on the lower parcel are primarily sandy with some clay and silt, whereas the upper parcel consists of more clayey sands and clays. Locally, gravelly and cobbly layers were found within the lithologic unit (Caltrans 2011).

Vegetation

The majority of the upper parcel supports nonnative grassland habitat, with a few small patches of disturbed Diegan coastal sage scrub along the eastern and southern borders (see Figure 2). The nonnative grassland is comprised primarily of brome grasses (*Bromus* spp.), wild oat (*Avena* sp.), and barley (*Hordeum* spp.). The nonnative grassland habitat provides some wildlife and foraging habitat for common bird and mammal species.

Native species in the disturbed Diegan coastal sage scrub communities include deerweed (*Lotus scoparius*) and coyote bush (*Baccharis pilularis*); however, this habitat is dominated by nonnative grasses such as ripgut grass (*Bromus diandrus*), wild oat (*Avena* sp.), red brome (*Bromus madritensis* ssp. *rubens*), and barley (*Hordeum* spp.).

Disturbed habitat is found in portions of the upper parcel and concentrated to the east. The disturbed habitat is dominated by black mustard (*Brassica nigra*), filaree (*Erodium* sp.), tocalote (*Centaurea melitensis*), wild radish (*Raphanus sativus*), clover (*Medicago* sp.), sweet fennel, and horseweed (*Conyza canadensis*).

Nonnative grassland, disturbed Diegan coastal sage scrub, and disturbed habitat communities were identified on the upper parcel. Overall, the parcel contains poor habitat, with weed invasion in most places. A summary of existing habitat types and acreage on the Deer Canyon II site is provided in Table 2 below.

Table 2
Existing Vegetation Communities

Preserved Habitat Type	Mitigation Acreage
Disturbed Coastal Sage Scrub	0.48 ac.
Disturbed Habitat	0.6 ac.
Nonnative grassland	21.12 ac.
Total	22.2 ac.

North Coast Corridor Mitigation Site Assessment for the Deer Canyon II Site

Wildlife

Bird species that were observed onsite include California towhee (*Pipilo crissalis*), song sparrow (*Melospiza melodia*), Cassin's kingbird (*Tyrannus vociferans*), and common yellowthroat (*Geothlypis trichas*) (Scatolini 2012). Northern harriers (*Circus cyaneus*) and white-tailed kites (*Elanus leucurus*) were observed foraging onsite.

One San Diego horned lizard (*Phrynosoma coronatum blainvillii*) was observed on the dirt road along the northern boundary of the site.

Prior and Current Land Use

The habitat creation on the upper parcel slopes will be adjacent to the upland and wetland mitigation immediately to the south on the Deer Canyon (I) Mitigation Site and additional coastal sage scrub creation that is already planned on a portion of the upper parcel (Caltrans 2011). There are additional riparian mitigation sites immediately to the west, north, and south of the upper parcel.

The fire road immediately north of the site at the top of the slope is used as a trail by horse-back riders, walkers, and mountain bikes.

Existing Utilities/Infrastructure/Easements

There are utility power lines immediately west of the project. There is a sewer easement along dirt roads to the west and south of the Deer Canyon parcels. There are no known utilities onsite.

MITIGATION PROGRAM

The main goals of the mitigation are to provide wildlife habitat for the California gnatcatcher (*Polioptila californica californica*) and other native wildlife species habitat by removing nonnative grassland and creating high quality coastal sage scrub habitat, improve coastal sage scrub habitat and ecosystem continuity through connectivity between coastal wetlands and native uplands, and preserve the restored areas in Deer Canyon as permanent open space. The coastal sage scrub habitat created onsite will also provide a buffer to the riparian habitat at the base of the slope in the adjacent mitigation areas, and provide slope stability and protection from erosion during rain events. The following program is intended to promote the established goals.

Schedule

Design of the mitigation plan will begin when full approval is received from the resource agencies that mitigation is appropriate at the Deer Canyon II site, and will be counted toward mitigating the North Coast Corridor multi modal transportation program impacts. Detailed

North Coast Corridor Mitigation Site Assessment for the Deer Canyon II Site

design will be provided through the Notice of Intent to Develop (NOID) approval process during the first phase of implementation of the North Coast Corridor PWP/TREP. As discussed in Section 6.5.3 of the PWP/TREP, the results of consultations with persons and agencies interested in, with jurisdiction over, and/or affected by the proposed development, including consultations with federal and state resource agencies (e.g., USFWS, CDFG, etc.), as well as all supporting documentation are required to be submitted along with the NOID project report. Accordingly, all design and related project reporting would be submitted to the permitting agencies for consultation as part of the NOID review and approval process.

Mitigation Goal and Purpose

Upland mitigation will create Diegan coastal sage scrub in existing nonnative grassland habitat onsite. Creation will include exotic control, dethatching, container planting, seeding, and will likely use temporary irrigation.

Hydrology

Upland hydrology will primarily be maintained as overland sheet flow and within the existing hillside drainages that currently exist. However, some minimal topographic modifications and/or appropriate Best Management Practices (BMPs) will be implemented in upland areas if necessary to reduce concentrated runoff and erosive conditions.

Topographic Modification

SANDAG/Caltrans do not propose to re-contour or grade the site. Appropriate BMPs would be implemented on the site, as needed, to minimize erosion and sedimentation. BMPs may include use of fiber rolls, erosion control textiles, and fiber mulch products to hold soil in place until vegetation density and cover are established.

Site Preparation

The nonnative grassland onsite will be dethatched and sprayed with herbicide prior to planting.

After dethatching and prior to seeding and planting, a grow/kill program involving two or more watering events using a temporary irrigation system or watering truck followed by kill/herbicide application shall be implemented to reduce the nonnative seed bank. All nonnative plant material will be taken offsite and disposed of properly. Prior to hydroseed installation, soil testing will be conducted to test viability; fertilizer will be incorporated into the slurry mix per soil test results and recommendations.

North Coast Corridor Mitigation Site Assessment for the Deer Canyon II Site

Target Plant Communities

Table 3 contains a list of container species that will be used onsite. Table 4 contains a list of coastal sage scrub species that will be hydroseeded on all coastal sage scrub planting areas. Hydroseeding of the non-irrigated slopes will occur between October and February to take advantage of the rainy season.

Table 3
Coastal Sage Scrub Species to be Planted on the Slope

Scientific Name	Common Name	Container Size
<i>Rhus integrifolia</i>	lemonadeberry	1 gallon
<i>Heteromeles arbutifolia</i>	toyon	1 gallon
<i>Artemisia californica</i>	coastal sagebrush	1 gallon
<i>Salvia mellifera</i>	black sage	1 gallon
<i>Salvia apiana</i>	white sage	1 gallon
<i>Isomeris arborea</i>	bladderpod	1 gallon
<i>Mirabilis californica</i>	four o'clock	1 gallon
<i>Encelia californica</i>	California sunflower	1 gallon
<i>Leymus condensatus</i>	giant wild rye	1 gallon
<i>Cylindropuntia prolifera</i>	coast cholla	1 gallon

Table 4
Hydroseed for Coastal Sage Scrub Enhancement Area

Scientific Name	Common Name	Percent Germination (Minimum)	Pounds Pure Live Seed per Acre
<i>Artemisia californica</i>	coastal sagebrush	40	1.0
<i>Bromus carinatus</i>	California brome	70	2.0
<i>Camissonia cheiranthifolia</i>	Beach evening-primrose	65	1.0
<i>Castilleja exserta</i>	purple owl's clover	40	1.0
<i>Clarkia purpurea quadivulnera</i>	four spot clarkia	65	0.5
<i>Encelia californica</i>	California sunflower	50	1.0
<i>Eriogonum fasciculatum</i> var. <i>fasc.</i>	flat-topped buckwheat	55	3.0

North Coast Corridor Mitigation Site Assessment for the Deer Canyon II Site

Scientific Name	Common Name	Percent Germination (Minimum)	Pounds Pure Live Seed per Acre
<i>Deinandra fasciculata</i>	fascicled tarweed	15	2.0
<i>Lupinus bicolor</i>	Miniature lupin	70	2.0
<i>Lupinus succulentus</i>	Arroyo lupin	75	2.0
<i>Gnaphalium californicum</i>	California everlasting	15	0.25
<i>Lasthenia californica</i>	goldfields	50	2.0
<i>Lotus scoparius</i>	deerweed	50	2.5
<i>Nassella pulchra</i>	purple needlegrass	50	6.0
<i>Salvia apiana</i>	White sage	40	1.0
<i>Sisyrinchium bellum</i>	Blue-eyed grass	65	1.0
<i>Salvia mellifera</i>	black sage	40	2.0

NOTE: Hydroseed mixes shall include seed mix, amendments per soil test recommendation, and virgin wood cellulose fiber mulch at 2,500 lbs per acre.

Supportive Measures

Temporary irrigation will likely be used to initiate a nonnative grow/kill program to reduce the nonnative seed bank onsite prior to hydroseeding and planting. Temporary irrigation will likely also be used for the first year or two to get the container plants established. Maintenance and monitoring will be performed during the 5-year monitoring period to guide the emerging native vegetation toward meeting performance standards. Maintenance onsite will require several years of intense weed removal through hand pulling and spraying with herbicide (glyphosate) to control the nonnative grasses and allow the coastal sage scrub species to become established.

Performance Criteria

Performance criteria will be developed from reference sites within or adjacent to the mitigation parcel and will be established with the aim of matching the reference habitats. Other performance criteria will include native seedling recruitment, non-native vegetation cover, soil stability (lack of erosion), and wildlife use of the area. Criteria will be established that provides a high level of confidence that, once performance criteria are achieved, the resultant vegetation communities will be resilient and persistent as a demonstration of self-sustainability under a long term management program.

Mitigation results for uplands are expected to increase native cover and species diversity to around 85% of reference habitat, while reducing non-native annual cover to 5% or less of total vegetation cover. The specifics of the performance criteria will be detailed in the Conceptual

North Coast Corridor Mitigation Site Assessment for the Deer Canyon II Site

Mitigation Plan for the Deer Canyon II Site, through the NOID process and/or Coastal Development Permit. Presently, the mitigation site is dominated by non-native vegetation.

SITE PROTECTION

Caltrans will deed the site to the City of San Diego with a fully funded endowment, once the mitigation projects have reached the end of interim maintenance period and satisfy established performance criteria. A management endowment account will be established once the property acquisition is complete. The endowment funds will be used by the management entity to monitor and maintain site access restrictions and habitat quality. The upper parcel, once restored, is intended to be preserved in a natural, scenic, open condition to maintain its ecological, historical, visual and educational values.

Site restrictions might be required to fully protect existing biological resources from local residential land use and motorists at the viewpoint parking area. Any fence installed will be maintained as part of the land management.

LONG TERM MANAGEMENT

A Habitat Management Plan (HMP) will be prepared to define the long term management responsibilities to maintain the functions and services of the preserved biological resources. The City of San Diego will assume long term management responsibilities. Funds for long term management will be provided by SANDAG/Caltrans and placed into a non-wasting endowment. Endowment funds will be established using a Property Assessment Report that is based on the approved HMP.

Anticipated potential management issues related to this parcel include site access control, weed control, trash accumulation control.

ADDITIONAL STUDIES

Further studies will be required to support the final design to be presented in the NOID submittal. These studies include soils testing to determine if there are any nutrient deficiencies. Cultural resource studies have already been completed and no resources were identified. In addition, a reference site with appropriate coastal sage scrub will be identified and sampled using line-transect methods to obtain vegetation community data such as cover, density, and species diversity.

REQUIRED PERMITS

A NOID with accompanying project report will likely be required for project implementation.

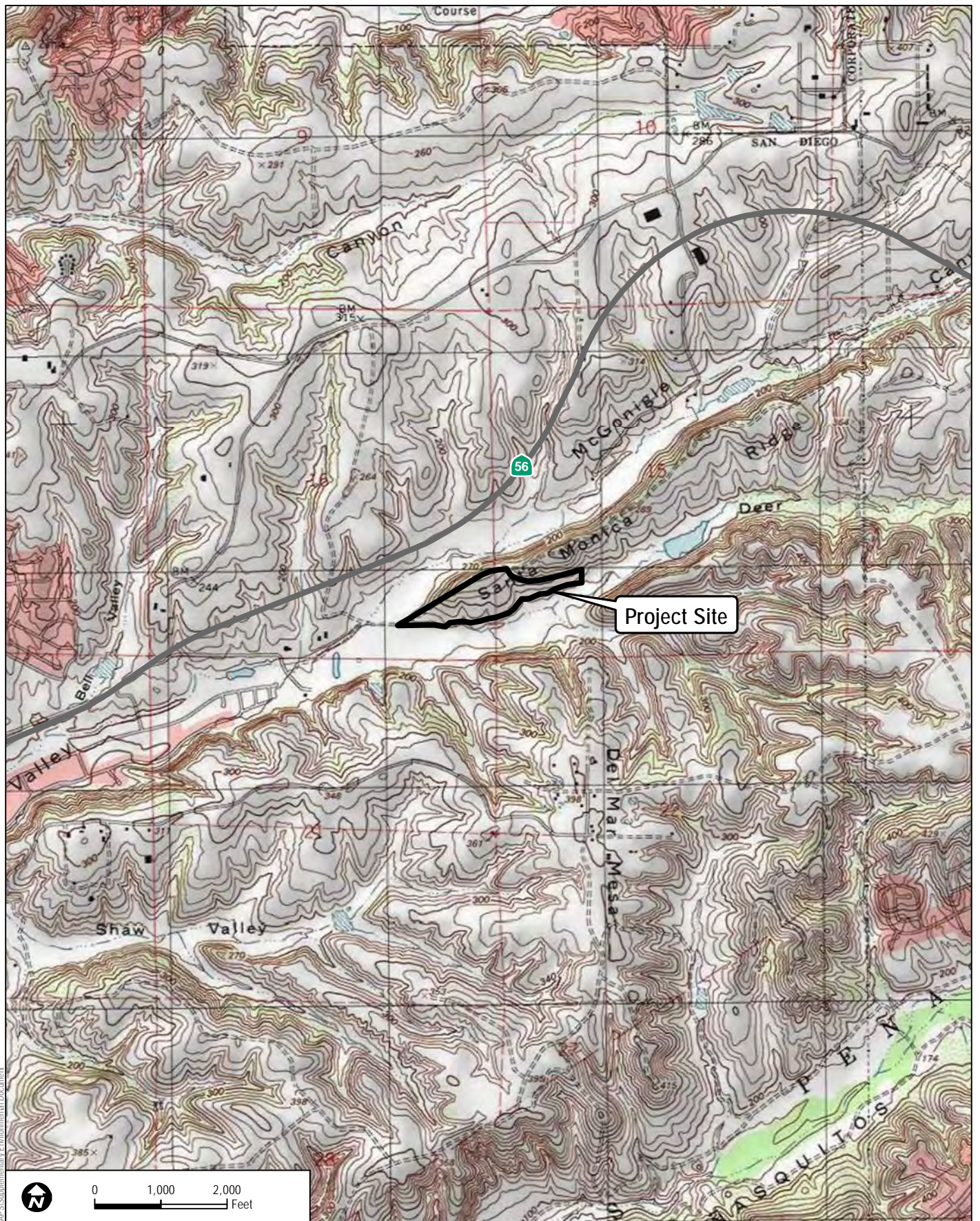
North Coast Corridor Mitigation Site Assessment for the Deer Canyon II Site

REFERENCES

CalIPC. 2012. Website <http://www.cal-ipc.org/ip/management/ipcw/categories.php>, accessed May 4, 2012.

Caltrans. 2011. Final Compensatory Wetland/Upland Mitigation Plan for Deer Canyon. May 2011.

Scatolini, Susan. 2012. Email correspondence occurring on May 2, 2012.



