Chula Vista Bayfront Master Plan

Natural Resources Management Plan

Final

May 2016

CITY OF CHULA VISTA

Unified Port of San Diego

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1.0 Introduction

This Natural Resources Management Plan (NRMP) implements a vision for promoting and enhancing natural resources in this bay-estuarine, urban setting for a sustainable future that sets far-reaching goals for living with climate change. It envisions a thriving, healthy ecosystem that fosters the human experience of nature. This NRMP contains goals, objectives, and strategies for achieving a cooperative vision. The NRMP will serve as an important environmental guidance and implementation document, applicable to all development within the Chula Vista Bayfront project area. All projects, both public and private, will be evaluated by the Port and City relative to furthering the goals, objectives, standards, and strategies contained herein.

The 500-plus-acre Chula Vista Bayfront Master Plan (CVBMP) project footprint is recognized as one of the last great development opportunities to create a legacy destination for the public on San Diego Bay. The CVBMP Amendment was unanimously approved by the California Coastal Commission (CCC) on August 9, 2012, after ten years in development.

1.1 The NRMP Vision

Our vision for the Chula Vista Bayfront is to sustain habitats and ecosystems that protect and nourish both native resident and migratory fish and wildlife, especially those that are at risk and dependent on the south bay.

The goals, objectives, and strategies articulated in this plan are intended to transform the way we conserve and restore nature in coastal urban environments with a changing global climate, and to preserve precious natural resources for generations to come.

The Chula Vista Bayfront will offer varied opportunities for human encounters with nature that are engaging, tranquil, support human and ecological health and well-being, and are accessible to all. Once completed, the world-class bayfront will be a destination for global travelers as well as local residents and visitors, reflect strong planning and design principles for sustainability of resources, economic feasibility, and community benefit.

1.2 The NRMP's Origin

The Wildlife Advisory Group (WAG) was formed to advise the San Diego Unified Port District (Port or District) and the City of Chula Vista (City) on 1) the creation and content of this NRMP, and 2) to initiate and support funding requests to the Port and City as well as identify priorities for the use of these funds, and engage in partnering, education, and volunteerism to support the development of the Chula Vista Bayfront in a manner that protects and enhances the fish, wildlife, and habitats of the area and

educates and engages the public. The WAG was formed following a Settlement Agreement in May 2010 between the Port, the City of Chula Vista, and the Bayfront Coalition, which consists of the Environmental Health Coalition, the San Diego Audubon Society, the San Diego Coastkeeper, the Coastal Environmental Rights Foundation, the Southwest Wetlands Interpretative Association, the Surfrider Foundation (San Diego Chapter), and Empower San Diego. Other WAG members include the Living Coast Discovery Center, South County Economic Development Council, Port tenants, Pacifica Companies, Resource Conservation Commission, three residents from the City of Chula Vista, Zoological Society of San Diego, Sportfishing Association of California, San Diego Foundation, U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service, Regional Water Quality Control Board (RWQCB), California Department of Fish and Wildlife (CDFW), and the CCC.

The CVBMP Settlement Agreement requires the adoption of environmental protection measures above and beyond those required by federal, state, and local regulations, including for sea level rise and other expected impacts of climate change. This NRMP is developed as a condition of the CVBMP Settlement Agreement to include management objectives and performance standards to guide the promotion of natural resources.

1.3 The Bayfront Environ's Core Natural Resource Values

The bayfront and its adjacent areas provide important and unique natural resources values. These include:

- Resting and foraging habitat for Pacific Flyway migratory shorebirds and waterbirds, many of which are of conservation concern.
- A productive marine life nursery for fishes that come into San Diego Bay for its sheltered, warmer water to begin their growth.
- An unusually biodiverse fish assemblage with species unique to southern California.
- The green sea turtle.
- A productive salt marsh, sheltering rare birds and sustaining the life-cycle needs of other wildlife.
- Transitional coastal uplands, supporting native endemic plants and wildlife and buffering storm surge and sea level rise.
- A haven for seabird nesting and fledging of young.
- The regulating function of carbon sequestration tied to salt marsh and other vegetation, as well as other organic matter in soils and sediment.
- Water quality purification and maintenance functions of wetlands.

Existing habitat connections provide for fish and wildlife movement, and opportunities for habitat migration during the stress of climate change adaptation. These connections improve use by native fish and wildlife that are irreplaceable, especially those uniquely dependent on eelgrass, estuaries, marshes, stream openings, and access to natural shores. Opportunities for maintaining these needed habitat linkages into the future include the creation of upland refugia for wildlife from high tides, more meaningful size and connection of mudflat and salt marsh fragments, and better connection to incoming streams for fish and wildlife that need these. The water entering the bay from the watershed is currently altered from its natural cycle of winter storm pulses of fresh water and sediment. However, it still meets quality standards for water contact recreation, as well as fish/invertebrates that are safe to eat.

1.4 The NRMP's Core Guiding Principles

Certain overarching guiding principles are common elements throughout the NRMP. They describe the intended targets and desired outcomes that help to shape the goals, objectives, and strategies of this document.

1.4.1 Guiding Principle I—Consistency with the Coastal Commission Development Policies, CVBMP Settlement Agreement, and all Regulatory Compliance Requirements

This NRMP will be consistent with the Chula Vista Bayfront Development Policies (issued by the CCC and so herein after referred to as the Chula Vista Bayfront Master Plan Coastal Commission Development Policies [CCDP]) and the May 2010 CVBMP Settlement Agreement between the Port, the City of Chula Vista, and the Bayfront Coalition. It will also be consistent with the San Diego Bay Integrated Natural Resources Management Plan (INRMP) and all regulatory requirements as appropriate and identified in the Environmental Impact Report (EIR) for each jurisdiction, including the Multiple Species Conservation Program (MSCP) Subarea Plan on City lands.

1.4.2 Guiding Principle II—Ecosystem-Based Management and Ecosystem Services

As part of ecosystem-based management (see Section 1.6.3: Non-Regulatory NRMP Facilitates Ecosystem-Based Management and Ecosystem Services and Appendix B: Ecosystem-Based Management and Ecosystem Services), this NRMP is intended to promote the protection, restoration, and enhancement of the natural resources that are unique, characteristic, and globally important to the Chula Vista Bayfront ecosystem. These actions will occur against a backdrop of unprecedented change and uncertainty about the future of those resources due to local and global challenges. Ecosystem-based management is an approach that should:

- Design for the future by conserving the essential elements underpinning habitat function and quality of the Chula Vista Bayfront. As a first goal, provide for no net loss of bay-dependent habitats over time, and promote design guidelines using natural habitat versus built solutions (soft versus hard).
- Facilitate resilience to climate change by identifying and implementing adaptation strategies for sea level rise and managing carbon emissions.
- Apply sustainable living solutions in the midst of and in the built environment, adjacent to natural resources under global climate pressure.
- Minimize impacts of human presence on wildlife, while fostering the benefits that nature provides for human well-being.
- Use ecosystem services (see Section 1.6.3: Non-Regulatory NRMP Facilitates Ecosystem-Based Management and Ecosystem Services). Appendix B: Ecosystem-Based Management and Ecosystem Services has a framework to communicate values of ecosystems and biodiversity, and to evaluate the pros and cons of management approaches as well as their effect on human well-being and environmental sustainability.

1.4.3 Guiding Principle III—Exemplary Transboundary Connections and Integrated Planning

The implementation of this NRMP within the project boundaries may influence resources across boundaries at local, watershed, and regional scales as it is connected ecologically, culturally, socio-economically, and organizationally. It should:

- Create an enabling environment for cooperation and innovation in implementing natural resources management.
- Empower organizations and stakeholders to work together towards the shared vision of the NRMP.
- Provide clear decision authority and process, allowing for residents, visitors, decision-makers, and natural resources managers to jointly and efficiently protect and sustain this unique environment.
- Inform decision-makers of the risks, anticipated impacts, costs, and trade-offs of proposed management strategies.
- Guide actions within the CVBMP footprint (see Map 1-1 and Map 1-2) to minimize impacts to Wildlife Habitat Areas (WHAs) and connected areas, as defined in the Settlement Agreement. This context includes the USFWS National Wildlife Refuge (NWR) and cooperative intertidal management areas.
- Unify habitat planning among organizations for the best possible outcome for dependent wetland, marine, upland transition, and riparian natural resources. Projects of individual organizations would benefit from collaborative objectives and targeted outcomes for the recovery of fisheries, water quality, habitats, and from buffering the ecosystem for the impacts of sea level rise.

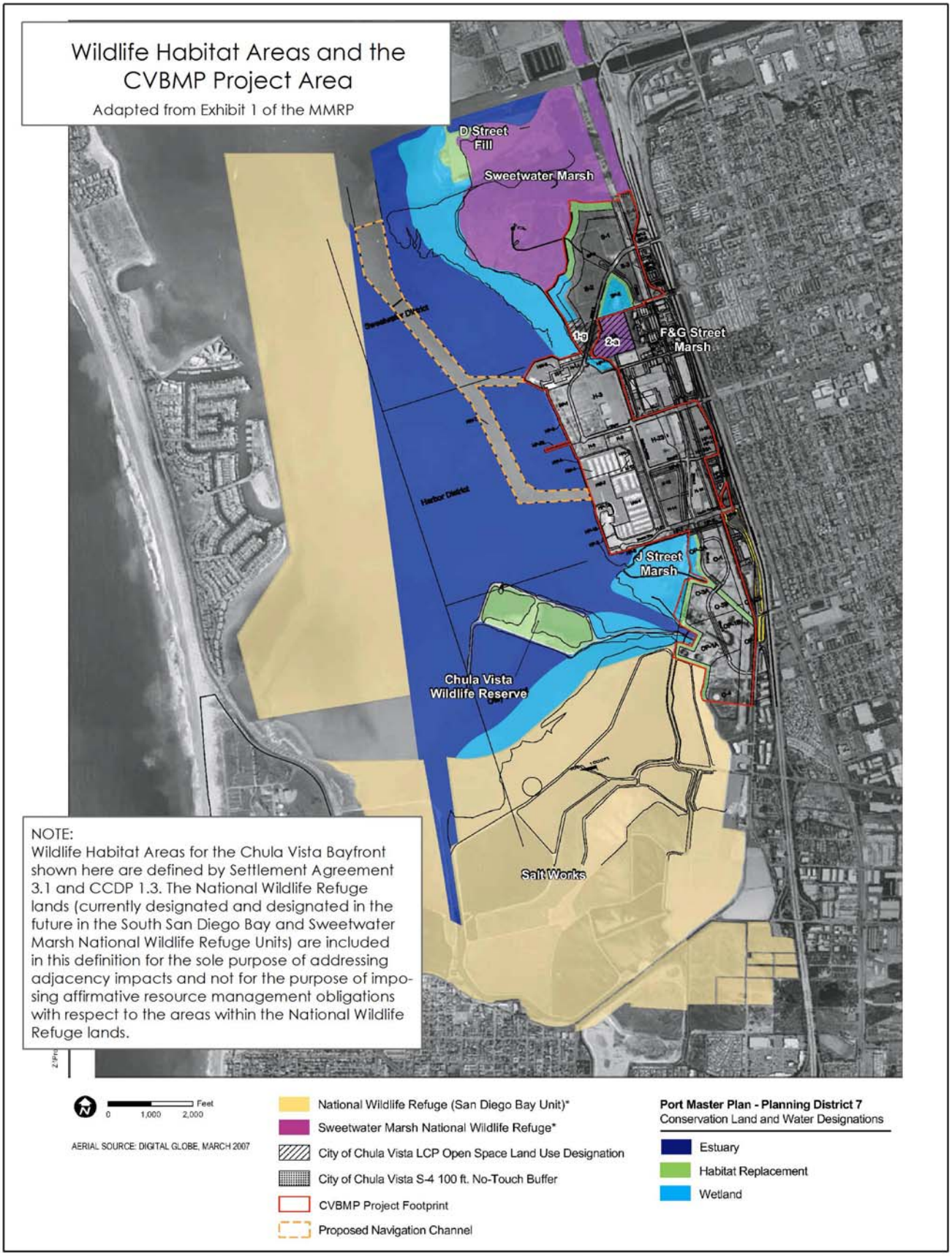
1.4.4 Guiding Principle IV—Benefits from Natural Resources are Accessible to All

Public access to natural resources for all residents of and visitors to the CVBMP project, and the people of California should enable multi-faceted experiences and provide ecosystem services. This includes experiences of discovery, wonder, tranquility, and responsibility.

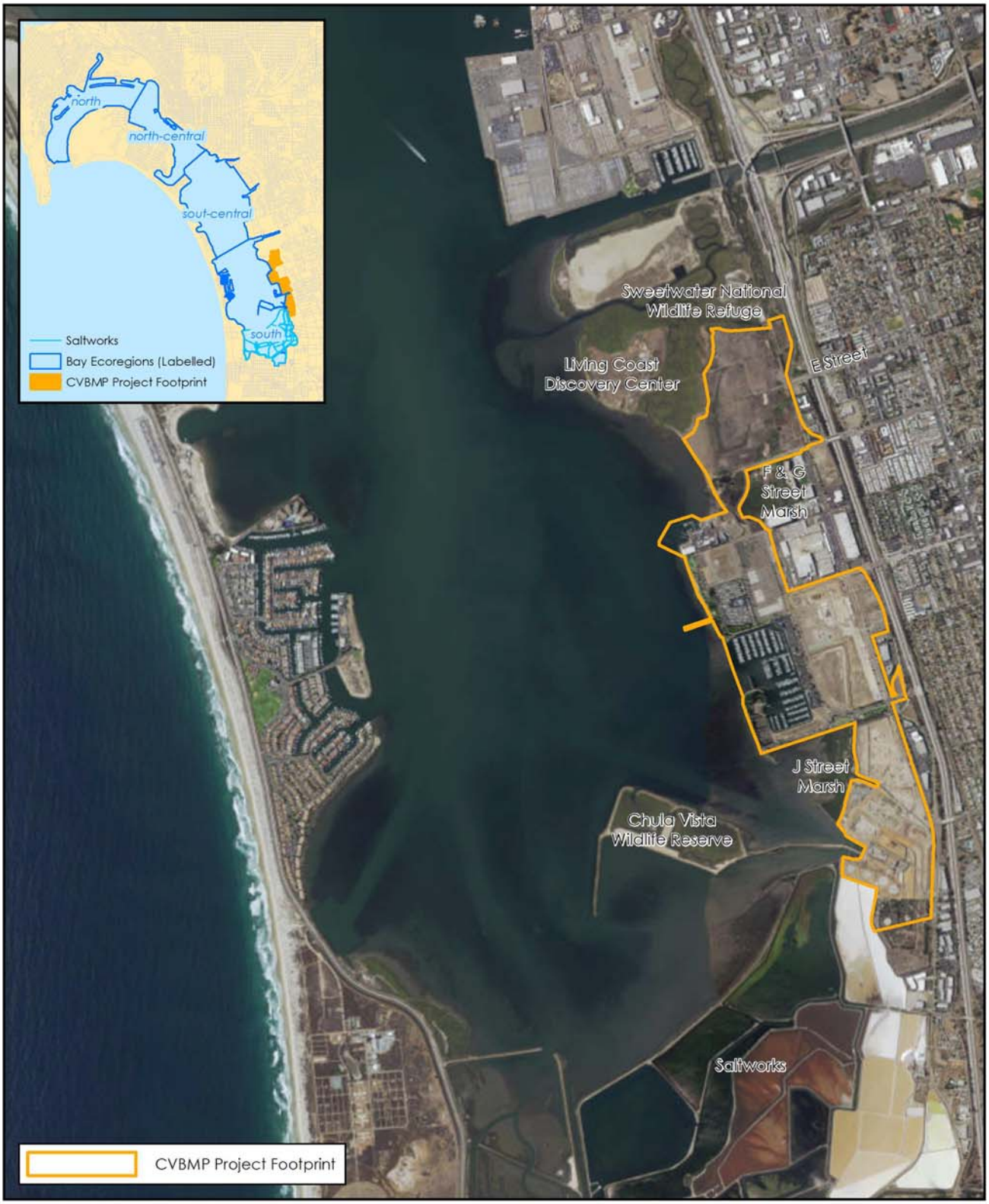
1.4.5 Guiding Principle V—Best Science for Accountable, Adaptive Management

Adaptive management means a systematic approach to natural resource management that incorporates changes to management practices, including corrective actions based upon study results and review of overall project performance.

Adaptive management should give the NRMP longevity, while addressing estuarine complexity and issues that emerge over time. Decisions should be accountable and based on independent, peer-reviewed evidence, transparent research analysis, and the precautionary principle for protecting vulnerable natural resources. While evidence-based conservation should always be sought, available science will have limits for decision-making due to scale, complexity, data availability, social considerations, legal frameworks, and the affected community's vision. Therefore, decision-makers may want to consider risk, degree of consequences, vulnerability, and cost-effectiveness.



Map 1-1. Wildlife Habitat Areas and the Chula Vista Bayfront Master Plan footprint.



Map 1-2. Chula Vista Bayfront Master Plan planning footprint.

Conservation solutions should not be delayed by gaps in available evidence, but should promote innovation with pilot studies using the latest technology. Pilot projects should be supported by monitoring in an adaptive framework, designed to determine whether project outcomes are benefiting the NRMP's goals and objectives, and whether they are achieved efficiently and equitably. Monitoring will benefit accountability among partners in NRMP implementation.

1.4.6 Guiding Principle VI—Planning is Non-Regulatory

Planning is a tool for retaining what we value about a place. While information contained in the NRMP may be included in regulatory documents, it is in itself non-regulatory. In this NRMP, the elements of regulatory compliance that are already established are incorporated, such as through the certified CCDP, while building around these a natural resources planning framework that looks into the future of valued and vulnerable natural resources for the life of the CVBMP development.

Extended horizons make for better natural resources planning. This means looking beyond the immediate footprint of the development to surrounding areas as defined in the Settlement Agreement (see Section 1.2: The NRMP's Origin and maps in this chapter), since the Bayfront is an unnatural boundary in terms of ecosystem function. It also means looking at longer time frames (a decade and longer). This expanded view can serve as a good foundation for partnerships and collaborative planning. This NRMP is consistent with and does not override any other Port planning documents, such as the San Diego Bay INRMP, the Climate Action Plan, and others.