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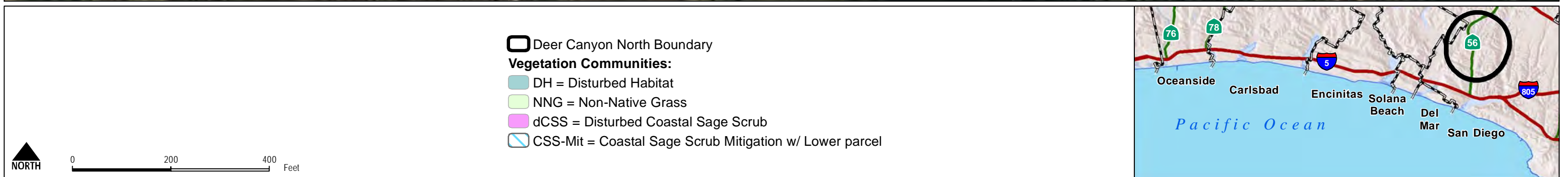
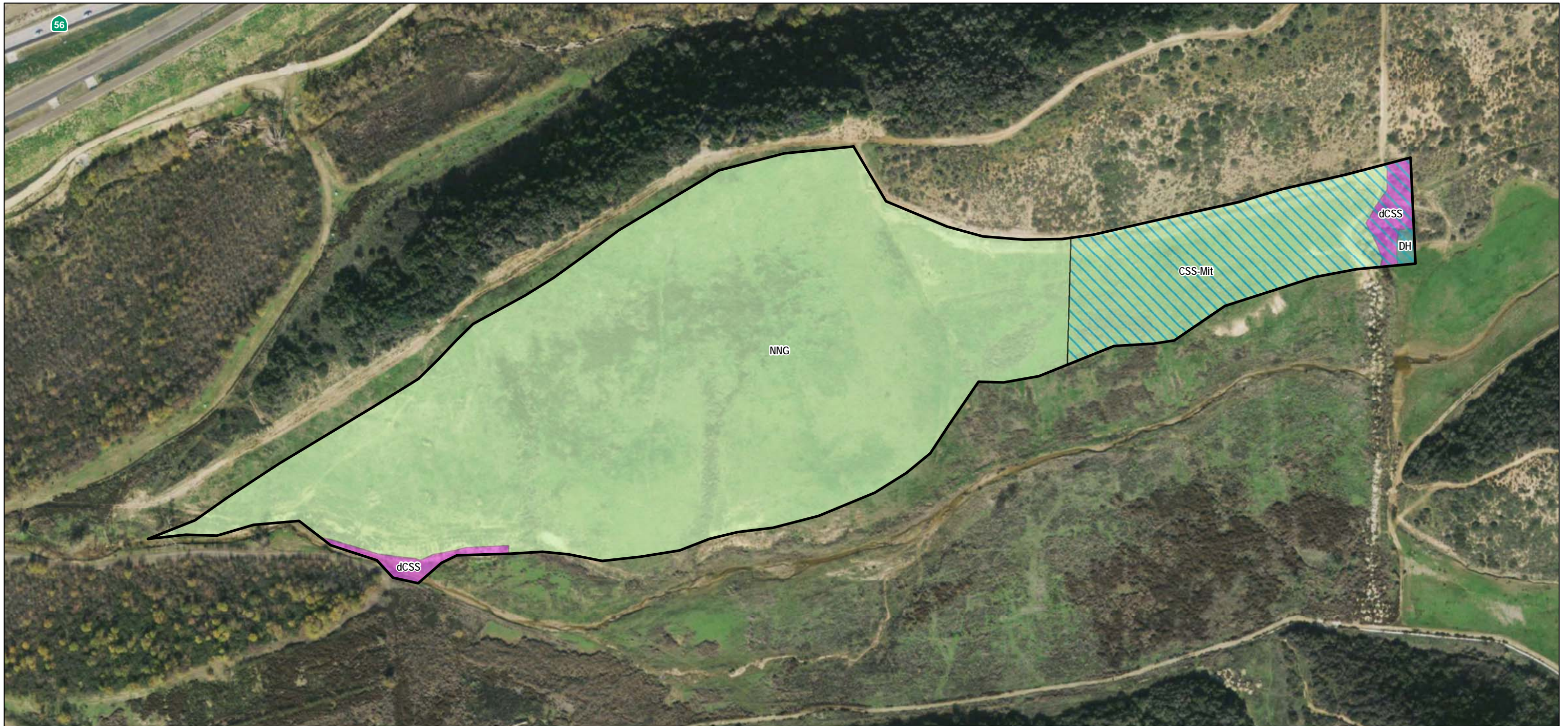
SOURCE: USGS Topo 7.5 min Quads

North Coast Corridor Transportation and Resource Enhancement Program and Highway Public Works Plan

FIGURE 1

Deer Canyon II - Vicinity Map

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DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, Imagery: DigitalGlobe March 2008

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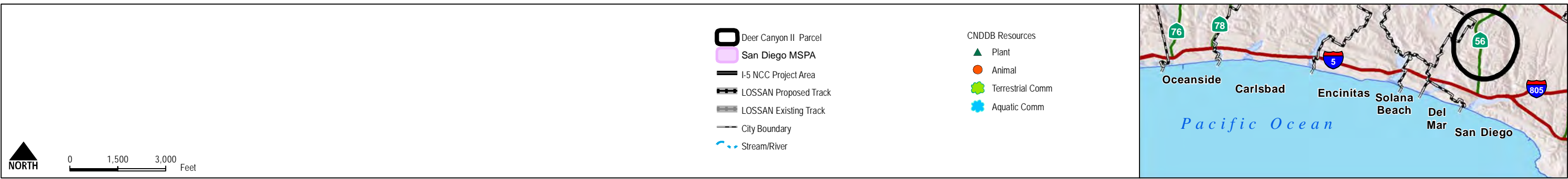
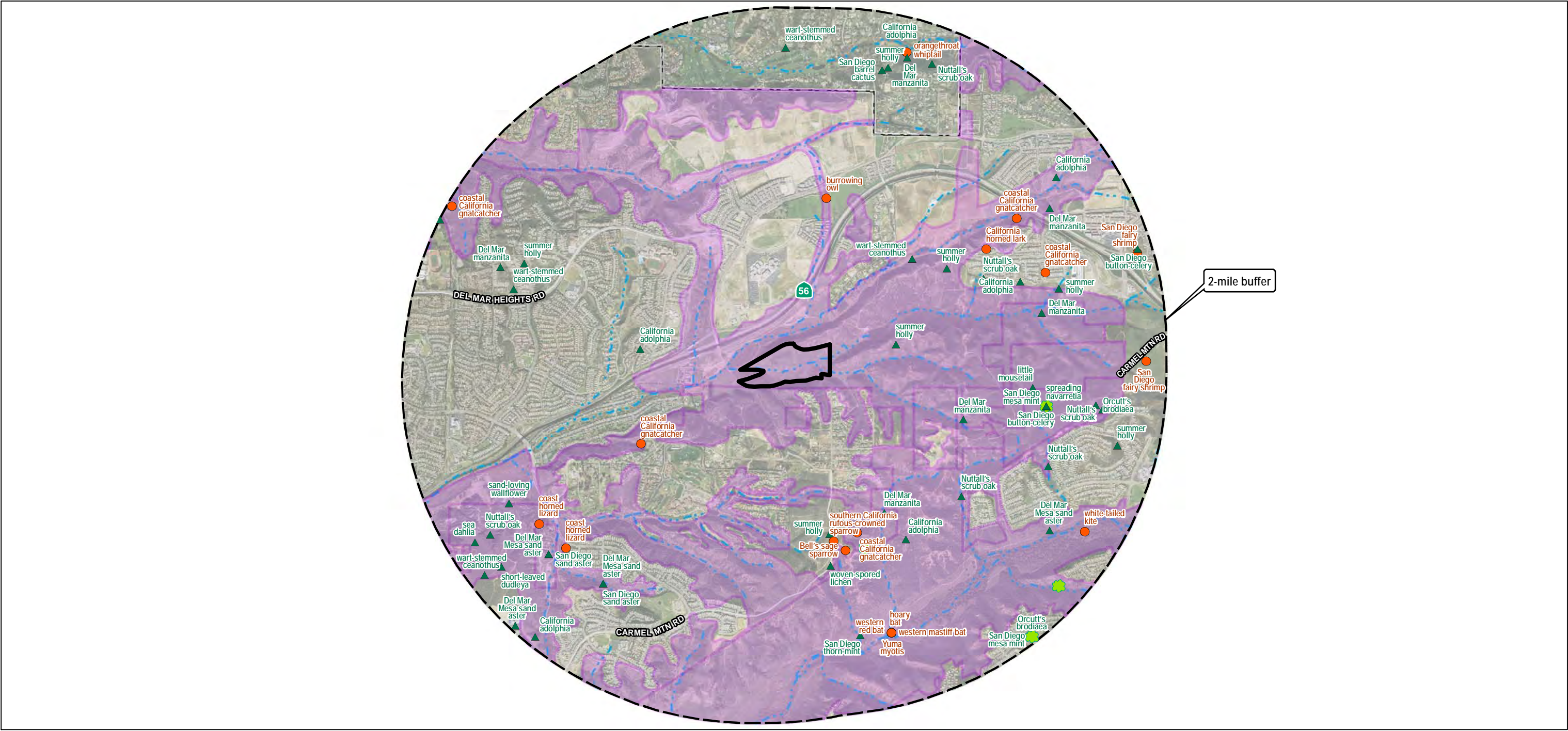
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FIGURE 2

Deer Canyon II Parcel Existing Vegetation

North Coast Corridor Transportation and Resource Enhancement Program and Highway Public Works Plan

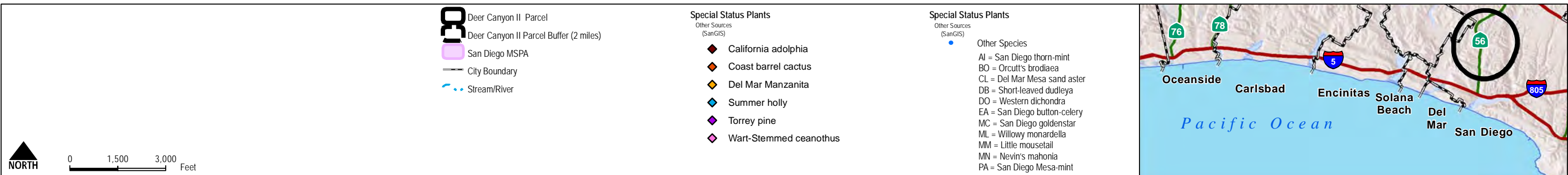
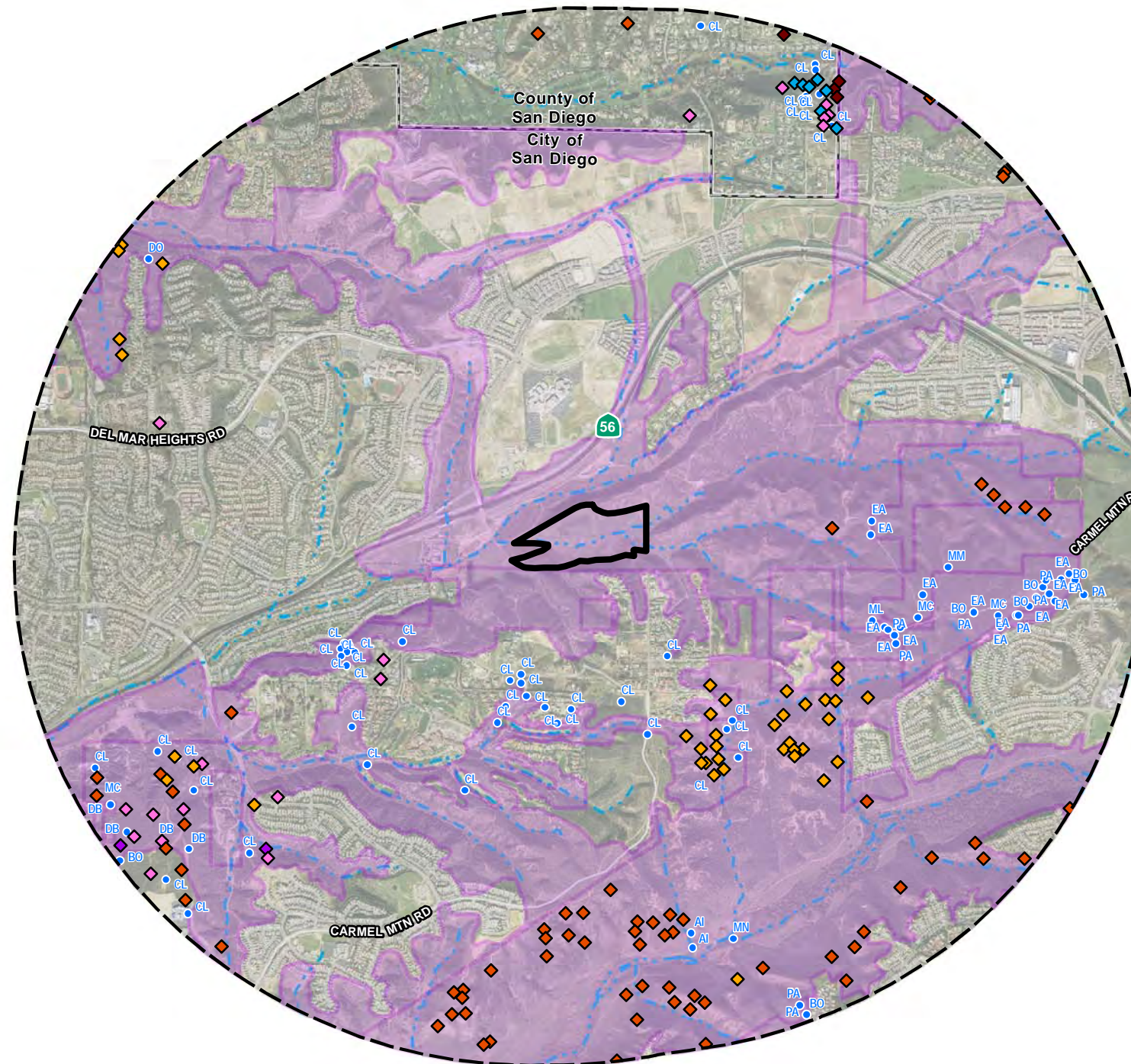


DATA SOURCES: Caltrans, California Coastal Commission, Local Jursidictions, SanGIS, SANDAG, CDFG, USFWS, CNDDDB, Imagery: DigitalGlobe March 2008

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FIGURE 3
Deer Canyon II Parcel CNDDDB Resources within 2 miles



DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, Imagery: DigitalGlobe March 2008

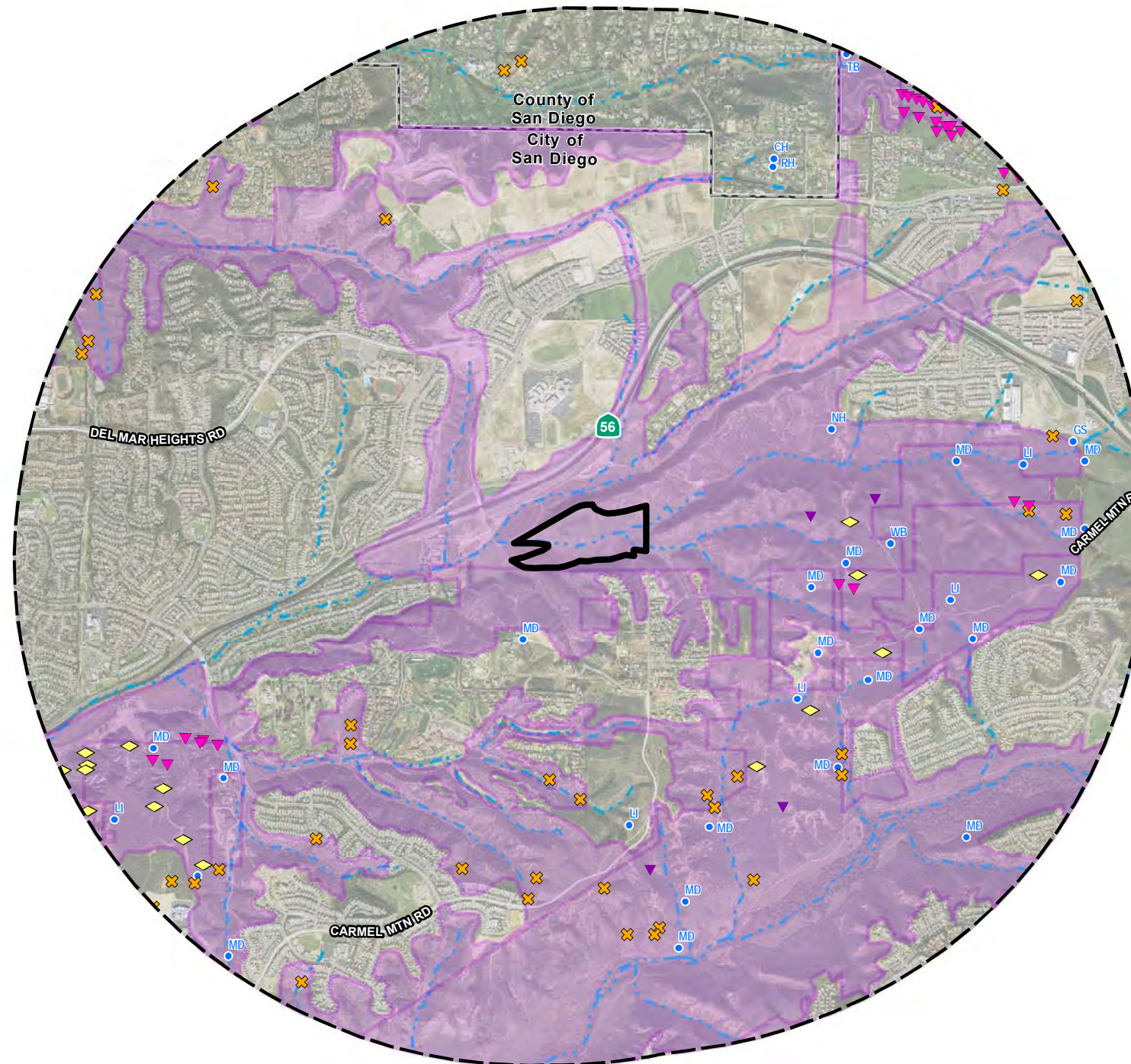
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FIGURE 4
Deer Canyon II Parcel Special Status Plant Resources

North Coast Corridor Transportation and Resource Enhancement Program and Highway Public Works Plan



- Deer Canyon II Parcel
- Deer Canyon II Parcel Buffer (2 miles)
- San Diego MSPA
- City Boundary
- Stream/River

- Special Status Wildlife**
Other Sources (SanGIS)
- California gnatcatcher
 - Orange-throated whiptail
 - Rufous-crowned sparrow
 - San Diego horned lizard

- Special Status Wildlife**
Other Sources (SanGIS)
- Other Species
 - CH = Cooper's hawk
 - GS = Grasshopper sparrow
 - LI = Mountain lion
 - MD = Southern mule deer
 - NH = Northern harrier
 - RH = Red-shouldered Hawk
 - TB = Tricolored blackbird
 - WB = Western bluebird



DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, Imagery: DigitalGlobe March 2008

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Deer Canyon II Parcel Special Status Wildlife Resources

FIGURE 5

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**North Coast Corridor Public Works Plan/Transportation and
Resource Enhancement Program
Mitigation Site Assessment for the La Costa Preservation
Parcel**

Prepared by:

DUDEK

Prepared for:



AUGUST 2012

North Coast Corridor Mitigation Site Assessment for the La Costa Preservation Parcel

Site Location: The La Costa preservation parcel is located east of Interstate 5 (I-5), south of La Costa Avenue and east of Piraeus Street (see Figure 1). The parcel is situated across La Costa Avenue from Batiquitos Lagoon.

Latitude/Longitude: 33.0878/-117.2896

APN: 216-110-31 (19.75 acres)

Ownership: Caltrans has purchased this parcel

Correspondence with Resource Agencies: June 2008, Resource agencies receive request from Caltrans and SANDAG to approve site for acquisition; Letters acknowledging consideration of site for mitigation received from CCC March 2009, CDFG July 2008, USFWS August 2008, and NMFS July 2008.

MITIGATION GOAL

The San Diego Association of Governments (SANDAG) and California Department of Transportation (Caltrans) propose to mitigate impacts to sensitive upland habitats associated with the North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program (PWP/TREP) of multi modal transportation projects by preserving and managing existing high quality uplands habitat on the La Costa preservation parcel located along the south shore of Batiquitos Lagoon (see Figure 2). The goal of the preservation acquisition and mitigation program is to remove development potential of the parcel, enhance disturbed Coastal Sage Scrub (CSS) areas through rehabilitation efforts, preserve existing high quality upland habitat through site protection (easements and fence), and manage the parcel in perpetuity.

The proposed preservation and management of the native uplands vegetation communities will preserve:

- Occupied California gnatcatcher habitat by removing extant habitat from the threat of development;
- Chaparral and coastal sage scrub habitat and ecosystem continuity through connectivity between coastal wetlands and native uplands;
- Sensitive plants and cultural resources onsite;
- Wildlife connectivity with Batiquitos Lagoon and surrounding native open space that connects to Encinitas Creek and other drainages into the lagoon and out to the Pacific coastline; and,
- Natural topography adjacent to Batiquitos Lagoon that is highly visible from the I-5 corridor and significantly contributes to scenic quality and landscape character.

The proposed rehabilitation of the disturbed CSS communities will involve:

North Coast Corridor Mitigation Site Assessment for the La Costa Preservation Parcel

- The removal of nonnative species from areas mapped as disturbed CSS
- Replanting and/or hydroseeding disturbed areas with appropriate native species.

EXISTING CONDITIONS

Ecological Context

The parcel was identified as consisting of high to very high habitat values in the Multiple Habitat Conservation Plan (MHCP) for coastal northern San Diego County, and is located within a Biological Core Linkage area. The preservation area abuts the Carlsbad HCP core area #8 that comprises Batiquitos Lagoon. The lagoon is owned and managed by the California Department of Fish and Game. California Natural Diversity Database (CNDDB) mapped resources for these adjacent uplands to Batiquitos Lagoon includes a variety of nearby data points (Figure 3). Special status plant species identified onsite include California adolphia (*Adolphia californica*) and wart stemmed ceanothus (*Ceanothus verrucosus*), while sea dahlia (*Coreopsis maritima*) and Del Mar sand aster (*Lessingia filaginifolia* var. *linifolia*) have been identified nearby (Figure 4). Numerous special status wildlife species are also identified within and adjacent to Batiquitos Lagoon (Figure 5), and critical habitat for the California gnatcatcher is designated on the entirety of the parcel. Adjacent upland areas, including the subject parcels, are utilized by California gnatcatcher.

Other open space lands are present south and east of the preservation parcel. These open space areas are located on slopes and canyons that topographically form the southern boundary of Batiquitos Lagoon. These slopes provide linkages to inland areas associated with Encinitas Creek and other drainages that flow into the lagoon and ultimately connect to the Pacific.

Soils

The acquired parcel consists of steep north and northwest facing slopes. Three soil types are present on the parcel including Carlsbad gravelly loamy sand at the base of the slope, Gaviota fine sandy loam on the steepest slopes, and Corralitos loamy sand on the mesa top (NRCS, Web Soil Survey).

Vegetation

Diegan coastal sage scrub, chaparral (both southern maritime chaparral and chamise chaparral), and disturbed habitat communities were identified on the parcel. The parcel has good habitat with excellent habitat found on the top of the mesa. It provides habitat for sensitive plants as well as the threatened California gnatcatcher and supports rare plants and communities. There is little

North Coast Corridor

Mitigation Site Assessment for the La Costa Preservation Parcel

weed invasion in most places, and minimal effort would be needed to fence these parcel to control access and preserve the habitat in place.

A general description of each community and a description of its occurrence within the parcel are provided below.

Diegan Coastal Sage Scrub. This vegetation type was once widespread in coastal southern California, and now it occurs in patches from Los Angeles into Baja California. This plant community on the parcel totals about 11.75 acres and is composed of a variety of low, soft aromatic shrubs dominated by drought-deciduous species such as California sagebrush (*Artemisia californica*), flat-topped buckwheat (*Eriogonum fasciculatum* var. *fasciculatum*), white sage (*Salvia apiana*), and black sage (*Salvia mellifera*). Coastal sage scrub (CSS) on site is dominated by California sagebrush and buckwheat with prickly pear (*Opuntia littoralis*), laurel sumac (*Malosma laurina*), lemonade berry (*Rhus integrifolia*), black sage, desert elderberry (*Sambucus mexicana*), California sunflower (*Encelia californica*), and golden yarrow (*Eriophyllum confertifolium* var. *confertifolium*) (Figure 2). California adolphia (*Adolphia californica*), a sensitive plant, occurs in this community on site. The top of the mesa is relatively densely vegetated except along walking trails. The top of the slope on the northern end of the mesa has patches that are more disturbed with nonnative grasses and weedy annuals including ripgut grass (*Bromus diandrus*), foxtail chess (*Bromus madritensis* var. *rubens*), mustard (*Brassica* sp.), and ice plant (*Carpobrotus edulis*).

The base of the canyon on the northeastern end of the parcel consists of approximately 3.65 acres of disturbed coastal sage scrub dominated by coyote bush (*Baccharis pilularis*), California sunflower, and black sage with large patches of fennel (*Foeniculum vulgare*).

Chaparral. Two types of chaparral are found on site including chamise chaparral and southern maritime chaparral. There is approximately 3.38 acres of chaparral on site. Chamise chaparral is dominated by chamise (*Adenostoma fasciculatum*) in dense almost monotypic stands. This is a fire-adapted community that is found primarily on east-facing slopes. Chamise chaparral on site occurs in small patches on north-facing slopes of the parcel.

Southern maritime chaparral occurs on the upper north-facing slopes at the western end of the parcel and on the north facing slopes of the canyon. This community is dominated by wart-stemmed ceanothus (*Ceanothus verrucosus*) with chamise, toyon (*Heteromeles arbutifolia*), laurel sumac, fuchsia-flowered gooseberry (*Ribes speciosum*), mission manzanita (*Xylococcus bicolor*), and Mohave yucca (*Yucca schidigera*). Elements of Diegan coastal sage scrub are interspersed within this community.

North Coast Corridor Mitigation Site Assessment for the La Costa Preservation Parcel

A summary of existing habitat types and acreage on the La Costa parcel is provided in Table 1, below.

Table 1
Preservation Acreage by Habitat Type

Preserved Habitat Type	Mitigation Acreage
Coastal Sage Scrub	11.75 ac.
Disturbed Coastal Sage Scrub	3.65 ac.
Chaparral	3.38 ac.
Disturbed Habitat (Coastal Sage Scrub Enhancement)	0.97 ac.
Total	19.75 ac.

Wildlife

One pair of threatened coastal California gnatcatcher (*Polioptila californica californica*) was observed at the top of the parcel (see Figures 2 and 5). Other bird species that were observed on site include California towhee (*Pipilo crissalis*), song sparrow (*Melospiza melodia*), Anna's hummingbird (*Calypte anna*), bushtit (*Psaltiriparus minimus*), and California thrasher (*Toxostoma redivivum*). Other wildlife species observed on site include coyote (*Canis latrans*), western fence lizard (*Sceloporus occidentalis*), desert cottontail (*Sylvilagus audubonii*), and California ground squirrel (*Spermophilus beecheyi*).

Prior and Current Land Use

The parcel is adjacent to La Costa Avenue on the north. Piraeus Street is located to the west and Sky Loft Road to the south. La Costa Avenue is a four-lane road with high traffic speeds and no roadside parking. Access from La Costa Avenue is extremely limited and roadside parking is dangerous. Limited parking is available on the shoulder of Piraeus Street adjacent to the south at the intersection with La Costa Avenue. Roadside parking along Sky Loft Road is limited by an asphalt curb that runs the length of this road up to the existing residential development.

Some informal hiking trails are present on the parcel. These trails appear to be used to access high points that provide vistas of Batiquitos Lagoon and the Pacific Ocean. Due to the lack of parking, these trails are likely used only by local residents.

Existing Utilities/Infrastructure/Easements

There are no known utilities, infrastructure, or easements located on the parcel that could affect implementation of the proposed mitigation/preservation opportunity (see Figure 6).

North Coast Corridor Mitigation Site Assessment for the La Costa Preservation Parcel

MITIGATION PROGRAM

The proposed mitigation for the entirety of the site will be for protected open space, habitat preservation and management. The goal of the preservation acquisition is to remove development potential of the parcel, preserve existing upland habitat through site protection (easements and fence), and ensure management in perpetuity.

Rehabilitation

Areas that are mapped as disturbed CSS will be rehabilitated through the removal of nonnative species and the replanting and/or seeding with an appropriate native CSS plant palette.

Target Plant Communities

The design and plant palette used to rehabilitate the disturbed CSS areas will include native species found in adjacent native areas. To provide appropriate native species diversity that is comparable to adjacent high quality habitat, additional field surveys of the La Costa Parcel, detailing annual and perennial species will need to occur and the recorded species added to the plant palette in the NOID submittal, as appropriate.

SITE PROTECTION

Caltrans will deed the preservation parcel to a local land management agency that is acceptable to the resource agencies. A management endowment account will be established once the property acquisition is complete. The endowment funds will be used by the management entity to monitor and maintain site access restrictions and habitat quality.

Site restrictions might be required to fully protect existing biological resources. However, some controlled access opportunity for local residents to access vistas should be considered to minimize vandalism on the preserved land. Any fence installed will be maintained as part of the preserved land management.

LONG TERM MANAGEMENT

A Habitat Management Plan (HMP) will be prepared to define the long term management responsibilities to maintain the functions and services of the preserved biological resources. A resource agency-approved management entity will assume long term management responsibilities. Funds for long term management will be provided by SANDAG/Caltrans and placed into a non-wasting endowment. Endowment funds will be established using a Property Assessment Report that is based on the approved HMP.

North Coast Corridor Mitigation Site Assessment for the La Costa Preservation Parcel

Anticipated potential management issues related to this parcel include site access control, weed control, trash accumulation control.

ADDITIONAL STUDIES

Rehabilitation of disturbed CSS areas may occur as a portion of the proposed mitigation program for the La Costa Parcel. Additional field surveys of the La Costa Parcel will need to occur to determine appropriate plant palettes to be used in the rehabilitation efforts onsite.

REQUIRED PERMITS

No permits are anticipated to be required to implement site protection and management actions.