1.4.7 Guiding Principle VII—Collaborative Action

The CVBMP is a visionary and significant achievement for the region. It has been exemplary in its collaboration to date, and resource management and protection will be funded, in part, by successful development projects.

Collaboration makes for better ecological, social, and economic outcomes. Recognizing that many types of knowledge are needed to reach consensus in an ecosystem-based approach, the partnerships built through collaborative planning are an alternative to gridlock in getting beneficial work done. Collaboration must continue to be a hallmark of this effort across jurisdictions, artificial political boundaries, communities, and agencies.

While collaboration and partnership are core themes of this NRMP, they do not change jurisdictional authority or responsibility. For example, WHAs (refer to Map 1-1) discussed in the NRMP include lands administered by the Port and City, as well as:

> All National Wildlife refuge lands, currently designated and designated in the future, in the South San Diego Bay and Sweetwater Marsh National Wildlife Refuge Units. Anything in this Agreement to the contrary notwithstanding, National Wildlife Refuge lands are included in the definition of the WHAs for the sole purpose of addressing adjacency impacts and not for the purpose of imposing affirmative resource management obligations with respect to the areas within the National Wildlife Refuge lands (Settlement Agreement 3.1.1, CCDP 1.3).

These NWR lands will remain under the jurisdictional authority of the USFWS, but will be addressed within the context of the NRMP to allow for the development of conservation measures that will help avoid or minimize adjacency impacts associated with development and intensified human use of the Chula Vista Bayfront. Likewise, the Port and City of Chula Vista will retain jurisdictional authority and responsibility for WHAs that they administer, including:

All District designated lands and open water areas in the Conservation Land Use Designations of Wetlands, Estuary, and Habitat Replacement as depicted in the Draft Precise Plan for Planning District 7; Parcels 1g and 2a from the City's Bayfront Specific Plan; No-Touch Buffer Areas as depicted on Exhibit 2 of the MMRP (Settlement Agreement 3.1.2 through 3.1.4; CCDP 1.3).

1.5 Setting

1.5.1 Planning and Jurisdictions

For planning purposes, the CVBMP project footprint was divided into three districts: the Sweetwater District, comprising the northern portion of the planning area; the Harbor District, including the central portion of the planning area near the marinas; and the Otay District, encompassing the southern portion of the planning area (refer to Map 1-2). These three districts were subdivided into smaller planning areas for the identification of specific development and/or management activities (Map 1-3; refer also to Table C-1 in Appendix C: Setting).

An important component of the CVBMP is the anticipated land exchange with North Chula Vista Waterfront L.P. (Pacifica) and the Port to achieve an improved mix of land uses. It shifted high-density residential land uses from the more environmentally sensitive Sweetwater District to the centrally located Harbor District, which would serve as an economic catalyst for the overall bayfront. The Port received 97 acres of land near E Street, immediately adjacent to the NWR. For the Port, the 97 acres is intended for open space buffers and areas for habitat replacement opportunities. There is also planned: a 21-acre Signature Park with connecting walking trails, overlooks, and picnic areas; 120,000 square feet of commercial recreation development; one campground/recreational vehicle park; and the relocation of the Living Coast Discovery Center's parking lot. Pacifica received 35 acres of land near J Street, immediately east of the Chula Vista Marina. The 35 acres is intended to include a mix of uses, including a 1,500 mid-rise and high-rise residential unit, 15,000 square feet of ground floor retail, 420,000 square feet of mixed-use commercial and office space, and a 250-room hotel.

The result was a net gain of 62 acres of land to the public for parks, open space, and lower-impact future development. Infrastructure improvement to J Street, Marina Parkway, and A Street around the harbor could occur, and Pacifica would be able to generate increased tax revenue for the City of Chula Vista. Pacifica contributed $3 million to the Port for future infrastructure improvements on the Chula Vista bayfront. Pacifica committed that its project will be certified under the Leadership in Energy and Environmental Design (LEED) rating system and will beat Title 24 energy efficiency standards for residential and non-residential buildings by 20 percent.

Further, the project resulted in the creation of a Community Benefits Fund, managed by the San Diego Foundation for the purposes of natural resources protection, sustainability, livability, affordable housing, and community impacts and culture (refer to Section 7.4.1.5 Community Benefits Fund).

Map 1-3. Jurisdictions and management parcels of the Chula Vista Bayfront Master Plan footprint.

1.5.2 Cultural Land Use History

Appendix C: Setting provides a synopsis of human uses of the Chula Vista bayfront. This history includes prehistoric Native American use, Spanish and Mexican use, and American use up to the present-day. Much of the historic tidal lands in the vicinity of the CVBMP project have been developed out. See Map 1-4 for bay habitat circa 1859.

Chula Vista is located within the historical territory of the Kumeyaay, which may have extended as far north as the San Luis Rey River, prior to European contact. At the time of Spanish contact, the Kumeyaay were a nomadic people who inhabited portions of present-day San Diego County, Imperial County, and Baja California, Mexico (Loumala 1978; City of Chula Vista 2012c). The Kumeyaay practiced a fairly typical hunting-and-gathering way of life common among California Native Americans. They subsisted on a diet of fish, small and large game, and wild seeds, nuts, and berries (City of Chula Vista 2012c). Kumeyaay living along the coast collected clams, abalone, scallops, starfish, octopus, and other marine species from lagoons and tidepools, and grunion were gathered during runs (Baksh n.d.).

The salt works is also a part of the historical land use of the Chula Vista Bayfront and region. In 1870, La Punta Salt Works was established in the southeast corner of the San Diego Bay, but the facility closed in 1901 (Otay River Watershed Management Plan [ORWMP] 2006). By 1916, the facility stretched across the entire end of the south bay. This expansion eliminated salt marsh and mudflats with the creation of diked evaporation ponds. In 1999, approximately 1,400 acres of the salt works created the South Bay Unit of the San Diego Bay NWR, including open water areas (ORWMP 2006; E. Maher, pers. com. 2013). Map 1-4 illustrates habitats historically present in San Diego Bay and the CVBMP footprint.

1.5.3 Current Natural Resources Setting

Map 1-5 presents the various vegetation and habitats found within the CVBMP footprint and WHAs. Many of these habitats, including shallow and intertidal habitats such as mudflat and marsh, are required by a number of important fishery and sensitive migratory species. These liminal ecological spaces are scarce because of the development of the many harbors, ports, and marinas of the southern California region. An overview of these resources is presented in Section 2.0: Sustainable and Improved Native Habitats and Communities, and in Appendix C: Setting. Detailed information on each habitat and survey results are presented in the EIR for the CVBMP.

1.6 Approach to Planning

1.6.1 Collaboration

The WAG engaged in a collaborative effort to develop this NRMP (see Guiding Principle VII). A kickoff meeting was followed by six focused topic subgroup meetings, and three consensus-building meetings. The NRMP was iteratively refined through a series of public drafts. An internal website facilitated ongoing comment review, information sharing, and compliance with the Brown Act (California Government Code 54950 et sec.).

Old Bed of the San Diego River
Mission Valley
San Diego
San Diego River
New San Diego
Valley of La Carbonera
Las Chollas Valley
Valley of Paleta
Ranch de la Nacion or Sweetwater Valley
La Punta
Valley of Ohjai (Now Otay)

CVBMP Project Footprint
Historical Water Channels
Bay Footprint

Habitat
- Deep Sub Tidal -20 to -76
- Moderately Deep Sub Tidal from -12 to -20
- Shallow Sub Tidal -3 to -12
- MLLW to -3
- Upper Tidal, MLLW to +2 (Estimated)
- Marsh
- Upland
- Habitat not defined by the 1859 map

Upland
Upper Tidal, MLLW to +2
Marsh
Shallow Sub-Tidal -3 to -12
Marsh
Upper Tidal, MLLW to +2

Habitat not defined by the 1859 map

*Depths and annotations reproduced from San Diego Bay, California, Survey of the Coast of the United States, 1859