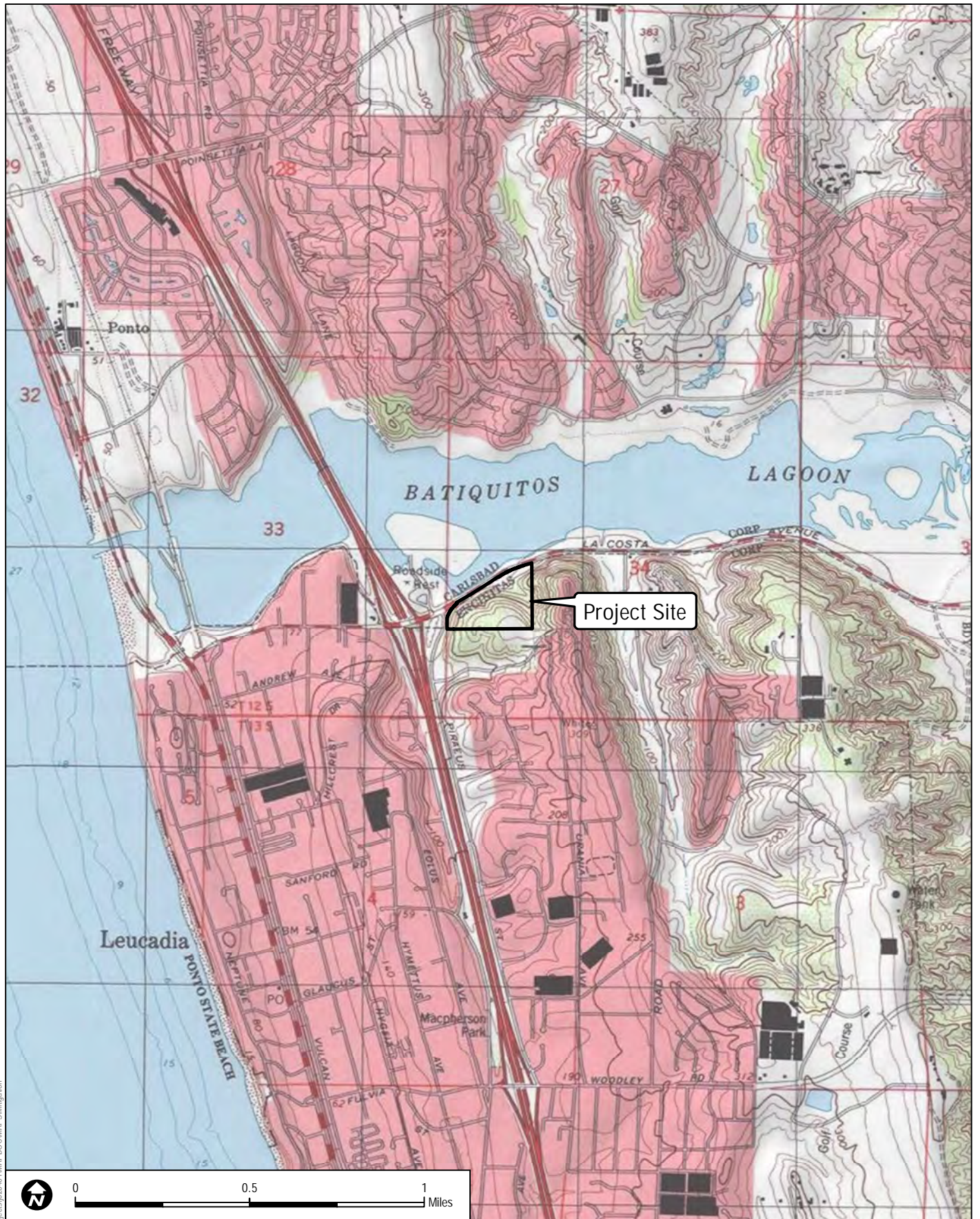


FIGURE 1
Project Vicinity

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NOVEMBER 2011

SOURCE: USGS Topo 7.5 Minute Series - Encinitas Quadrangle

La Costa Preservation Parcel



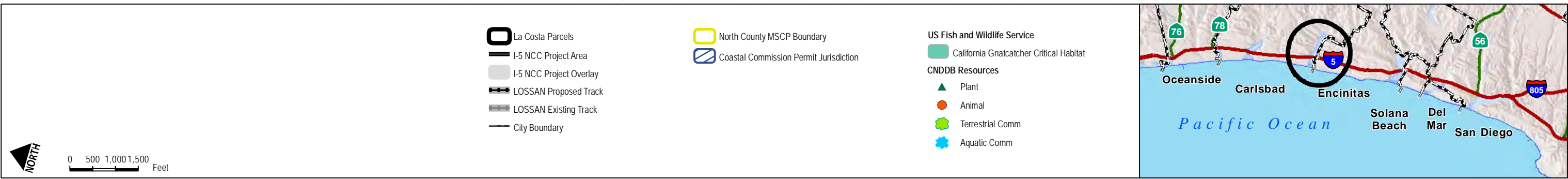
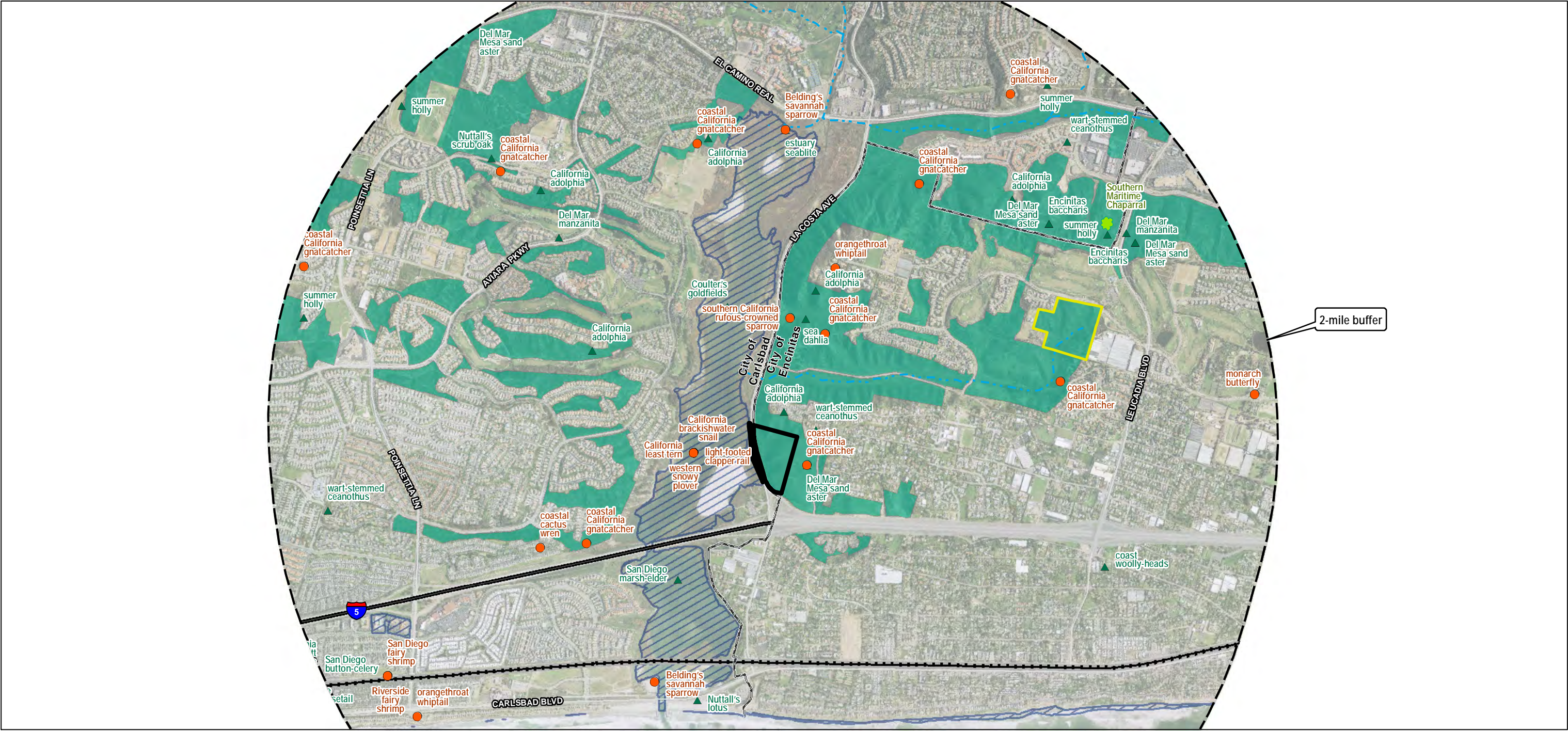
FIGURE 2
Existing Vegetation

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6264-06

NOVEMBER 2011

La Costa Preservation Parcel



DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, CDFG, USFWS, Imagery: DigitalGlobe March 2008

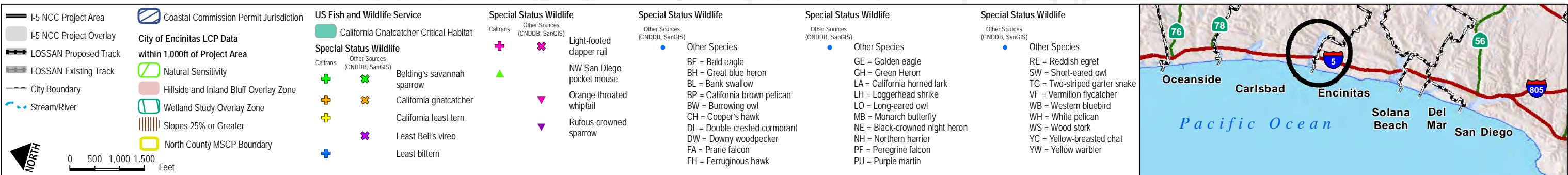
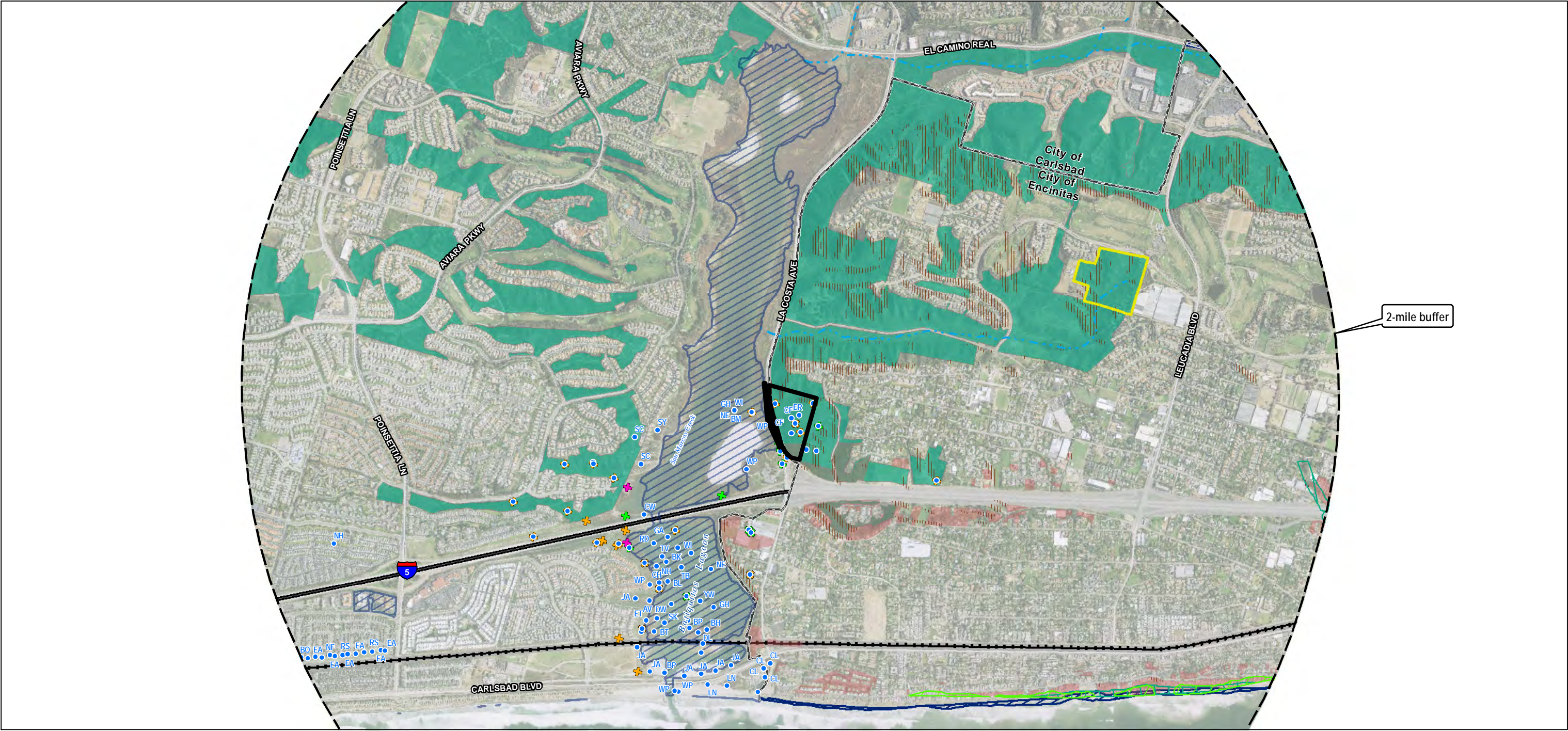
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FIGURE 3
La Costa Parcels CNDDDB Resources within 2 miles

North Coast Corridor Transportation and Resource Enhancement Program and Highway Public Works Plan

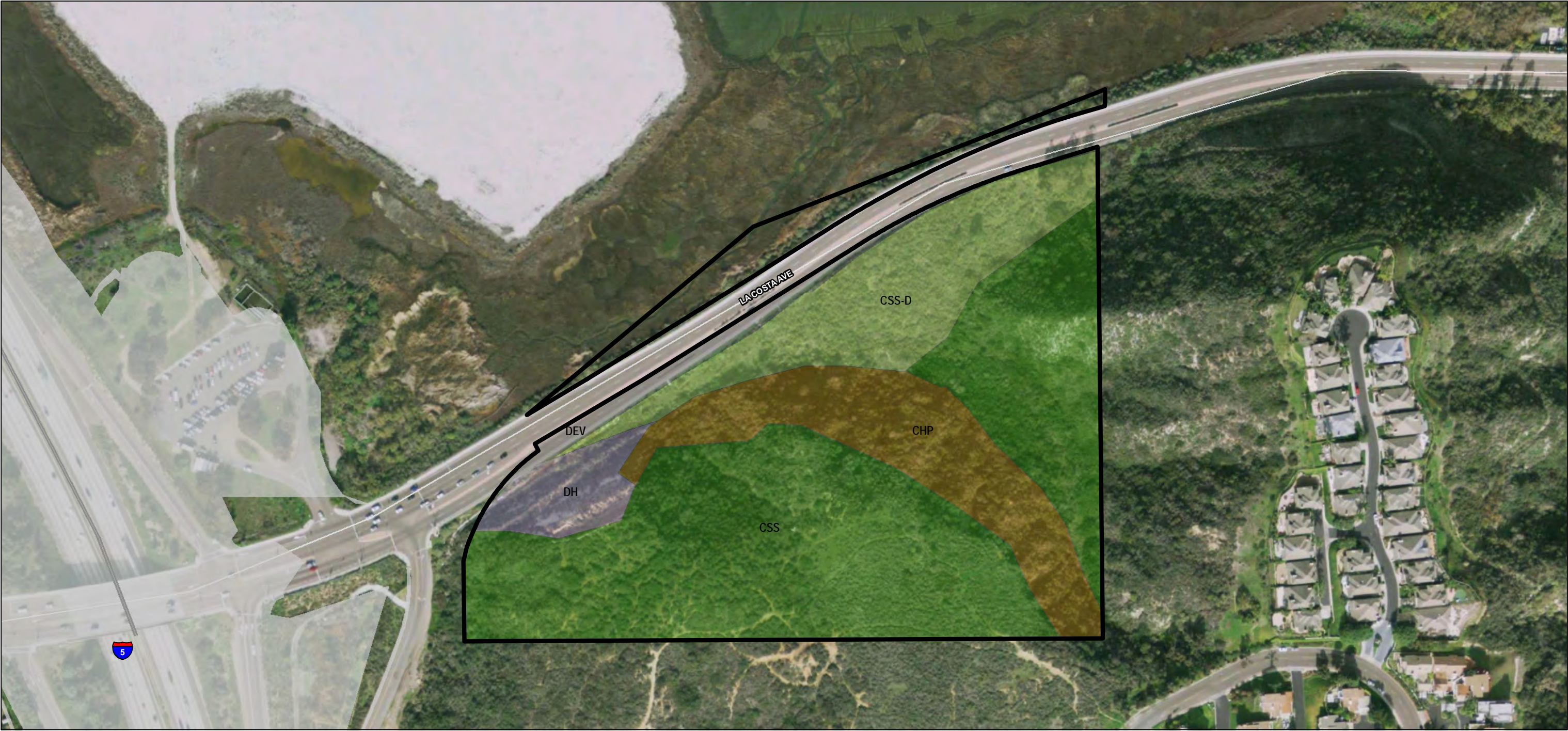


DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, CDFG, USFWS, Imagery: DigitalGlobe March 2008

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FIGURE 5
La Costa Parcel Special Status Wildlife Resources



DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, CDFG, USFWS, Imagery: DigitalGlobe March 2008

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FIGURE 6
La Costa Parcels Constraints Map

North Coast Corridor Transportation and Resource Enhancement Program and Highway Public Works Plan

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**North Coast Corridor Public Works Plan/Transportation and
Resource Enhancement Program
Mitigation Site Assessment for the Laser Preservation Parcels**

Prepared by:

DUDEK

Prepared for:



AUGUST 2012

North Coast Corridor Mitigation Site Assessment for the Laser Preservation Parcels

Site Location: The Laser Preservation Parcels (Laser parcels) are located west of Interstate 5 (I-5) and north and east of Manchester Avenue (see Figure 1). The parcels are situated across Manchester Avenue from San Elijo Lagoon.