0 1 2 Miles

Map 1-4

San Diego Bay Habitats Identified in 1859*

0 0.5 1 Miles

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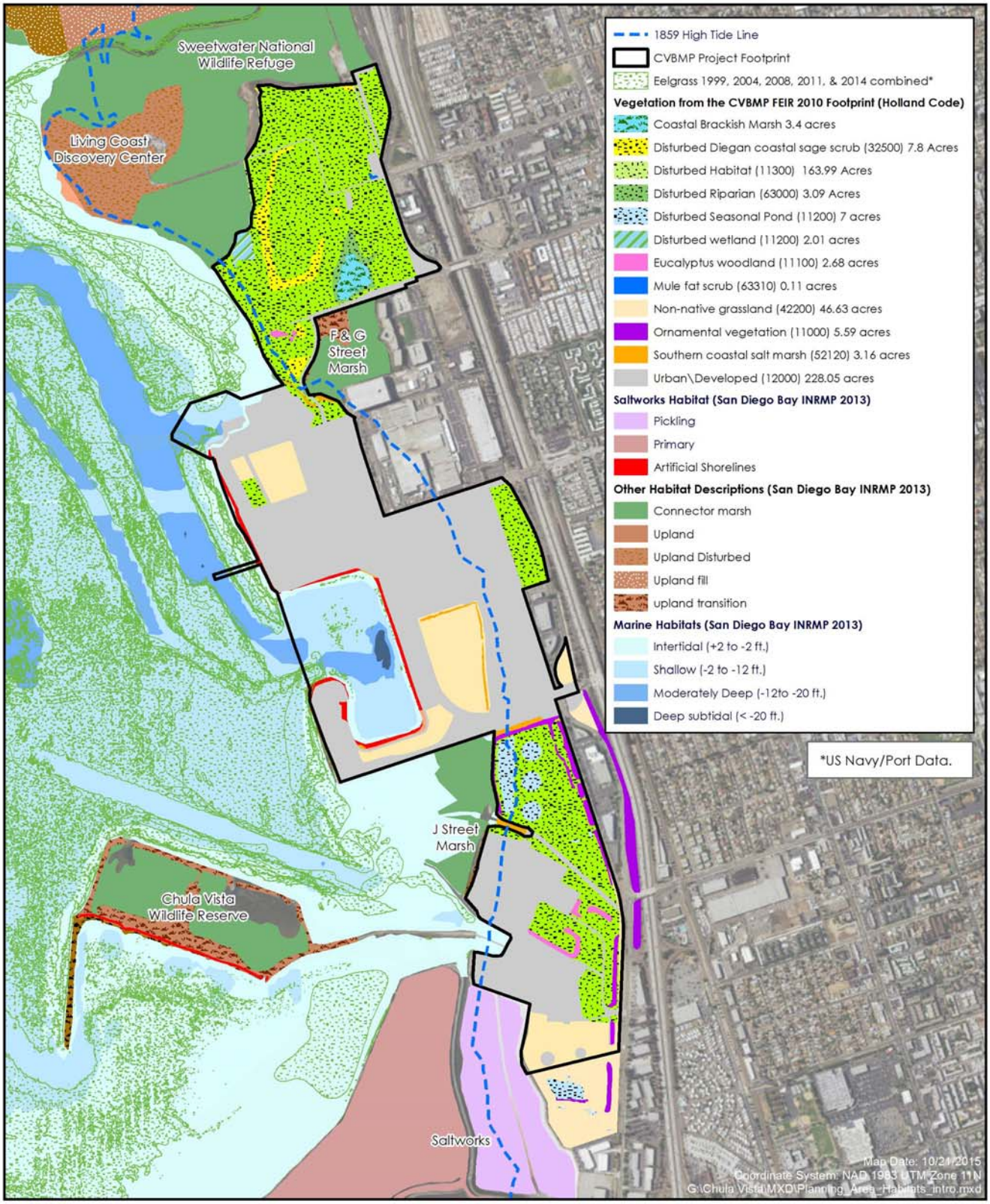


Habitats Within & Adjacent to the CVBMP Project Footprint

Miles
0 0.25 0.5
Kilometers
0 0.25 0.5

Map 1-5. Vegetation and habitats within and adjacent to the Chula Vista Bayfront Master Plan project footprint.

1.6.2 Overriding Driver of Impacts to Natural Resources and People—Climate Change

Climate change adaptation is stressed throughout the NRMP as the defining critical issue for natural resources now, and over the coming decades. Warmer temperatures, rising waters, and other expected changes may bring new stresses for countless species of plants, animals, and fish. Some species are adaptable with wide ranges, and are likely to continue to thrive, while those that depend on particular habitats will be more vulnerable. This NRMP considers ***flooding from sea level rise*** and ***extended heat days*** as primary consequences of climate change in the footprint of the CVBMP. Climate change may also limit the ***availability of water*** to maintain landscaped areas in the future. This may require adjustments in the function of vegetation intended for environmental protection such as its use for erosion control, treatment wetlands, and for blocking sound or stray light from sensitive areas.

The strategies in this NRMP are built on existing or emerging science, adaptation, and conservation efforts, such as the U.S. Global Change Research Program, the Interagency Climate Change Adaptation Task Force, State Wildlife Action Plans, and Landscape Conservation Cooperatives.

See Appendix D: Sea Level Rise, Climate Change, and Carbon Sequestration Assumptions for depictions of projected sea level rise for the vicinity of south San Diego Bay.

1.6.3 Non-Regulatory NRMP Facilitates Ecosystem-Based Management and Ecosystem Services

This is a non-regulatory plan, however the cornerstones of the plan are those requirements found in the NRMP's controlling documents (the Mitigation Monitoring and Reporting Program [MMRP] of the EIR, the CVBMP Settlement Agreement, and the CCDP). While some impacts of the CVBMP development must be mitigated through regulatory processes, the underlying compliance requirements are documented in these controlling documents. Most of this NRMP's goals and objectives are not regulatory.

This absence of a species-specific regulatory driver is one of this NRMP's strengths. It facilitates ***ecosystem-based management*** and planning for the crucial functions of the coastal environment that underpin its productivity and uniqueness. This 50-year plan seeks to provide a unifying approach to broad management considerations as outlined inAppendix B: Ecosystem-Based Management and Ecosystem Services.

As stated in Guiding Principle II, goals and objectives of this NRMP emphasize natural resource functions that benefit the entire ecosystem. These are then linked to proposed indicators of successful natural resources management. Ecosystem functions are primarily based on the great, global cycles of matter and energy that make life on this planet habitable for wildlife and humans: water, carbon, nitrogen, phosphorus, and sulfur are the major ones. Disruption of these cycles can lead to floods, droughts, climate change, pollution, and many other environmental problems. Soils provide critical ecosystem services, especially for sustaining ecosystems and growing food and fiber. Ecosystem functions include the interactions between organisms and the physical environment, such as nutrient cycling, soil development, and water budgeting, as well as interactions among the biota, such as food webs and mutualistic relationships, and biodiversity as a basis for a resilient ecosystem. Mobile and migratory wildlife provide critical links and increase ecosystem resilience by connecting habitats and

ecosystems through their movements. Their services include pollination, seed dispersal, nutrient deposition, pest control, and scavenging. Ecosystem functions range from global to microscopic in scale.

Ecosystem services are the set of ecosystem functions that are useful to people, communities, and economies every day. Appendix B: Ecosystem-Based Management and Ecosystem Services provides a primer on these functions. They are the direct and indirect contributions of ecosystems to human well-being, most of which are traditionally unpriced since they are not traded economically. This integrative approach to conservation planning and economic practice for stewardship of natural resources has become federal policy in the United States, and is applied internationally. It was formalized by the U.S. National Research Council and the United Nations' Millennium Ecosystem Assessment in 2005. This latter effort was a four-year assessment of the condition and trends of the world's ecosystems, supported by 1,300 experts. Consistent with these sources and federal policy, this NRMP classifies ecosystem services according to the following:

- **Provisioning services** (the goods or products obtained from ecosystems): food, fiber, raw material, fresh water, medicinal resources, and genetic resources.
- **Regulating services** (the benefits obtained from an ecosystem's control of natural processes): local climate and air quality regulation, carbon sequestration and storage, moderation of extreme weather events, water purification and wastewater treatment, erosion prevention and maintenance of soil fertility, pollination, and pest regulation through biological control.
- **Habitat or supporting services:** habitats for species, maintenance of genetic diversity, primary productivity (photosynthesis), soil formation, nutrient cycling, and water cycling.
- **Cultural services** (the non-material benefits people obtain from ecosystem services): recreation and mental and physical health, tourism and scenic values, aesthetic appreciation and inspiration for culture, art and design, ethical values, education, spiritual experience, and sense of place.

It is intended that implementation of this CVBMP NRMP showcase the benefits of ecosystem services in the urban/wildland and coastal water/wetland interface, and in the built environment through the true valuation of the important role they play in our daily lives. It is hoped that this NRMP serves as a model to help resolve impasses in the conservation of San Diego Bay's natural resources.

1.6.4 NRMP Content and Footprint

The CVBMP Project Area is set forth in the CVBMP Settlement Agreement and consists of the CVBMP project footprint and the WHAs. As set forth in the Settlement Agreement, the NWR lands are included in the definition of WHAs for the sole purpose of addressing adjacency impacts and not for the purpose of imposing affirmative resource management obligations with respect to the areas with the NWR Lands. Wildlife management objectives outlined in the Controlling Documents are to be achieved in the Port/City WHAs to the extent that they address such adjacency issues.

This NRMP provides strategies for managing natural resources within the CVBMP footprint and WHAs. Fulfillment of the CVBMP's vision could influence the integrity of WHAs both internal and adjacent to the CVBMP footprint in both positive and negative ways (refer to Map 1-1). At the same time the CVBMP footprint is influenced by activity from the upstream watershed and from coastal-estuarine areas with which it is contiguous. Recommendations are made to manage positive and negative influences in both directions. The Project footprint boundaries are

defined in the CVBMP Settlement Agreement and depicted herein on Map 1-1 and Map 1-2. The goals, objectives, and strategies set forth in the NRMP shall apply to the Project footprint and WHAs.

This NRMP does *not* provide: 1) strategies for design, expansion, or adaptation to sea level rise of the Sweetwater Marsh Unit or other bay-side units of the San Diego NWR; or 2) a plan to manage the marine habitat and resources within the south bay that are outside of the CVBMP footprint and WHAs; management of natural resources within San Diego Bay as a whole is covered by the San Diego Bay INRMP (Port and U.S. Navy 2013). The NRMP seeks to be consistent and integrated with the USFWS Comprehensive Conservation Plan for the refuges, the INRMP, and other related Port and City plans. The goal is to have seamless management of wildlife throughout the entire area that influences habitat values of the CVBMP.

The NRMP ***does*** seek maximum possible and necessary actions within the CVBMP footprint and WHAs under the jurisdiction of the Port and City to achieve management objectives for those areas and their resources (see Map 1-2 and other maps on this chapter) as these resources are part of our collective commons and responsibility.

Taking into consideration the potential changes in functionality of WHAs due to rising sea levels, the NRMP will promote, at a minimum, the following objectives ("Management Objectives") for the WHAs (Settlement Agreement 3.2, CCDP 1.3):

- Long-term protection, conservation, monitoring, and enhancement of: wetland habitat, with regard to gross acreage as well as ecosystem structure, function, and value; coastal sage and coastal strand vegetation; upland natural resources for their inherent ecological values, as well as their roles as buffers to more sensitive adjacent wetlands. Upland areas in the Sweetwater and Otay Districts will be adaptively managed to provide additional habitat or protection to create appropriate transitional habitat during periods of high tide and taking into account future sea level rise (Settlement Agreement 3.2.1, CCDP 1.3).
- Preservation of the biological function of all bayfront habitats serving avifauna as breeding, wintering, and migratory rest stop uses (Settlement Agreement 3.2.2, CCDP 1.3).
- Protection of nesting, foraging, and rafting wildlife from disturbance (Settlement Agreement 3.2.3, CCDP 1.3).
- Avoidance of actions within the Proposed Project area that would adversely impact or degrade water quality in San Diego Bay or watershed areas or impair efforts of other entities for protection of the watershed (Settlement Agreement 3.2.4, CCDP 1.3).
- Maintenance and improvement of water quality where possible and coordination with other entities charged with watershed protection activities (Settlement Agreement 3.2.5, CCDP 1.3).

To that end, the NRMP includes potential proactive actions and recommendations that address inevitable impacts to adjacent resources to the maximum extent it can be done *within* the CVBMP footprint and in WHAs under the jurisdiction of the Port and City. In the NRMP, these goals, objectives, and strategies will be stated as applying to the CVBMP "project area" as stated in the Controlling Documents (see Map 1-1).

In addition, the NRMP includes recommendations suggested for its influencing region - the upstream watershed and adjacent coastal-estuarine resources of south San Diego Bay (Map 1-6 shows this sphere of influence). These bigger-picture actions influence (both positively and negatively) the health and ecosystem services provided within the CVBMP project area. The NRMP also provides recommendations, goals, objectives, and strategies to catalyze grant funding or other important conservation work.

One of the intents of this NRMP is that it be used as a reference by others in the future for natural resources management planning in the south bay outside of the current CVBMP project footprint, and to build on the Port's suite of plans and initiatives for its jurisdiction and responsibilities. These include the Climate Action Plan (Port 2013); the future Comprehensive Integrated Port Master Plan (PMP) Update; the Final San Diego Bay INRMP (Port and U.S. Navy 2013); Sea Level Rise Adaptation Strategy for San Diego Bay (January 2012); future plans for Pond 20; and considerations for future planning overlays and regulatory compliance facilitation including mitigation banking that advances NRMP goals.

1.7 How to Use This Plan

1.7.1 Plan Organization

This NRMP is organized hierarchically in tiers from broad to specific, starting with the Vision statement described above (Section 1.1: The NRMP Vision), then by goals, objectives, and strategies in each of the following chapters. The Table of Contents reflects the underlying ecosystem-based management and ecosystem service themes carried throughout the plan, organized in the following groupings:

- Productive and Diverse Habitats and Communities
- Minimizing Harm to Wetlands and Marine Waters
- A Wildlife-Friendly Urban-Wildland Interface
- Maximum Ecosystem Services in the Built Environment and Open Space
- Education to Inspire and Promote the Human Experience of Nature
- Integration and Implementation

The final chapter on implementation integrates all of the previously presented work in the NRMP, prioritizes the work, and identifies roles and responsibilities.

The supporting appendices provide detail on the background and approach to this NRMP.

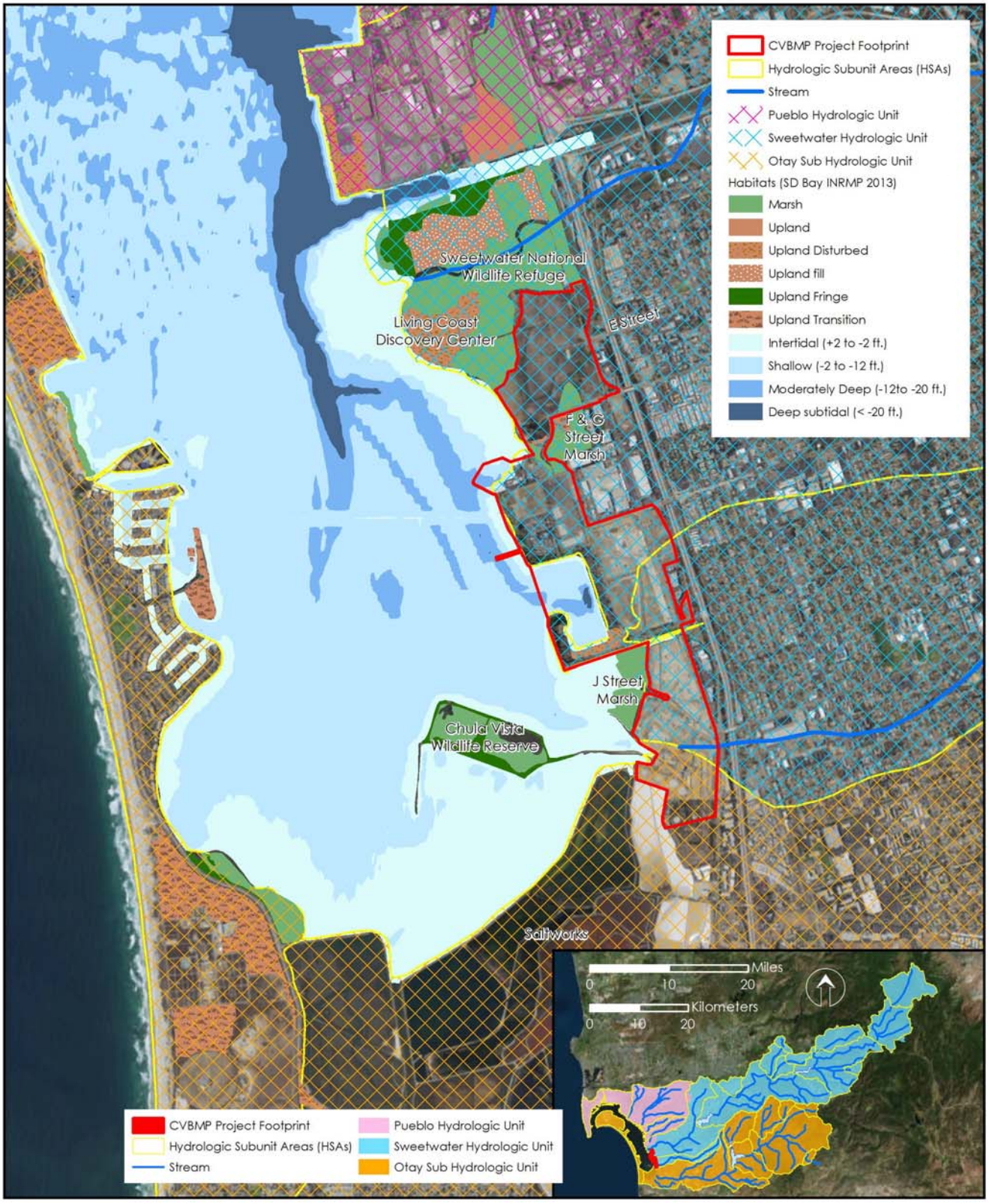
1.7.2 Definition of Planning Terms

The following terms are used throughout this NRMP.

Vision

The Vision includes inspiring words chosen to clearly and concisely convey direction of the organization and outcome for the plan area. It uses present tense guiding principles, communicates both purpose and values, and motivates realization of an attractive and common vision for the future (see Section 1.1: The NRMP Vision).

Ideally, what will natural resources and their management look like in support of the CVBMP?



Map 1-6. Selected wildlife habitat and watersheds adjacent to and influencing the Chula Vista Bayfront Master Plan project footprint.

Goal

A Goal is a broad guiding principle that lasts for the life of the plan and sets the course. It is not necessarily fully reachable, but an intention to act.

What course of action will help achieve the Vision of the NRMP for natural resources and their management?

Objective

An Objective establishes the desired condition for each resource or area of concern. It can be qualitative or quantitative, but should be measurable. It can address multiple scales and time frames.

What is the conservation target for the resource? What indicator describes what success looks like for the resource?

Standard (for implementing Goals and Objectives)

A Standard is an expression of a minimum, measurable level of physical and biological condition or degree of function required for a healthy, sustainable natural resource. It is generally long-term, but can be adjusted with improved knowledge. It is based on a conceptual model of a range of outcomes possible for a resource/ecological site. It focuses on structure and function. It is attainable and complies with applicable statutes, policies, and directives.

Strategy (for how to achieve the Standard and Objective)

What is needed to ensure that objectives and standards can be met or progress made toward them. Adjusted over time as knowledge and experience from monitoring improves. Management approaches, actions, and practices need to achieve desired natural resources condition.