Latitude/Longitude: 33.0878/-117.2896

APNs: 260-200-21-00 (1.88 acres) and 260-200-03-00 (3.1 acres)

Ownership: Caltrans has purchased these parcels

Correspondence with Resource Agencies: Resource agencies were made aware of the site purchase during NEPA 404 coordination meetings held in 2011 and 2012, and letters received on March 17, 2011 from USFWS and CDFG regarding consideration of the Laser parcels for mitigation.

Mitigation Goal

The San Diego Association of Governments (SANDAG) and California Department of Transportation (Caltrans) propose to mitigate impacts to sensitive upland habitats associated with the multi modal transportation projects permitted under the North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program (PWP/TREP) by rehabilitating, preserving, and managing existing uplands habitat on the Laser parcels located immediately north of San Elijo Lagoon. The goal of the mitigation program on the Laser Parcel is to remove development potential of the parcels, preserve existing upland habitat through site protection (easements and fence), improve habitat value through the removal of non-native species in areas adjacent to the lagoon, and ensure management in perpetuity.

The proposed preservation and management of the native uplands vegetation communities will preserve:

- Occupied California gnatcatcher habitat (two territories);
- Coastal sage scrub and coastal bluff scrub habitat and ecosystem continuity through connectivity between coastal wetlands and native uplands;
- Sensitive plants onsite;
- Increased native upland buffer between I-5 and San Elijo Lagoon and surrounding native open space that connects to Encinitas Creek and other drainages into the lagoon and out to the Pacific coastline; and

North Coast Corridor

Mitigation Site Assessment for the Laser Preservation Parcels

- Natural topography adjacent to San Elijo Lagoon that is highly visible from the I-5 corridor and significantly contributes to scenic quality and landscape character.

The proposed rehabilitation of the ornamental adjacent to Manchester Avenue and the disturbed CSS communities throughout the Parcel will involve:

- The removal of nonnative species from areas mapped as ornamental adjacent to Manchester Avenue and areas mapped as disturbed coastal sage scrub (CSS).
- Replanting and/or hydroseeding ornamental planting and disturbed CSS areas with appropriate native species.

EXISTING CONDITIONS

Ecological Context

The Laser parcels were determined to support a range of habitat values (low to high) immediately adjacent to the Multiple Habitat Conservation Plan (MHCP) area for coastal northern San Diego County. The site is located within a Biological Core Linkage area. The parcels are located adjacent to the Coastal Zone and within critical habitat for California gnatcatcher (see Figure 2). California Natural Diversity Database (CNDDB) mapped resources for these adjacent uplands to San Elijo Lagoon includes nearby data points for northwestern San Diego pocket mouse (*Perognathus fallax fallax*), Palmer's grapplehook (*Harpagonella palmeri*), and sand-loving wallflower (*Erysimum ammophilum*) (see Figure 3). Special status plant species observed onsite include California adolphia (*Adolphia californica*), sea dahlia (*Coreopsis maritima*), and Del Mar sand aster (*Lessingia filaginifolia* var. *linifolia*), while San Diego barrel cactus (*Ferocactus viridescens*) was observed nearby (see Figure 4). Numerous special status wildlife species are also identified within and adjacent San Elijo Lagoon (see Figure 5). Adjacent upland areas, including the subject parcels, are utilized by California gnatcatcher.

Soils

The acquired parcels consist of steep west-facing slopes. The soil on these parcels consists of terrace escarpment soils (NRCS, Web Soil Survey). The soil texture appears to be a sandy loam that is moderately erodible. There are areas where sandstone parent material is exposed.

Two areas of minor erosion that total 0.06 acre are present on the northern portion of the site. These erosion features are remnant off road vehicle and bike trails that predate the adjacent

North Coast Corridor

Mitigation Site Assessment for the Laser Preservation Parcels

residential development on the west. The residential development truncated these trails. Presently, there appears to be limited access to these trails by local residents. Although some native recruitment is present, the bare ground area does not appear to provide sufficient soil resources for natural recruitment to passively reclaim these areas. The severity of erosion features observed within these areas is low due to soil substrate texture.

Vegetation

Diegan coastal sage scrub, coastal bluff scrub, nonnative grassland, disturbed habitat, bare ground, and ornamental communities were identified on the two parcels. In addition, a small area of disturbed salt marsh and developed habitats were observed adjacent to Manchester Avenue. A general description of each community and a description of its occurrence within the parcels are provided below.

Diegan Coastal Sage Scrub. This vegetation type was once widespread in coastal southern California, and now it occurs in patches from Los Angeles into Baja California. This vegetation community is composed of a variety of low, soft aromatic shrubs dominated by drought-deciduous species such as California sagebrush (*Artemisia californica*), flat-topped buckwheat (*Eriogonum fasciculatum* var. *fasciculatum*), white sage (*Salvia apiana*), and black sage (*Salvia mellifera*). Coastal sage scrub onsite is dominated by California sagebrush and buckwheat with prickly pear (*Opuntia littoralis*), laurel sumac (*Malosma laurina*), lemonadeberry (*Rhus integrifolia*), black sage, and California sunflower (*Encelia californica*) (see Figure 2). The following sensitive plants occur in this community onsite, California adolphia (*Adolphia californica*), San Diego barrel cactus (*Ferocactus viridescens*), south coast saltscale (*Atriplex pacifica*), and Del Mar sand aster (*Lessingia filaginifolia* var. *linifolia*). There is approximately 2.6 acres of coastal sage scrub onsite (see Table 1).

Disturbed Coastal Sage Scrub. The upper portions of the parcels closer to I-5 and the utility access roads are dominated by disturbed coastal sage scrub. There is 1.32 acres of disturbed coastal sage scrub onsite (see Table 1).

Disturbed coastal sage scrub is dominated by the same native species with nonnative grass, mustard (*Brassica* sp.), fennel (*Foeniculum vulgare*), tobacco tree (*Nicotiana glauca*), and other nonnative species annuals.

In particular, non-native veldtgrass (*Ehrharta* sp.) appears to be spreading within the disturbed coastal sage scrub areas and on adjacent parcels. Veldtgrass is a perennial grass found along California's coastline. Veldtgrass is commonly found in disturbed areas, including riparian areas,

North Coast Corridor Mitigation Site Assessment for the Laser Preservation Parcels

scrub, grassland, woodland, urban areas and turf. Veldtgrass causes more litter accumulation than native grasses and herbs do, which further inhibits native plant growth (CALIPC website; http://www.cal-ipc.org/ip/management/plant_profiles/Ehrharta_erecta.php).

Coastal Bluff Scrub. Coastal bluff scrub is a plant community made up primarily of low, prostrate plants that are wind pruned by sea breezes. Dominant plants in this community are primarily woody and/or succulent (Holland 1986). Species commonly found in this community include sea dahlia (*Coreopsis maritima*), live forever (*Dudleya spp.*), lemonadeberry, and prickly pear. Coastal bluff scrub was identified in the southern portion of the smaller parcel. There is approximately 0.5 acres of coastal bluff scrub on the parcels. Sea dahlia and Orcutt's pincushion (*Chaenactis glabriuscula var. orcutiana*) are sensitive plant species that were found in this community onsite.

Non-native Grassland. Non-native grassland is generally dominated by annual non-native species of grass including wild oat (*Avena sp.*), ripgut grass, foxtail chess, and others. Non-native grassland occurs in two small patches onsite totaling 0.16 acres (see Table 1).

Other Communities. The remainders of the parcels are composed primarily of bare ground and ornamental landscaping. Bare ground areas are found on trails and near the edges of the roads. These areas have less than 10 percent cover and most of what does grow on these compacted soils are weedy species. The disturbed habitat is dominated by black mustard (*Brassica nigra*), ice plant (*Carpobrotus edulis*), tobacco tree, and yellow sweet clover (*Melilotus indica*). Ornamental landscaping is found near Manchester Avenue and is dominated by ice plant. There is also a small sliver of developed habitat on the shoulder of Manchester Avenue and a small remnant patch of disturbed salt marsh.

Table 1 includes the type and acreage of habitat to be preserved on the Laser parcels.

Table 1
Preservation Acreage by Habitat Type

Habitat Type	Mitigation Acreage
Coastal Sage Scrub	2.6 ac.
Disturbed (Coastal Sage Scrub Enhancement)	1.32 ac.
Coastal Bluff Scrub	0.5 ac.
Non-native Grassland	0.16 ac.

North Coast Corridor Mitigation Site Assessment for the Laser Preservation Parcels

Habitat Type	Mitigation Acreage
Bare Ground	0.11 ac.
Developed	0.06 ac.
Disturbed Salt Marsh	0.02 ac.
Ornamental	0.21 ac.
Total	4.98 ac.

Wildlife

Two territories of threatened coastal California gnatcatcher (*Polioptila californica californica*) were observed, one on each parcel (see Figure 2). Other bird species that were observed onsite include California towhee (*Pipilo crissalis*), song sparrow (*Melospiza melodia*), Anna's hummingbird (*Calypte anna*), bushtit (*Psaltirparus minimus*), wrentit (*Chamaea fasciata*) and red-tailed hawk (*Buteo jamaicensis*). Other wildlife species detected onsite include coyote (*Canis latrans*), western fence lizard (*Sceloporus occidentalis*), desert cottontail (*Sylvilagus audubonii*), and California ground squirrel (*Spermophilus beecheyi*).

Prior and Current Land Use

Access to the Laser parcels is limited. Access to an existing pump station adjacent to I-5 may currently be used to access these parcels.

Some informal hiking trails are present on the parcel. These trails appear to be used to access high points that provide vistas of San Elijo Lagoon and the Pacific Ocean. Due to the lack of parking, these trails are likely used only by local residents and occasionally by motorists who make use of the nearby scenic viewpoint parking area associated with I-5. However, the viewpoint is fenced to discourage trespassing on this property.

Constraints/Existing Utilities/Infrastructure/Easements

There are access roads for the San Dieguito Water District pump station and reclamation plant crossing the northernmost portion of the site. In addition, due to proximity of residential land uses to the north and south of the Laser parcels, it is possible that a portion of the 100-foot fuel modification zone could extend into a small corner of the total site area available for habitat preservation and management, although it is currently high quality coastal sage scrub habitat (see Figure 6). If the 100-foot fuel modification zone does extend into a small corner of the total site area, these zone areas are not included in the restoration totals of the site. Treatment of the 100-

North Coast Corridor Mitigation Site Assessment for the Laser Preservation Parcels

foot fuel modification zone will be consistent with fire protection standards for plant density, vegetation height, and reduced cover using appropriate fire resistant plantings.

A small area of the Laser Preservation Parcel could possibly be impacted by the eventual widening of Interstate 5. Any portion of the property affected by future widening of Interstate 5 is not included in the restoration totals of the site.

MITIGATION PROGRAM

The proposed mitigation for the entirety of the site will be for protected open space, habitat preservation and management. The goal of the preservation acquisition is to remove development potential of the parcels, preserve existing upland habitat through site protection (easements and fence), and ensure management in perpetuity.

Rehabilitation

Native species will be rehabilitated in areas that are currently mapped as ornamental and as disturbed CSS, but are not deed restricted or located within fire buffer areas, through the removal of the nonnative species and the replanting with appropriate native species. Adjacent native areas will be preserved, as outlined herein.

Removal of the ornamental plant species along Manchester Avenue and the replacement with native species will enhance the functions and services of the preserved upland and wetland buffer by preventing future encroachment of the ornamental species into the San Elijo Lagoon.

Target Plant Communities

The design and plant palette used to rehabilitate the ornamental and disturbed CSS areas will include native species found in adjacent native areas. To provide appropriate native species diversity that is comparable to adjacent high quality habitat, additional field surveys of the Laser Parcel, detailing native annual and perennial species will need to occur and the recorded species added to the plant palette in the NOID submittal, as appropriate.

SITE PROTECTION

Caltrans will deed the preservation parcels to an approved local land management agency that is acceptable to the resource agencies. A management endowment account will be established once the property acquisition is complete. The endowment funds will be used by the management entity to monitor and maintain site access restrictions and habitat quality.

North Coast Corridor Mitigation Site Assessment for the Laser Preservation Parcels

Site restrictions might be required to fully protect existing biological resources from local residential land use and motorists at the viewpoint parking area. The viewpoint will be fenced and the fence would be maintained by Caltrans. Any additional fence installed will be maintained as part of the land management.

LONG TERM MANAGEMENT

A Habitat Management Plan (HMP) will be prepared to define the long term management responsibilities to maintain the functions and services of the preserved biological resources. A resource agency-approved management entity will assume long term management responsibilities. Funds for long term management will be provided by SANDAG/Caltrans and placed into a non-wasting endowment. Endowment funds will be established using a Property Assessment Report that is based on the approved HMP.

Anticipated potential management issues related to this parcel include site access control, weed control, and trash accumulation control.

ADDITIONAL STUDIES

If some portion of the Laser Property may be affected by the future widening of Interstate 5, mitigation acreages available on the property would be adjusted to remove impact areas. This acreage change will be clearly documented in the text and figures of the Conceptual Mitigation Plan for the Laser Parcel.

Enhancement of ornamental planting and disturbed CSS areas may occur as a portion of the proposed mitigation program for the Laser Parcel. Additional field surveys of the Laser Parcel will need to occur to determine appropriate plant palettes to be used in the enhancement efforts onsite.

REQUIRED PERMITS

No permits are anticipated to be required to implement proposed site protection and long-term management actions.

**North Coast Corridor
Mitigation Site Assessment for the Laser Preservation Parcels**

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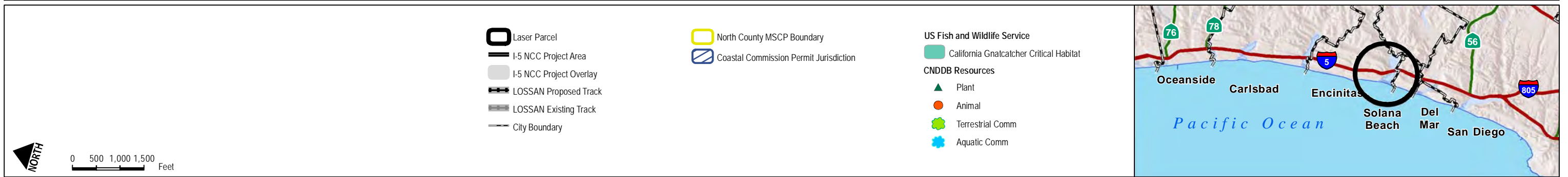
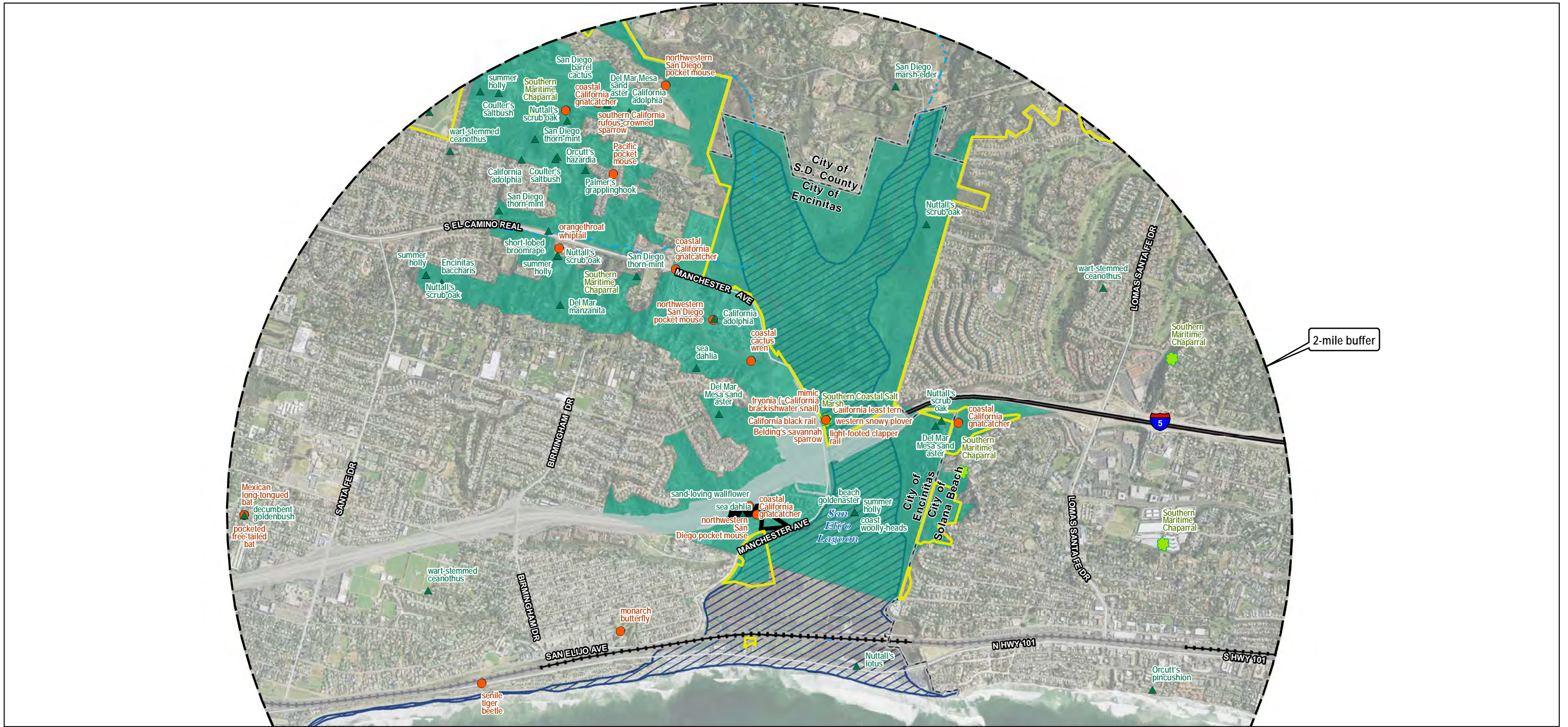