The following terms relate specifically to the implementation of NRMP Core Strategies (refer to Section 1.7.4) and the NRMP Implementation Table presented in Chapter 7.

Project Approval

As defined below for each specific project type:

1. Public Works Project in Port Jurisdiction: Approval of plans and specifications by the Board of Port Commissioners or its designee pursuant to Board Policies.
2. Public Works Project in City Jurisdiction: Issuance of Grading or Building Permit by City of Chula Vista, whichever occurs first.
3. Port Tenant Project: Final approval of plans by the Board of Port Commissioners or its designee pursuant to Board Policies.
4. City Developer Project: Issuance of Grading or Building Permit by City of Chula Vista, whichever comes first.

Project Proponent

Developer or agency that submits an application or initiates a project and is thereby responsible for design, cost, permit acquisition, implementation, and compliance with all Chula Vista Bayfront Controlling Documents, CVBMP NRMP, and Port or City policies.

1.7.3 Sources and Levels of Funding Not Yet Defined

The implementation of the NRMP is a multi-decade effort and may, over the life of the project, include a significant number of projects of all sizes and scopes. The NRMP will evolve through an adaptive management process and the life of the NRMP. The CVBMP Financing Agreement between the City of Chula Vista and the Port requires that Operation and Maintenance sources commit to funding some types of work first. Also, 0.5 percent of each sale of a residential condo and $2,000 per room for the Pacifica hotel will be paid to a Joint Powers Authority (JPA). This is discussed further in Section 7.0: Moving Forward: Implementation of the NRMP, Monitoring for Adaptive Management, Addressing SLR, and Future Funding.

The visionary goals, objectives, and strategies set forth in the NRMP are intended to establish the requirements to protect natural resources and must be incorporated in future decisions of the Port and the City of Chula Vista within the CVBMP. Once adopted by the Port and City and approved by the Coastal Commission, implementation of the NRMP is required to be funded and implemented as set forth in the Settlement Agreement. The Port and City may also seek alternative sources of funding to implement NRMP goals, objectives, and strategies where appropriate, including through federal and state grants.

Funding for the implementation of the NRMP will be from the Port and City through the JPA. The Port and City will ensure that the JPA will treat financial requirements of the NRMP as priorities, as revenue is identified and projects implemented, per Settlement Agreement 3.4 and 4.1.1. However, implementation of the NRMP is not required until project related revenues are identified.

Readers are encouraged to read the plan in its entirety, which is designed to identify direction and opportunities for future work.

1.7.4 Conventions Used in the NRMP

The underlying requirements for development of the CVBMP project footprint derive from the planning and permitting documents that preceded the development. They provide the basic framework from which this NRMP is built. Throughout the NRMP, requirements from these documents are embedded into a comprehensive approach for natural resources protection that is longer term and broader in scope than regulatory mitigation alone. The NRMP Controlling Documents include (Appendix I: NRMP Controlling Documents):

- the MMRP as described in the CVBMP Final EIR (May 2010);
- CCDP conditions (July 2012); and
- the CVBMP Settlement Agreement (May 2010).

The NRMP strategies that are mandatory compliance (that is, covered in the MMRP, CCDP, or the CVBMP Settlement Agreement) are identified by a blue shaded box.

> *Implementation of the Controlling Documents referenced in the blue box and certain other strategies is identified with a green bar to the left. These are referred to as Core Strategies. (Sub paragraphs under green bar core strategies are only required implementation if they too have a green bar next to them.)*

All other strategies will be considered during project approvals for both public and private projects, as applicable, and as part of future adaptive management efforts. Strategies offered in this plan are intended to help decision-makers in project review and to seek grant funding.

As a first approach and as much as possible, the need for funding is minimized through design guidelines presented herein. For example, prevention strategies are promoted over enforcement or control for invasive species. Also, this NRMP reflects in its recommendations a preference for performance-based outcomes, rather than specific practice prescriptions.

In addition, when the NRMP uses such terms as practicable, feasible, or possible, considerations of whether the item can be accomplished in a successful manner within a reasonable amount of time in view of economic, environmental, legal, social and technological factors shall be taken into account.

The inclusion of shaded boxes with descriptions of requirements imposed by the NRMP's controlling documents (CVBMP Settlement Agreement, the MMRP, and the CCDP) is for information and reference purposes only. Should any ambiguity or apparent conflict exist between the Controlling Documents and the NRMP, the Controlling Documents shall control for all purposes. The NRMP does not modify the Controlling Documents nor do the descriptions provided within shaded boxes of the NRMP modify or create obligations in addition to those already imposed by the Controlling Documents.

Contextual Information

Information that is contextual or explanatory in nature is provided throughout the NRMP to contribute to a more complete understanding of the relevant compliance and recommended strategies.

In a number of cases, this information is presented within a box outlined in green or a table with green shading.

In other cases, the information is located in the left-hand margin adjacent to relevant strategies.

Use of Ecosystem Service Icons in Left Margin

The set of icons below represent ecosystem services provided by each strategy or project (see Section 1.6.3: Non-Regulatory NRMP Facilitates Ecosystem-Based Management and Ecosystem Services). These are color-coded by the category of ecosystem service. For relevant strategies, they appear in the left margin in two rows to indicate whether the NRMP action supports an ecosystem service at a primary (top row) or secondary (bottom row) level. For example, eelgrass habitat would provide multiple ecosystem services, including provisioning, regulating, and habitat services.

Provisioning Services


Food


Raw Materials


Fresh Water


Medicinal Resources

Regulating Services


Local Climate and Air Quality


Carbon Sequestration and Storage


Moderation of Extreme Weather


Wastewater Treatment


Erosion Prevention, Soil Fertility


Pollination


Biological Control

Habitat or Supporting Services


Habitat for Species


Maintenance of Genetic Diversity

Cultural Services


Recreation, Mental and Physical Health


Tourism


Aesthetic Appreciation, Inspiration for Culture, Art, and Design


Spiritual Experience, Sense of Place

2.0 Sustainable and Improved Native Habitats and Communities

Migratory shorebirds—such as the black brant—flock, rest and forage in the mudflats and wrack lines to regain their strength for migration for the long journey south. Eelgrass and sheltered intertidal shores are abundant in young fish that feed until they are large enough to enter the open ocean. The green sea turtle ripples the water surface now and again. Endemic gobies abound in the warm shallow waters, and game fish regain their numbers in the grassy underwater nursery. Nesting seabirds come to nest and fledge their chicks on exposed flats where abundant silver fish, small enough for a young, school nearby. The salt marsh is black with anaerobic activity and the salt-loving pickleweed and cordgrass obscure the nests of herons, rails, and sparrows. In the tidal transition that buffers storm surge salt-tolerant grasses, herbs, and shrubs provide cover for specialized insects and their pollinator host flowers, beetles, and black-tailed jack rabbits.

2.1 Key Messages

- Compliance through normal regulatory channels as described under the Chula Vista Bayfront Development Policies, which were approved by the Port Commission and the CCC in 2012, will help avoid net loss of habitat acreage or value within the Chula Vista Bayfront area that are due to development impacts in the CVBMP footprint. This NRMP proposes the same standard, while accommodating impacts of climate change unrelated to the development itself. This is primarily achieved through establishment and design of sea level rise Buffer Areas (No-Touch, Limited Use, and Transitional Use Buffer Areas; refer to Map 2-1). Additionally, the parks and open space, where appropriate, will be designed to accommodate flood waters from the bay, as well as feature exemplary treatment wetlands. There may also be a need to accommodate impacts from sea level rise in areas adjacent to the Sweetwater salt marshes and at the J Street marsh.
- Sea level rise will provide unique opportunities to create/restore sensitive wetland habitats; it will also pose threats to established sensitive wetland habitats.
- There is opportunity to improve existing habitat in the CVBMP footprint and WHAs through restoring and enhancing size, connectivity, and complexity (in microtopography and substrate). Of current habitat values within the CVBMP area, the upland transition appears the most degraded. While ecosystem functions are impaired in the wetlands and shallow nearshore habitats due to historic losses, they continue to support uniquely productive fish and wildlife communities.
- Core ecosystem values of the south San Diego Bay can be represented within the CVBMP footprint and WHAs by selecting conservation planning species or species groups that use important and unique attributes of the bay-estuarine environment. Considering the life cycles of these species helps to ensure conservation of the key physical and biological attributes of habitat that support them.
- Future conservation and restoration of south bay habitat values may entail partnerships with agencies and organizations that manage lands outside the footprint of the CVBMP.

There are several primary concerns for the sustainability of habitat functions, and the flora and fauna they support, in the CVBMP footprint, adjacent WHAs, and their connections to the rest of south San Diego Bay. These are:

- The historic loss of the size and quality of habitat (See Appendix Table C-4 which shows estimated habitat losses within San Diego Bay from 1859 to 1995 by comparing a 1859 geodetic chart and 1995 aerial photo, updated in 2007). This primarily affects the shallow shores (intertidal mudflat and salt marsh are the most impacted), intact natural shorelines, upland transition areas, and the fresh water flow regime from streams. Poor quality habitat supports few native species.
- Migration pathways are impaired by loss of connectivity and “stepping stones” for rest and replenishment, such as avian and pollinator pathways.
- Habitat fragmentation impairs local movement of fish and wildlife among habitats to complete life-cycle needs.
- Invasive species are an increasing threat to local native flora and fauna. This threat interacts with climate change vulnerabilities.
- The increasing pace of climate change and change in sea level rise predictions complicate the ability to design management strategies to address it adequately. There is no universally accepted or used approach to address sea level rise, and there is a need for more refined analysis of expected flooding to direct early actions or forestall impacts. Multiple lines of decision-making authority and jurisdictions complicate this issue. The Port/City will utilize as appropriate the California Coastal Commission’s Sea Level Rise Policy Guidance (2015).

- The scale of natural resources issues, including climate change, does not match the solution space provided by the CVBMP project footprint available to planners. Many important natural resources issues will only be resolved at a bay-wide or regional scale by collaboration among agencies (as described in the Settlement Agreement Management Objectives).
- The degree of indirect impacts from future adjacent development remains uncertain.
- There is concern about the ecosystem's capacity to adapt to the cumulative impacts of all of the above, including the possibility of destabilized food webs or system collapse.

The above concerns were used to establish the NRMP habitat goals and objectives.

Ecosystem function depends on its structure, diversity, and integrity at scales from microscopic to regional (Ecological Society of America [ESA] 2013). Biological diversity is a critical component in strengthening ecosystems against disturbance, and diversity itself is a dynamic property of ecosystems (ESA 2013). This dynamic property is amplified by climate change. Therefore, it follows that management of biological diversity requires recognizing that the complexity and function of any particular location is influenced heavily by the surrounding system. Refer to Appendix B: Ecosystem-Based Management and Ecosystem Services. This NRMP emphasizes ecosystem function as the key target of conservation for the CVBMP footprint, the adjacent WHAs, and the seamless ecological interlinkages in the system that influence these functions (see Settlement Agreement 3.1.1 through 3.1.5, and Exhibit 1).

This chapter is organized in four sections:

2.2 Mitigation Compliance and Improving Habitat Quality in the CVBMP Footprint and WHAs
- Objective 2.2-1 Promote the goal of no net loss due to direct and indirect effects of development
- Objective 2.2-2 Long-term habitat conservation
- Objective 2.2-3 Habitat for conservation planning species

2.3 Improving Habitat and Community Connections
- Objective 2.3-1 Resilient habitats through connectivity
- Objective 2.3-2 Cooperative agreements for neighboring habitats
- Objective 2.3-3 Re-establish and improve watershed connections

2.4 Sea Level Rise and Buffer Areas
- Objective 2.4-1 No net loss due to climate change
- Objective 2.4-2 Habitat migration
- Objective 2.4-3 Ensure buffer areas add habitat value and other ecosystem services
- Objective 2.4-4 Habitat connectivity
- Objective 2.4-5 Buffer area use

2.5 Effective Restoration to Meet NRMP Goals and Objectives for Climate Change Resilience and Habitat Value
- Objective 2.5-1 Resilient habitats providing ecosystem services
- Objective 2.5-2 Make the most of built shorelines and in-water structures
- Objective 2.5-3 Ensure built structures promote water quality and habitat
- Objective 2.5-4 Sediment replenishment
- Objective 2.5-5 Restoration priorities
- Objective 2.5-6 Multiple benefits to core resource values

2.2 Mitigation Compliance and Improving Habitat Quality in the CVBMP Footprint and WHAs

Goal

No Net Loss of Habitat Area and Ecological Functions. *Strive for no net loss or degradation of marine, wetland, and upland transition habitat area, value, function, or related ecosystem services within the footprint and WHAs due to development in the CVBMP project footprint, and long-term improvement of habitat quality.*

Objective 2.2-1

Promote the Goal of No Net Loss Due to Direct and Indirect Effects of Development. Development projects will comply with avoidance, minimization, and compensation requirements for marine and wetland systems, and sensitive vegetation communities, as required by law, the CCDP, and the MMRP.

I. *Eelgrass and Open Water Development Impact Avoidance.* Development in San Diego Bay waters shall be reviewed for potential impacts to open water (foraging) and eelgrass, including any direct (e.g., construction activity) and indirect (e.g., shading from structures or boats) impacts. Efforts must be made to maintain the eelgrass habitat available and to improve water quality (CCDP 25.2).

> *Prior to Project Approval of site-specific development proposals, the Port/City will review and approve studies prepared by the Project Proponent or Port/City environmental consultant that document the potential for impacts to eelgrass or open water.*

II. *Eelgrass and Open Water Mitigation for Development Impacts.* No net loss of eelgrass meadows shall be permitted. Pre-construction and post-construction eelgrass surveys shall be prepared in full compliance with the "Southern California Eelgrass Mitigation Policy" or any later revised policy adopted by the National Marine Fisheries Service. Any existing eelgrass impacted shall be replaced at a minimum 1.2:1 ratio, in accordance with the Southern California Eelgrass Mitigation Policy[a]. In addition, impacts to open water habitat shall be assessed and mitigated (CCDP 25.2). Prior to construction of the H Street Pier, the Port shall create 0.96 acre of eelgrass habitat [surface water foraging habitat, see also MMRP 4.9-1] to mitigate for the loss of surface water foraging habitat in accordance with the Southern California Eelgrass Mitigation Policy. The creation of eelgrass habitat shall be conducted in accordance with EIR Mitigation Measures 4.9-1 and 4.9-2 in Section 4.9, Marine Biological Resources (MMRP 4.8-8). Prior to completion of in-harbor work in Phase IV, the Port shall create 1.93 acres of eelgrass habitat. The creation of eelgrass habitat shall be conducted in accordance with EIR Mitigation Measure 4.9-2 in Section 4.9, Marine Biological Resources. When project-specific designs are proposed for the remaining project components affecting 1.61 acres of surface water foraging habitat and intertidal mudflats, the mitigation of impacts shall be re-evaluated by the Port during subsequent environmental review pursuant to the California Environmental Quality Act (CEQA) Guidelines Section 15168 to determine accurate net loss and mitigation for the loss of foraging habitat (MMRP 4.8-9).

a. The Southern California Eelgrass Mitigation Policy (SCEMP) has been replaced by the California Eelgrass Mitigation Policy (CEMP). The Port/City will comply with the new policy.

Prior to Project Approval of construction documents for the H Street Pier and in-harbor development plans, the Project Proponent shall conduct surveys and mitigation, if required, in compliance with paragraph II above.

III. *Wetland Delineation by Coastal Act and Coastal Commission Regulations.* Wetlands shall be defined and delineated consistent with the Coastal Act and the Coastal Commission Regulations, and shall include, but not be limited to, lands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens. Any unmapped areas that meet these criteria are wetlands and shall be accorded all of the protections provided for wetlands in the PMP. Wetlands shall be further 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 shall also include those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent and drastic fluctuations of surface water levels, wave action, water flow, turbidity, or high concentrations of salts or other substances in the substrate. Such wetlands can be recognized by the presence of surface water or saturated substrate at some time during each year and their location within, or adjacent to, vegetated wetlands or deep-water habitats (CCDP 2.2). Where the required initial site inventory indicates the presence or potential for wetland species or other wetland indicators, the District shall require the submittal of a detailed biological study of the site, with the addition of a delineation of all wetland areas on the project site. Wetland delineations shall be based on the definitions contained in Section 13577(b) of Title 14 of the California Code of Regulations (CCDP 2.3).

Prior to Project Approval of site-specific construction documents, the Project Proponent shall conduct surveys in compliance with paragraph III above.

IV. *Mitigation for Impacts to Jurisdictional Waters of the U.S.:*

A. In Port jurisdiction, the Port or Port tenants, as appropriate, shall mitigate for permanent and temporary impacts to U.S. Army Corps of Engineers (USACE) jurisdictional waters at the following ratios: 1:1 for permanent impacts to non-wetland waters of the U.S.; 4:1 for impacts to wetlands; and 1:1 for all temporary impacts. A minimum of 1:1 mitigation must be created in order to achieve the no-net-loss requirement of the Clean Water Act (CWA). Table 4.8-8 of the EIR provides a breakdown of the required mitigation acreages for all USACE impacts within the Port's jurisdiction. Mitigation for impacts from the Bay and Marina components of the Proposed Project will be established through USACE regulations, once final designs for this work in Phases II through IV are finalized. Prior to the commencement of grading activities for any projects that impact USACE jurisdictional waters, the Port or Port tenants, as appropriate, shall prepare and initiate implementation of a restoration plan detailing the measures needed to achieve the necessary mitigation (MMRP 4.8-12).

B. In City jurisdiction, prior to the issuance of the first clearing and grubbing or grading permit for activities that impact USACE jurisdictional waters, the project developer(s) within the City's jurisdiction shall prepare a restoration plan detailing the measures needed to create/restore impacts to USACE jurisdictional waters within the City's jurisdiction in accordance with the acreage identified in EIR Table 4.8-9 (MMRP 4.8-12).