Figure 1. Location of Laser Parcels





Figure 2. Vegetation Communities and California gnatcatcher locations on Laser Parcels



DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, CDFG, USFWS, Imagery: DigitalGlobe March 2008

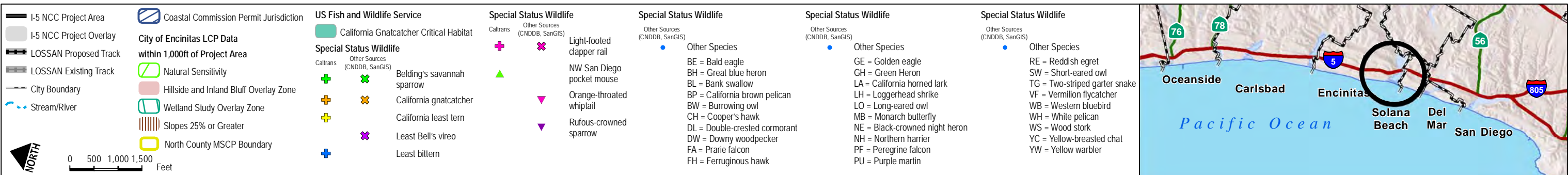
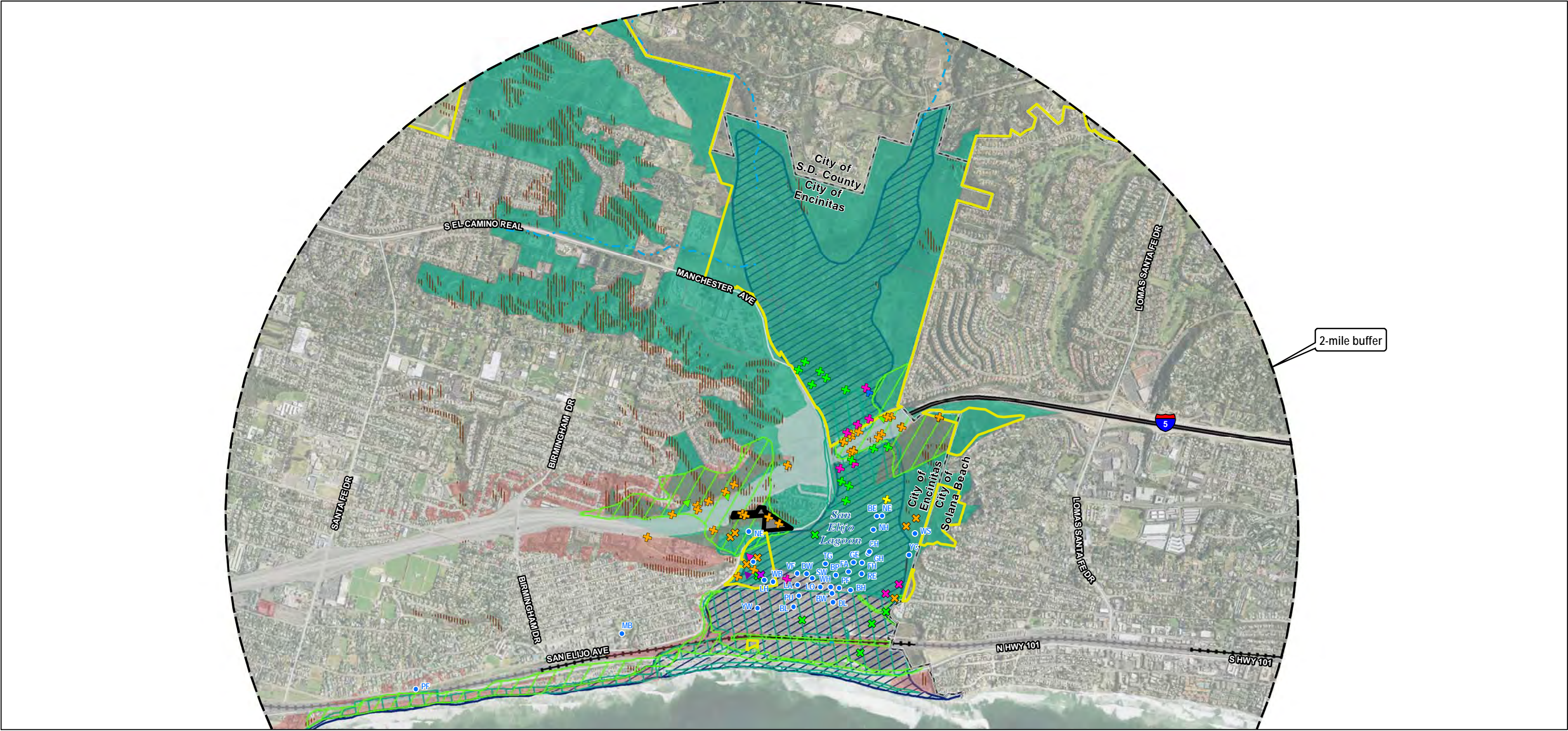
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FIGURE 3

Laser Parcel CNDDB Resources within 2 miles

North Coast Corridor Transportation and Resource Enhancement Program and Highway Public Works Plan



DATA SOURCES: Caltrans, California Coastal Commission, Local Jurisdictions, SanGIS, SANDAG, CDFG, USFWS, Imagery: DigitalGlobe March 2008

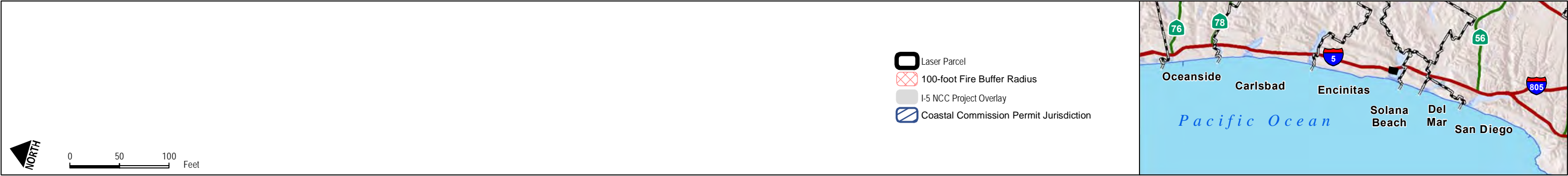
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FIGURE 5

Laser Parcel Special Status Wildlife Resources

North Coast Corridor Transportation and Resource Enhancement Program and Highway Public Works Plan



DATA SOURCES: Caltrans, California Coastal Commission, Local Jursidictions, SanGIS, SANDAG, CDFG, USFWS, Imagery: DigitalGlobe March 2008

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FIGURE 6

Laser Parcel Constraints Map

North Coast Corridor Transportation and Resource Enhancement Program and Highway Public Works Plan

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**North Coast Corridor Public Works Plan/Transportation and
Resource Enhancement Program
Mitigation Site Assessment for the San Elijo Lagoon**

Prepared by:

DUDEK

Prepared for:



OCTOBER 2012

North Coast Corridor Mitigation Site Assessment for the San Elijo Lagoon

Site Location: San Elijo Lagoon is located in the City of Encinitas just north of Solana Beach. The lagoon is part of the larger San Elijo Lagoon Ecological Reserve that includes approximately 1,000 acres of wetland and upland habitat.

Latitude/Longitude: 33.007931/-117.272033

Ownership: State of California (CDFG), the County of San Diego, and the San Elijo Lagoon Conservancy (SELC). The reserve is mainly operated by the County of San Diego, however CDFG and the San Elijo Nature Conservancy Center are also involved in operations.

Correspondence with Resource Agencies: Stakeholders, including the Army Corps of Engineers (USACE), County of San Diego, SELC, San Diego Association of Governments (SANDAG), California Department of Transportation (Caltrans), and other state resource agencies are currently coordinating efforts to prepare a Draft EIR/EIS for the San Elijo Lagoon Restoration Project.

MITIGATION GOAL

SANDAG and Caltrans propose to mitigate impacts to USACE jurisdictional and State wetlands, as well as sensitive upland habitats associated with the North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program (PWP/TREP) by funding the restoration of San Elijo Lagoon. The San Elijo Lagoon Restoration Project (SELRP) includes restoring the hydrological regime and the marsh habitat, and converting middle and high marsh habitat to mudflats and low marsh habitat within San Elijo Lagoon. Restoration alternatives under consideration include the following: 1) potential opening of the lagoon mouth and/or relocating the lagoon inlet at Coast Highway, 2) lengthening the I-5 bridge across San Elijo Lagoon to create wetland habitat within the existing bridge footprint and facilitate the restoration of marsh habitat through the improved hydrology, 3) dredging of channels and marsh habitat to create more mudflat and low marsh habitats, and 4) provide endowments for future lagoon maintenance.

The proposed SELRP will provide the following benefits (SELC 2012):

- Enlarge the tidal prism to increase area of tidal expansion within the lagoon.
- Improve water quality through restored tidal circulation, thereby reducing impacts to the public from beach closures due to high bacteria counts and the potential for mosquito-borne disease.
- Ensure no adverse change to current flood protection, specifically to existing infrastructure and adjacent development.

North Coast Corridor Mitigation Site Assessment for the San Elijo Lagoon

- Provide a natural gradient of habitats that considers climate change, anticipated sea level rise, heterogeneity of habitats, and tidal channels of various orders.
- Enhance habitats for native species, including rare and endangered species.

The provision of endowment funds for future lagoon maintenance will provide the following management benefits:

- A cost-effective management and maintenance plan for supporting the proposed habitat enhancements, curtailing growth and expansion of exotic species, and maintaining regular tidal flow.
- Design and implement a biological and hydrological monitoring program to assess the success of restoration efforts and facilitate adaptive management decisions.
- Maintain lagoon public access and educational opportunities consistent with resource protection needs and requirements.

San Elijo Lagoon

The San Elijo Lagoon consists of approximately 491 acres. The lagoon watershed encompasses all drainages that convey water into San Elijo Lagoon including Escondido Creek, San Elijo Creek, and their tributaries.

EXISTING CONDITIONS

San Elijo Lagoon Ecological Reserve is transitioning from open water and mudflat habitats to salt marsh and riparian habitat as a result of urban pressures. Transportation infrastructure contributes to restricted tidal flushing and degraded water quality in the reserve. As population expands in Southern California, the ecology of the wetland will continue to be impacted by both historical and future development. The future restoration project would thus restore the lagoon, a biodiversity hot spot and one of the few remaining wetland systems in Southern California to a more natural state.

Ecological Context

Habitats present in or within the vicinity of San Elijo Lagoon primarily include open water (estuarine and fresh), sand/mudflats, coastal salt marsh, fresh/brackish marsh, riparian, and Diegan coastal sage scrub upland. San Elijo Lagoon and its upland habitats support a number of special-status wildlife species including California least tern (*Sterna antillarum browni*), Belding's savannah sparrow (*Passerculus sandwichensis beldingi*), California gnatcatcher

North Coast Corridor Mitigation Site Assessment for the San Elijo Lagoon

(*Polioptila californica californica*), and light-footed clapper rail (*Rallus longirostris levipes*). The lagoon is part of the SELC and its maintenance is coordinated by the SELC.

Drainage and Hydrology

San Elijo Lagoon is associated with the Carlsbad Hydrologic Unit (HU). The Carlsbad HU is comprised of seven sub-basins that include San Elijo Lagoon (Escondido Creek), Cottonwood Creek, Batiquitos Lagoon (San Marcos Creek), Encinas Creek, Agua Hedionda Lagoon (Agua Hedionda Creek), Buena Vista Lagoon (Buena Vista Creek), and Loma Alta Creek. The freeway and rail bisect four lagoons in this HU: San Elijo Lagoon, Batiquitos Lagoon, Agua Hedionda Lagoon, and Buena Vista Lagoon. All four of the lagoon crossings, including Loma Alta Creek, are on bridge structures. Development within the Carlsbad HU is projected to increase from 56% to 70% by the year 2015.

Beneficial uses within San Elijo Lagoon include contact recreation such as hiking, non-contact recreation such as wildlife viewing and nature tours, biological habitats of special significance, estuarine habitat, wildlife habitat, marine habitat, rare/threatened/endangered species habitat, migration corridors, and spawning/reproduction and/or early development habitat.

Soils

Upland and bank soils within the proposed mitigation areas are associated with marine terraces. The typical soils in the potential restoration areas include tidal flats; Corralitos loamy sand, 5 to 9 percent; Corralitos loamy sand, 9 to 15 percent; marina loamy coarse sand, 2 to 9 percent slopes; and terrace escarpments (NRCS 2012, soil survey maps).

Vegetation

The San Elijo Lagoon vegetated areas are composed primarily of sand/mudflats, coastal salt marsh, fresh/brackish marsh, southern riparian scrub, and coastal sage scrub vegetation community types.

Wildlife

San Elijo Lagoon and its upland habitats support special-status wildlife species such as California least tern, Belding's savannah sparrow, California gnatcatcher, and light-footed clapper rail. San Elijo Lagoon also provides important foraging and resting habitat for waterfowl and shorebirds along the Pacific flyway.

North Coast Corridor Mitigation Site Assessment for the San Elijo Lagoon

MITIGATION PROGRAM

The mitigation program for SELRP aims to provide comprehensive lagoon restoration through a suite of possible restoration alternatives, which may include infrastructure improvements where the facilities cross the Lagoon, hydrological improvements to the Lagoon mouth opening, and, where determined appropriate, through providing endowments for Lagoon planning, restoration, and maintenance in the future. These efforts would not only serve to substantially enhance and restore water quality in the corridor, but they would also serve to restore, enhance, and protect different habitat types within the Lagoon ecosystem.

Schedule

Detailed design of the mitigation program will begin upon selection of a preferred alternative by the resource agencies, and completion of environmental review. Currently, the City of Encinitas, USACE, USFWS, CDFG, County of San Diego, and the SELC are working to complete a Draft EIR/EIS for restoration of the lagoon. SANDAG/Caltrans have participated with the City of Encinitas, USACE, Coastal Commission, and other resource agencies in the feasibility analyses and modeling studies to determine optimal bridge openings at all major transportation crossings across the Lagoon for facilitating the mitigation program.

This REP mitigation opportunity includes funding large-scale lagoon restoration program at San Elijo Lagoon, in addition to funds already contributed to previous and ongoing planning and technical evaluation activities necessary to facilitate and implement this Lagoon restoration program. REP measures that contribute to large-scale Lagoon restoration opportunities (funding, critical transportation infrastructure improvements) shall be considered a substantial mitigation element for all PWP/TREP project impacts (including temporary impacts) given the resulting wide range of benefits to sensitive habitat for plant and wildlife species, water quality, flood control, groundwater recharge and recreation. For purposes of the PWP/TREP, detailed design of the selected alternative will be provided through the subsequent Coastal Development Permit and federal consistency review processes. The results of the consultations with persons and agencies interested in, with jurisdiction over, and/or affected by the proposed development, including consultations with federal and state resource agencies (e.g., USACE, U.S. Fish and Wildlife Service [USFWS], CDFG, Regional Water Quality Control Board [RWQCB], etc.), as well as all supporting documentation would be submitted with the Coastal Development Permit application.

Mitigation Goal and Purpose

The mitigation program will aim to preserve, protect and enhance the San Elijo Lagoon Ecological Reserve and, in turn, its watershed. The mitigation program would result in the restoration and enhancement of an integrated ecosystem, providing improved habitat for fish,

North Coast Corridor Mitigation Site Assessment for the San Elijo Lagoon

birds, and benthic organisms that would adequately compensate for the loss of wetland habitat occurring from the PWP/TREP rail and highway improvements. This large regional restoration project could ultimately facilitate the restoration of many hectares of wetlands, which would help to ensure the Lagoon's continued health and greatly enhance the coastal lagoon habitat.

To achieve the goals of the mitigation program, the EIR/EIS process, technical studies, and design work are currently being conducted to evaluate alternative actions to restore the habitat functions and services of the Lagoon. These studies and environmental review processes are being used to evaluate the restoration opportunities available within the San Elijo Lagoon and will be used in the ultimate design of the proposed mitigation program.

Alternatives

Three build alternatives are being studied for the SELRP EIR/EIS, which are described below in greater detail, below.

Alternative 1A

Alternative 1A provides minimal physical changes to the site, with the exception of enlarging the main feeder channel throughout the site and redirecting its course just west of I-5. The main tidal channel is also extended farther into the East Basin and existing constricted channel connections are cleared and enlarged. Existing habitat areas will essentially remain intact. The tidal prism of Alternative 1A will slightly increase compared to existing conditions. A relatively small area of transitional habitat above tidal elevations will be placed in the northwest portion of the Central Basin.

Alternative 1B

Alternative 1B provides a more substantial change to the existing site to create a greater diversity of habitats than currently exists. The existing tidal inlet remains the source of seawater, and the main tidal channel extends throughout the Lagoon. A new subtidal basin off the main channel is created in the Central Basin. The main feeder channel is redirected just west of I-5, and extended farther into the East Basin. The channel in the East Basin is significantly enlarged in cross-sectional area to promote more tidal exchange east of I-5. The tidal prism of Alternative 1B will be significantly increased compared to Alternative 1A. Non-tidal habitat areas will still exist in the East Basin. Several areas of transitional habitat above tidal elevations will be placed in the western portion of the Central Basin.

Alternative 2A

Alternative 2A also provides changes to the existing site to create a greater diversity of habitats than presently exists. Seawater would enter the Lagoon via a new tidal inlet located south of the

North Coast Corridor Mitigation Site Assessment for the San Elijo Lagoon

existing inlet and a new subtidal basin would be created just landward of the new inlet in the West and Central Basins. A new railroad bridge would be built adjacent to the new inlet to provide a more direct connection to the rest of the lagoon. The main tidal channel would extend throughout the Lagoon and be redirected just west of I-5, and extend into the East Basin. The channel in the East Basin is identical to that for Alternative 1B. The tidal prism of Alternative 2A will increase compared to Alternative 1B. Non-tidal habitat areas remain in the East Basin. Transitional habitat areas above tidal elevations will also be included in the Central Basin.

Hydrology

San Elijo Lagoon sustains significant opportunity for hydrodynamic restoration. Restoring the hydrodynamics of the Lagoon, a vital coastal resource in the region, would provide a mechanism for conveyance and dissipation of floodwater, allow for deposition of flood-suspended sediments, assist with shoreline stabilization, and facilitate the recharge of groundwater and storage of surface waters. Improvements to the hydrology of San Elijo Lagoon would also serve to improve filtration of suspended sediments and toxic substances, and facilitate nutrient cycling, denitrification, and mineralization.

The San Elijo Lagoon Restoration Project that is currently underway is evaluating infrastructure factors that affect tidal circulation including the lagoon inlet, bridges for South Coast Highway 101, rail and highway facilities, and the existing tidal regime within the lagoon. Based on analysis conducted for the San Elijo Lagoon Restoration Project and the I-5 project, the I-5 bridge will be lengthened, thereby creating wetland habitat within the existing bridge footprint and facilitating the restoration of marsh habitat through improved hydraulic flows. Lengthening the I-5 bridge would ultimately enhance all lagoon functions and decrease tidal muting effects in the eastern basin. Other key findings from the optimization modeling study for all potential alternatives are summarized as follows:

- For alternatives which rely on the existing inlet channel (No Project, Alternative 1A, and Alternative 1B), the existing Hwy 101 Bridge structure and the Railroad Bridge structure have sufficient spans and are not limiting factors for tidal range or flood conveyance. The limiting factor for these alternatives is the long and narrow inlet channel between Hwy 101 and the Railroad Bridge. The main channel through the Central Basin is also narrow, shallow, and sinuous resulting in additional energy losses during normal tidal fluctuations and extreme flood events.
- There is no benefit to tidal flows and storm flow conveyance from increasing the existing I-5 Bridge channel dimension for No Project and Alternative 1A conditions. Regardless of the I-5 Bridge channel dimension, Manchester Avenue will experience flooding in the East Basin during a 100-year event. The existing I-5 Bridge channel dimension actually

North Coast Corridor Mitigation Site Assessment for the San Elijo Lagoon

helps prevent additional flooding of Manchester Avenue in the Central Basin by attenuating peak flows in the East Basin. This attenuation results in higher flood levels in the East Basin, but little or no flooding in the Central Basin. If the I-5 Bridge channel is widened, flood elevations are lowered in the East Basin, but raised in the Central Basin causing flooding of Manchester Avenue in both basins.

- Bridge optimization modeling of Alternative 1B suggested that increasing the I-5 Bridge channel width to 261 feet would relieve some flooding of Manchester Avenue in the East Basin. Portions of the roadway will still experience flooding, however, an increased bridge channel width would reduce flood levels below a significant length of roadway in the East Basin.
- For Alternative 2A, the optimization modeling study supported the recommended bridge channel dimensions identified in the SELRP Feasibility Studies. A Hwy 101 inlet channel width of 200 feet, a railroad channel width of 590 feet and an I-5 channel width of 261 feet were found to provide optimum tidal range and flood conveyance.

Performance Criteria

The California Rapid Assessment Method (CRAM), a performance criteria metric, has already been completed for the lagoon and will be used as a functional assessment to determine success in achieving the mitigation program goals. All the goals will be developed for the SELRP EIR/EIS and the HMMP (habitat mitigation and monitoring plan) documents. Interim target functional criteria scores will be used to inform maintenance decisions during the long-term monitoring and maintenance period with the intention of achieving the final target functional criteria assessment scores.

SITE PROTECTION

The San Elijo Lagoon is part of the San Elijo Lagoon Ecological Reserve. Areas that will be restored will remain part of the San Elijo Lagoon Ecological Reserve once the mitigation in those areas is in place and complete.

ADDITIONAL STUDIES

Stakeholders, including the SELC, SANDAG, and Caltrans are currently coordinating efforts to prepare a Draft EIR/EIS for the SELRP. Additional studies necessary for the design and implementation of the proposed mitigation project in San Elijo Lagoon will be evaluated once the environmental and preliminary planning processes are complete.

North Coast Corridor Mitigation Site Assessment for the San Elijo Lagoon

REQUIRED PERMITS

404, 401, 1602, ESA/CESA Permits, and a Coastal Development Permit would likely be required for the proposed mitigation efforts in San Elijo Lagoon.

REFERENCES

SELC 2012. San Elijo Lagoon Restoration Project website, accessed August 15, 2012.

Moffatt & Nichol 2012. San Elijo Lagoon Bridge Optimization Study Final Report. April.

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**North Coast Corridor Public Works Plan/Transportation and
Resource Enhancement Program
Mitigation Site Assessment for the Buena Vista Lagoon**

Prepared by:

DUDEK

Prepared for:



SEPTEMBER 2012

North Coast Corridor Mitigation Site Assessment for the Buena Vista Lagoon

Site Location: Buena Vista Lagoon is located in the cities of Carlsbad and Oceanside.

Latitude/Longitude: 33.173972/ -117.349208

Ownership: California Department of Fish and Game (CDFG), cities of Carlsbad and Oceanside, Buena Vista Lagoon Foundation, North County Transit District (NCTD), the California Department of Transportation (Caltrans), and private developments.

Correspondence with Resource Agencies: Stakeholders, including the Buena Vista Lagoon Foundation, San Diego Association of Governments (SANDAG), and Caltrans, are currently working on the EIR/EIS for the Buena Vista Lagoon restoration.

MITIGATION GOAL

SANDAG and Caltrans propose to mitigate impacts to U.S. Army Corps of Engineers (USACE) jurisdictional and State wetlands, as well as sensitive upland habitats associated with the North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program (PWP/TREP) by restoring the hydrological regime and the wetland habitat within Buena Vista Lagoon. Restoration alternatives presently under consideration include the following common components: 1) opening the lagoon inlet at the terminus of the watershed and adjacent to the Pacific Ocean, allowing passive restoration to a fresh water¹ or a salt water system; 2) modify rail and highway bridge designs over the Buena Vista Lagoon, offsetting wetland fill impacts with the establishment of new wetland areas and improved flushing and stream flow; 3) restoring tidal/fluvial hydrology and maintaining hydrologic conditions through dredging; 4) improving flows through construction improvements to Coast Highway by opening up basins that have historically been separated; and 5) providing endowments for future lagoon maintenance and planning.

EXISTING CONDITIONS

Ecological Context

Buena Vista Lagoon area consists of approximately 203 acres. The lagoon watershed encompasses all drainages that convey water into Buena Vista Lagoon including Buena Vista Creek and its tributaries. Habitats present in or within the vicinity of Buena Vista Lagoon primarily include open water (estuarine and fresh), coastal brackish and freshwater marsh, southern riparian scrub, and Eucalyptus woodland. In addition, Buena Vista Lagoon and its

¹ Please note that resource agencies with jurisdictional oversight of the lagoon have indicated that a fresh water system restoration alternative would not meet the intent of providing in kind/similar mitigation to offset the types of impacts associated with the North Coast Corridor PWP/TREP. Accordingly, should that alternative be selected by the Stakeholders, it will not be included or funded through the REP.

North Coast Corridor Mitigation Site Assessment for the Buena Vista Lagoon

wetland and upland habitats support a number of special-status wildlife species including California gnatcatcher (*Polioptila californica californica*), Belding's savannah sparrow (*Passerculus sandwichensis beldingi*), and light-footed clapper rail (*Rallus longirostris levipes*).

The lagoon is part of the Buena Vista Lagoon Ecological Reserve that is maintained by CDFG. Buena Vista Lagoon is currently a freshwater lagoon that, for the most part, is not connected to the ocean except through a non-adjustable weir.

Drainage and Hydrology

Buena Vista Lagoon is associated with the Carlsbad Hydrologic Unit (HU) watershed that drains Buena Vista Creek. The Carlsbad HU is comprised of seven sub-basins that include San Elijo Lagoon (Escondido Creek), Cottonwood Creek, Batiquitos Lagoon (San Marcos Creek), Encinas Creek, Agua Hedionda Lagoon (Agua Hedionda Creek), Buena Vista Lagoon (Buena Vista Creek), and Loma Alta Creek. The freeway and railway bisect four lagoons in this HU: San Elijo Lagoon, Batiquitos Lagoon, Agua Hedionda Lagoon, and Buena Vista Lagoon. All four of the lagoon crossings, including Loma Alta Creek, are on bridge structures. Development within the Carlsbad HU is projected to increase from 56% to 70% by the year 2015.

Beneficial uses within Buena Vista Lagoon include the following: contact recreation such as fishing and hiking, non-contact recreation such as wildlife viewing and nature tours, biological habitats of special significance, estuarine habitat, wildlife habitat, marine habitat, and warm freshwater habitat.

Three existing transportation corridors cross the Lagoon (I-5, LOSSAN rail, and Coast Highway/Carlsbad Boulevard), which segments the Lagoon into four basins (Everest 2004). The ocean connection through a non-adjustable weir and LOSSAN rail bound the Weir Basin. The Railroad Basin is situated between the LOSSAN rail and Coast Highway. The Coast Highway Basin is located between Coast Highway and I-5. The I-5 Basin is located between I-5 and the mouth of Buena Vista Creek as it enters the Lagoon. The existing culvert under Coast Highway/Carlsbad Boulevard is inadequate to accommodate storm flows from moderate storm events, thereby limiting hydrologic exchange between the Coast Highway Basin and Railroad Basin. Sedimentation and vegetation in the vicinity of the crossings restricts flows between the four basins.

Soils

Upland soils in potential mitigation areas, located west of the potential I-5 area of effect, are largely associated with marine terraces. The typical soils in the potential restoration areas include marina loamy coarse sand, 2 to 9 percent slopes; terrace escarpments; and tujunga sand, 0 to 5

North Coast Corridor Mitigation Site Assessment for the Buena Vista Lagoon

percent slopes (NRCS 2012, soil survey maps). Due to adjacent urban land use, most soils along the banks of the potential mitigation area are imported soils of sand to sandy loam.

Habitat and Vegetation Communities

Habitat and vegetation communities within Buena Vista Lagoon are comprised primarily of coastal brackish and freshwater marsh, southern riparian scrub, and Eucalyptus woodland. Open water habitat is the primary habitat type and found in all four basins.

The Lagoon is highly disturbed being surrounded by development and a non-adjustable weir at the Pacific Ocean outlet.

Wildlife

Bird and waterfowl nesting islands were created in the lagoon in 1983. The lagoon provides important habitat supporting special-status wildlife species such as Belding's savannah sparrow, California gnatcatcher, and light-footed clapper rail. Many species of waterfowl also use the lagoon for foraging and resting along the Pacific flyway.

Existing Utilities/Infrastructure/Easements

There are several utilities (e.g., gas lines, electric lines, communication lines, water pipes, storm drains, and sewer lines) on or near the Lagoon. The functional performance of these infrastructure components must be maintained, mitigated, or replaced as part of the restoration project. In addition, there are some existing easements and agreements between various agencies and utility companies that might pose constraints to restoration, enhancement, and the establishment of wetlands within the Lagoon.

MITIGATION PROGRAM

The mitigation program for the Buena Vista Lagoon, currently under development as part of the Buena Vista Lagoon Restoration Project planning process, aims to provide comprehensive lagoon restoration efforts through a suite of potential mitigation opportunities. The mitigation opportunities include opening the lagoon inlet at the terminus of the watershed and adjacent to the Pacific Ocean, modifying rail and highway bridge designs over the Buena Vista Lagoon, restoring tidal/fluvial hydrology and maintaining hydrologic conditions through dredging, improving flows through construction improvements to Coast Highway by opening up basins that have historically been separated, providing endowments for future lagoon maintenance and planning.

Numerous agencies and organizations have been working toward restoring the lagoon, including, but not limited to, the California Coastal Conservancy, U.S. Fish and Wildlife Service (USFWS),

North Coast Corridor Mitigation Site Assessment for the Buena Vista Lagoon

Regional Water Quality Control Board (RWQCB), National Oceanic and Atmospheric Administration (NOAA), U.S. Army Corps of Engineers (USACE), the cities of Carlsbad and Oceanside, the Buena Vista Lagoon Foundation, The California Coastal Commission (CCC), and other local permitting agencies. The first phase of restoration planning, consisting of several studies assessing the feasibility of restoring function and habitat values by modifying the lagoon's hydrology was completed in 2010.

"Phase II" restoration planning is currently underway and consists of preparation of preliminary engineering and environmental documents requiring further development and evaluation of restoration alternatives for the lagoon. SANDAG/Caltrans have participated with the resource agencies as part of the NEPA 404 process for the I-5 project to determine the optimal bridge openings at all major transportation crossings to help facilitate (and not preclude) any future restoration plans for the lagoon.

Schedule

The Buena Vista Lagoon Foundation and its partners have completed a strategic plan and a restoration feasibility analysis that identifies proposed potential hydraulic regimes—saltwater, freshwater, or mixed water—and project alternatives. Restoration alternatives are being further examined as part of an ongoing lagoon restoration project EIR/EIS. Completion of this document is expected in 2013 with final engineering, permitting, and construction to follow as funding allows.

This REP mitigation opportunity includes funding large-scale lagoon restoration at Buena Vista Lagoon, in addition to funds already contributed to previous and ongoing planning and technical evaluation activities necessary to facilitate and implement this lagoon restoration program. REP measures that contribute to large-scale lagoon restoration opportunities (funding, critical transportation infrastructure improvements) shall be considered a substantial mitigation element for all PWP/TREP project impacts (including temporary impacts) given the resulting wide range of benefits to sensitive habitats for plant and wildlife species, water quality, flood control, groundwater recharge and recreation. For purposes of the PWP/TREP, detailed design of the Buena Vista Lagoon restoration/enhancement projects will begin upon selection of a preferred alternative by the resource agencies and be provided through subsequent Coastal Development Permit and federal consistency review processes. The results of the consultations with persons and agencies interested in, with jurisdiction over, and/or affected by the proposed development, including consultations with federal and state resource agencies (e.g., USACE, U.S. Fish and Wildlife Service [USFWS], CDFG, Regional Water Quality Control Board [RWQCB], etc.), as well as all supporting documentation would be submitted along with the Coastal Development Permit application.

North Coast Corridor Mitigation Site Assessment for the Buena Vista Lagoon

Mitigation Goal and Purpose

The Buena Vista Lagoon Restoration Project seeks to preserve, protect and enhance the Buena Vista Lagoon Ecological Reserve. The Buena Vista Lagoon mitigation program would provide an opportunity to modify rail and highway bridge designs over the Buena Vista Lagoon, which could ultimately have a beneficial effect on water quality and marine resources by offsetting wetland fill impacts with the establishment of new wetland areas and providing for improved flushing and stream flow where feasible. Restoring hydrodynamic conditions in Buena Vista Lagoon would significantly improve water quality and the ecological value of the lagoon, riparian system, and adjacent upland areas to better support environmentally sensitive habitat areas (ESHAs), special-status species, and wildlife.

The two salt water and two freshwater alternatives, discussed below, have been determined to be the most viable restoration opportunities, as discussed in the *I-5/SR78 Interchange Preliminary Engineering I-5 Bridge Study at Buena Vista Lagoon* draft report (Everest 2012).

Alternatives

A number of restoration alternatives were developed over the past few years under the direction of several federal and state agencies including, the California State Coastal Conservancy (SCC), U.S. Fish and Wildlife Service (USFWS), and CDFG. Four of these alternatives were selected for further study because the proposed grading and outlet/inlet configurations represent a reasonable range of potential restoration conditions for Buena Vista Lagoon. These alternatives were analyzed to evaluate the ranges of dimensions for the hydraulic connections in order to provide design guidance for the bridge structures under consideration by Caltrans. These four alternatives are listed below and described in the following sections.

- Saltwater Alternative: Alt 2-1
- Saltwater Alternative: Alt SW2-A
- Freshwater Alternative: Alt 1
- Freshwater Alternative: Alt FW-A

North Coast Corridor Mitigation Site Assessment for the Buena Vista Lagoon

Salt Water Alternatives

Alt 2-1

Alternative 2-1 represents the restoration configuration of a salt water hydrologic regime developed for the restoration project in 2008. This alternative achieved the restoration objectives primarily through elimination of the existing exotic vegetation, dredging to remove excess sediment, and establishment of continuous tidal exchange. The existing weir would be replaced with a tidal inlet to provide continuous tidal exchange between the Lagoon and Pacific Ocean. The tidal inlet would require stabilization with two jetties that would extend to the Mean Lower Low Water (MLLW) contour. The bottom elevation of the Railroad Basin and Weir Basin would be dredged to between -12 ft and -15 ft, NGVD to provide a sediment trap for sand entering the lagoon from the ocean. Prominent features of this alternative were described in the 2008 Hydraulic Study Report (Everest 2008).

Alt SW2-A

Alternative SW2-A is the latest salt water restoration alternative developed for the Lagoon. In this alternative, a channel would run along the center of the I-5 Basin and Coast Highway Basin at -3.3 ft, NGVD, with the two banks of the channel being graded with a slope not greater than 1:8 (vertical: horizontal). Downstream of the railroad bridge, the channel would widen and form a basin with a uniform depth of -3.3 ft NGVD at the Railroad Basin and Weir Basin. The tidal inlet channel would be constructed with an initial bottom elevation of -2.0' NGVD and no jetties would be constructed to stabilize the inlet channel. Prominent features of this alternative were described in the 2011 technical memo (Everest 2011a).

Fresh Water Alternatives

Alt 1

Alternative 1 represents the restoration configuration that was used to analyze the fresh water hydrologic regime as part of the Buena Vista Lagoon Restoration Project Feasibility Study in 2004. This alternative would achieve the restoration objectives primarily through elimination of the existing exotic vegetation and dredging to remove excess sediment. It was assumed that the existing ocean outlet weir would be replaced with an 80-foot (ft) wide ocean outlet weir in accordance with the weir widening project that was proposed by the City of Oceanside. The invert elevation of the weir would be kept at the invert elevation of the existing weir, which is 5.6 ft, NGVD. The bottom elevation of the Railroad Basin and Weir Basin would be dredged to between -12 ft and -15 ft, NGVD. Prominent features of this alternative were described in the 2008 fluvial hydraulics report (Everest 2008). It should be noted that for the sea level rise

North Coast Corridor Mitigation Site Assessment for the Buena Vista Lagoon

analysis presented in this report, it was assumed that the invert elevation of the weir would be raised by the projected value of sea level rise (55 inches) in order to keep ocean water from entering the Lagoon. This assumption was necessary in order to preserve the fresh water condition of the Lagoon under this freshwater alternative.

Alt FW-A

Alternative FW-A is the latest freshwater alternative developed for the Lagoon. The central portions of each basin would be dredged to maintain a water depth of about six feet (bottom elevation of about 0 ft), NGVD) to minimize the future encroachment of cattails throughout the Lagoon. Similar to Alt 1, it was assumed that the existing ocean outlet weir would be replaced with an 80-ft wide ocean outlet weir in accordance with the weir widening project that was proposed by the City of Oceanside. The invert elevation of the weir would be kept at the invert elevation of the existing weir, which is 5.6 ft, NGVD. Prominent features of this alternative were described in the 2011 technical memo (Everest 2011a). It should be noted that for the sea level rise analysis presented in this report, it was assumed that the invert elevation of the weir would be raised by the projected value of sea level rise (55 inches) in order to keep ocean water from entering the Lagoon. This assumption was necessary in order to preserve the fresh water condition of the Lagoon under this freshwater alternative.

Hydrology

A fluvial hydraulics analysis was conducted to provide guidance for the three bridge/culvert structures (Interstate 5 Bridge, Coast Highway Culvert/Bridge, and Railroad Bridge) located within the Buena Vista Lagoon. The purpose of the analysis was to establish the minimum channel width and minimum channel depth that would need to be accommodated by the three bridge/culvert structures such that future implementation of a salt water or fresh water restoration alternative will not be restricted by the existing and future bridges/culverts.

The HEC-RAS one-dimensional fluvial hydraulics model developed by the U.S. Army Corps of Engineers (USACE 2006) was used to conduct the fluvial hydraulics analysis in the present study. HEC-RAS is capable of simulating unsteady flow through a network of open channels and can account for hydraulic structures such as bridges, culverts, and weirs. The model is approved by the Federal Emergency Management Agency (FEMA) for flood studies and is commonly used by the USACE and Caltrans for fluvial hydraulics analyses.

The fluvial hydraulics analysis was conducted under the current mean sea level and the projected mean sea level in the Year 2100 based on the current guidance provided by the California Ocean Protection Council (COCP 2011). Based on the results of the analysis, the conclusions presented below were drawn for each of the three bridge channels.

North Coast Corridor Mitigation Site Assessment for the Buena Vista Lagoon

1. The channel under the existing Interstate 5 Bridge is not sufficient to accommodate a near full tide range nor is it sufficient to convey the fluvial flows analyzed in this study. The new Interstate 5 Bridge should be designed to accommodate a channel with a bottom width of 105 feet (at -6 ft, NGVD) and top width of 180 ft (at 14 ft, NGVD). The soffit of the existing Interstate 5 Bridge (23.1 ft, NGVD) is almost ten feet above the predicted flood water elevation for a 100-year flood event occurring with the projected mean sea level for Year 2100.
2. The channel under the existing Coast Highway Culvert/Bridge is not sufficient to accommodate a near full tide range nor is it sufficient to convey the fluvial flows analyzed in this study. The new Coast Highway Culvert/Bridge should be designed to accommodate a vertically-walled channel with a width of 110 feet and bottom elevation of -6 ft, NGVD. The soffit of the existing Coast Highway Culvert/Bridge (8.2 ft, NGVD) is about 1.5 feet (salt water alternative) to 5.5 feet (freshwater alternative) below the predicted flood water elevation for a 100-year flood event occurring with the projected mean sea level for Year 2100 thereby indicating that flooding of the structure would occur. This should be taken into account during design of the new Coast Highway Culvert/Bridge.
3. The channel under the existing Railroad Bridge is not sufficient to accommodate a near full tide range nor is it sufficient to convey the fluvial flows analyzed in this study. The width of the channel under the existing Railroad Bridge would be adequate to accommodate the fluvial flows analyzed in this study; however, the bottom elevation would need to be deepened from -2.5 ft, NGVD to -4 ft, NGVD. To accommodate a near full tide range the bridge would need to accommodate a channel with a bottom elevation of -6 ft, NGVD. If the existing bridge structure and foundation are capable of accommodating this increase in channel depth and the forces from higher flood levels, then the existing structural configuration would not need to be changed and would still convey the fluvial flows analyzed in this study and accommodate the implementation of a near full tidal salt water restoration project in the future (Everest 2008). This should be taken into account during design of a new Railroad Bridge when such work is undertaken. The soffit of the existing Railroad Bridge (11.1 ft, NGVD) is about 2.5 feet below the predicted flood water elevation for a 100-year flood event occurring with the projected mean sea level for Year 2100; therefore, flooding of that structure would occur under the fluvial flows analyzed in this study. This should be taken into account during design of a new Railroad Bridge when such work is undertaken.
4. The results of the fluvial modeling indicated that improvements to the Interstate 5 Bridge and Coast Highway Culvert/Bridge would result in higher flood levels within the Coast Highway Basin and Weir Basin because the flood flow is conveyed more efficiently to

North Coast Corridor Mitigation Site Assessment for the Buena Vista Lagoon

these lower basins from the Interstate 5 Basin. While representing an improvement in the overall flood hydraulics, an increase in flood levels within these two basins under the two freshwater alternatives could result in impacts to private property and infrastructure, especially in the Weir Basin where the St. Malo community is located. Everest (Everest 2004 and 2008) reported a similar finding for existing conditions, which is a freshwater system controlled by the 50 ft wide weir. The proposed freshwater alternatives feature an 80 ft wide weir which does help to alleviate the problem compared to the existing 50 ft wide weir; however, the 80 ft weir is still not large enough to convey increased rate of flow resulting from the improvements in the Interstate 5 Bridge and Coast Highway Culvert/Bridge. Consequently, this issue should be addressed as part of the implementation process associated with the I-5 North Coast Corridor (NCC) Project and any future work associated with the Coast Highway Culvert/Bridge. It is envisioned that this would include further analysis to determine if flooding of property and infrastructure would actually occur as well as the development of mitigation measures to reduce such flooding to levels of insignificance. For example, the weir could be widened to convey the increased rate of flow resulting from the improvements in the Interstate 5 Bridge and Coast Highway Culvert/Bridge. Alternatively, the berm surrounding the St. Malo community could be raised to reduce the risk to property from any increased flooding.

Topographic Modification

Additional topographic and hydrologic studies will need to occur following selection of a preferred restoration alternative to determine if and to what extent grading will be required to facilitate the proposed restoration activities.

Soils

Soil testing would be completed during the design process to determine what soils and groundwater levels are expected onsite to help in designing restoration activities. Any soil deficiencies or issues will be examined to ensure that plans take into account soils found onsite.

Performance Criteria

Performance criteria will be developed in the restoration plan and included in the EIR/EIS for the Lagoon restoration.

SITE PROTECTION

The Lagoon is part of the Buena Vista Ecological Reserve. Areas that will be restored will remain part of the Buena Vista Ecological Reserve once the mitigation in those areas is in place and complete.

North Coast Corridor Mitigation Site Assessment for the Buena Vista Lagoon

LONG TERM MANAGEMENT

A Habitat Management Plan (HMP) will be prepared to define the long term management responsibilities to maintain the biological resources that are established through the mitigation project. CDFG will assume long term management responsibilities in association with existing areas within the Buena Vista Ecological Reserve. Additionally, funds for long term management may be provided by SANDAG/Caltrans and placed into a non-wasting endowment. Any potential endowments funds will be established using a Property Assessment Report that is based on the approved HMP.

ADDITIONAL STUDIES

Further studies will be required to determine the extent and detail of the proposed restoration projects and will be conducted through the EIR/EIS process. These studies include a tidal hydrology study to establish target grade elevations that will create appropriate tidal inundations to support and sustain salt marsh habitat. Soil testing will need to occur to determine the appropriateness of existing soils for revegetation efforts. A topographic survey will be required to support construction grading design and construction plans. In addition, deed restricted, easement, and fuel / fire zone areas will also need to be quantified to determine boundaries and acreages that can be counted toward mitigation credit. The location of culverts, stormwater outfalls, or low areas where runoff from adjacent communities will also need to be mapped and analyzed to determine how flows onsite may affect restoration efforts. Field surveys will also need to occur to determine more accurately where and what type of mitigation opportunities exist.

REQUIRED PERMITS

404, 401, 1602, and a Coastal Development Permit would likely be required for the proposed mitigation efforts in Buena Vista Lagoon.

REFERENCES

COPC (California Ocean Protection Council). 2011. Resolution of the California Ocean Protection Council on Sea-Level Rise, Adopted on March 11, 2011.

Everest. 2004. Buena Vista Lagoon Restoration Feasibility Analysis Final Report. Prepared for Buena Vista Lagoon Foundation, California State Coastal Conservancy, U.S. Fish and Wildlife Service. Prepared by Everest International Consultants, Inc. June 2004.

Everest. 2008. Buena Vista Lagoon Restoration Project Fluvial Hydraulics, Sediment Transport, and Sedimentation Analysis Final Report. Prepared for California State Coastal

North Coast Corridor Mitigation Site Assessment for the Buena Vista Lagoon

Conversancy. Prepared by Everest International Consultants, Inc. under contract to Science Applications International Corporation. October 2008.

Everest. 2011a. Buena Vista Lagoon Restoration Project – Restoration Alternatives, Draft Technical Memorandum. Prepared for California Department of Fish and Game. Prepared by Everest International Consultants, Inc. December 2011.

Everest. 2012. I-5/SR78 Interchange Preliminary Engineering I-5 Bridge Study at Buena Vista Lagoon Fluvial Hydraulics and Residence Time Analysis Draft Report. Prepared for State of California, Department of Transportation. Prepared by Everest International Consultants, Inc. January 2012.

NRCS. 2012. Natural Resources Conservation Service. Soil Survey Staff, United States Department of Agriculture. Web Soil Survey. Available online at <http://websoilsurvey.nrcs.usda.gov/>. Accessed August 15, 2012.

USACE. 2006. HEC-RAS River Analysis System User's Manual Version 4.0 Beta. U.S. Army Corps of Engineers Hydrologic Engineering Center. November 2006.