C. The guidelines for this plan (Port or City jurisdiction) will be developed in consultation with the regulatory agencies. The plan shall summarize the approach taken to avoid and minimize impacts to sensitive habitats, detail the target functions and values, and address the approach to restoring those functions and values. Typically, the restoration plan shall detail the site selection process; shall propose site preparation techniques, planting palettes, implementation procedures, and monitoring and maintenance practices; and shall establish performance criteria for each mitigation site. Typical success criteria may include percent canopy cover, percent of plant survival, and percent of native/nonnative c.anopy cover. A minimum five-year maintenance and monitoring period would be implemented following installation to ensure each area is successful. The restoration plan shall address monitoring requirements and specify when annual reports are to be prepared and what they shall entail. Qualitative and quantitative assessments of the site conditions shall be included. If the mitigation standards have not been met in a particular year, contingency measures shall be identified in the annual report and remediation will occur within three months or the start of the growing season (MMRP 4.8-12).

1. The Port shall be responsible for ensuring that all of the success criteria are met to the satisfaction of the Port in consultation with the regulatory agencies (MMRP 4.8-12).
2. The project developer(s) shall be required to implement the restoration plan subject to the oversight and approval of the City (MMRP 4.8-12).

D. Prior to issuance of the first clearing and grubbing or grading permit, for activities that impact USACE jurisdictional waters, the Port or Port tenants, as appropriate, and project developer(s) within the City's jurisdiction shall obtain a Section 404 permit from USACE. The permit application process would also entail approval of the restoration plan from the USACE, as described above with regard to areas that fall under the jurisdiction of USACE (MMRP 4.8-12)

The requirements as noted above in paragraph IV shall be implemented in compliance with the MMRP.

V. *Wetland and Riparian Buffers.* Wherever wetlands are identified, a buffer of at least 100 feet in width from the upland edge of wetlands and at least 50 feet in width from the upland edge of riparian habitat shall be established (CCDP 2.6 and 3.1).

A. Buffers should take into account and adapt for rises in sea level by incorporating wetland migration areas or other sea level rise adaptation strategies as appropriate (CCDP 3.1).

B. The CDFW and USFWS must be consulted in such buffer determinations (CCDP 3.1)

C. In some unusual cases, smaller buffers may be appropriate, when conditions of the site as demonstrated in a site-specific biological survey, the nature of the proposed development, etc. show that a smaller buffer would provide adequate protection. In such cases, the CDFW must be consulted and agree that a reduced buffer is appropriate and the District, or Commission on appeal, must find that the development could not be feasibly constructed without a reduced buffer. In no case shall the buffer be less than 50 feet (CCDP 2.6).

D. In other cases, the required buffer could be greater than 100 feet, especially for salt marsh wetlands, depending on results of the consultation (CCDP 3.1)

The Port will develop maps that depict the location of baseline wetland habitat and 100-foot and 50-foot buffers as discussed in paragraph V above. Prior to Project Approval of site-specific construction documents, the Project Proponent shall conduct surveys in compliance with paragraph III above and delineate any buffer in compliance with paragraph V above.

VI. *Mitigation Ratios to Offset Fill or Development Impacts.* Where wetland fill or development impacts are permitted in wetlands in accordance with the Coastal Act and any applicable PMP policies, mitigation measures shall include creation of wetlands of the same type lost. Adverse impacts will be mitigated at a ratio of 4:1 for all types of wetland, and 3:1 for non-wetland riparian areas. Replacement of wetlands on-site or adjacent to the project site, within the same wetland system, shall be given preference over replacement off-site or within a different system. Areas subjected to temporary wetland impacts shall be restored to the pre-project condition at a 1:1 ratio. Temporary impacts are disturbances that last less than 12 months and do not result in the physical disruption of the ground surface, death of significant vegetation within the development footprint, or negative alterations to wetland hydrology (CCDP 2.5). See also Section 7.0: Moving Forward: Implementation of the NRMP, Monitoring for Adaptive Management, Addressing SLR, and Future Funding.

Prior to Project Approval of site-specific construction documents, the Project Proponent shall ensure that adverse impacts to wetlands shall be mitigated at the appropriate ratio in compliance with paragraph VI above.

VII. *Development Activities Permitted.* The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this Plan, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following: 1) new or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities; 2) maintaining existing, or restoring previously dredged, depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps; 3) in open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities; 4) incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines; 5) mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas; 6) restoration purposes; and 7) nature study, aquaculture, or similar resource dependent activities (CCDP 2.4).

Prior to Project Approval of site-specific projects, the Port/City will conduct preliminary environmental review of alternatives per paragraph VII above.

VIII. *Riparian Habitat or Sensitive Vegetation Communities.* Prior to the commencement of grading for development in each phase that impacts riparian habitat or sensitive vegetation communities within Port jurisdiction, or prior to the issuance of any clearing and grading permits withing the City's jurisdiction that would affect riparian habitat or sensitive vegetation communities (MMRP 4.8-10, 4.8-11):

A. The Port or Port tenants (in Port jurisdiction), as appropriate, shall prepare and initiate implementation of a restoration plan for impacts to riparian habitat and sensitive vegetation communities in accordance with the mitigation requirements presented in EIR Table 4.8-6. Prior to the commencement of Phase I grading that impacts riparian habitat or sensitive vegetation communities, the Port shall coordinate with the wildlife agencies for the preparation and approval of a detailed restoration plan within the Port's jurisdiction. The plan will be prepared by a qualified biologist and approved by the Port. The guidelines for this plan shall be developed in consultation with the regulatory agencies (MMRP 4.8-10).

B. The project developer(s) in City jurisdiction shall acquire mitigation credits or prepare and initiate implementation of a restoration plan for impacts to riparian habitats and sensitive vegetation communities in accordance with the acreages identified in EIR 4.8-7. Mitigation credits shall be secured in a City-approved mitigation bank, or land acquisition shall be provided at an approved location. Verification of mitigation credits or a restoration plan shall be provided to the City for review and approval. Development of a detailed restoration plan shall be done in consultation with the regulatory agencies and implemented to the satisfaction of the City and the regulatory agencies (MMRP 4.8-11).

C. For both City or Port jurisdiction, the plan shall summarize the approach taken to avoid and minimize impacts to sensitive habitats, detail the target functions and values, and address the approach to restoring those functions and values. Typically, the restoration plan shall detail the site selection process; shall propose site preparation techniques, planting palettes, implementation procedures, and monitoring and maintenance practices; and shall establish performance criteria for each mitigation site. Typical success criteria may include percent canopy cover, percent of plant survival, and percent of native/non-native canopy cover. A minimum five-year maintenance and monitoring period shall be implemented following installation to ensure each area is successful. The restoration plan shall address monitoring requirements and specify when annual reports are to be prepared and what they shall entail. Qualitative and quantitative assessments of the site conditions shall be included. If the mitigation standards have not been met in a particular year, contingency measures shall be identified in the annual report and remediation will occur within three months or start of the growing season (MMRP 4.8-10, 4.8-11).

    1. For Port jurisdiction, the Port shall be responsible for ensuring that all success criteria are met to the satisfaction of the Port in consultation with the regulatory agencies (MMRP 4.8-10).

D. Prior to initiating any construction activities in Port jurisdiction or issuance of any clearing and grubbing or grading permits in City jurisdiction that would affect riparian habitat or sensitive vegetation communities, including clearing and grubbing associated with program-level phases, an updated project-level assessment of potential impacts shall be made, based on a specific project design (MMRP 4.8-10, 4.8-11).

1. In Port jurisdiction, the Port or project developer(s), as appropriate, shall retain a qualified, Port-approved biologist, to update appropriate surveys, identify the existing conditions, quantify impacts, and provide adequate mitigation measures to reduce impacts to below a level of significance. This updated assessment shall be submitted to the Port for review and approval (MMRP 4.8-10).
2. In City jurisdiction, the project developer(s) shall retain a City-approved biologist to update appropriate surveys, identify the existing conditions, quantify impacts, and provide adequate mitigation consistent with the City's MSCP Subarea Plan. This updated assessment shall be submitted to the City for review and approval (MMRP 4.8-11).

The requirements as noted above in paragraph VIII shall be implemented in compliance with the MMRP.

IX. *MSCP Species Permit.* Prior to issuance of any clearing and grubbing or grading permits within the jurisdiction of the City, the project applicant within the City's jurisdiction shall be required to obtain a Habitat Loss and Incidental Take (HLIT) permit pursuant to Section 17.35 of the Chula Vista Municipal Code for impacts to Covered Species and Vegetation Communities protected under the City's MSCP Subarea Plan. In addition, the MSCP requires additional protective measures for the western burrowing owl (MMRP 4.1-4, 4.8-2, 4.8-5, 4.8-11).

The requirements as noted above in paragraph IX shall be implemented in compliance with the MMRP.

X. *Wetland Ponds In Otay District.* At the time of adoption of the CVBMP, the seasonal ponds designated "Former Industrial Areas in Process of Remediation" on O-1 and O-4 have been identified as wetland habitat. These areas will be preserved and infrastructure rerouted to preserve the resource. Site-specific studies to assess the extent and quality of natural resources on the site will be required at the time development is proposed (CCDP 2.7).

Prior to Project Approval of site-specific construction documents, the Project Proponent shall conduct surveys in compliance with paragraph X above.

A. The area around the existing wetlands will be considered, if necessary, as a site for mitigation for the loss of wetlands elsewhere or as part of adaptive management. The removal of the rock revetment wall between these wetlands and the J Street Marsh to provide a better wetland/upland transition may also be considered to provide future wetland mitigation or adaptive management.

XI. *Impacts to Environmentally Sensitive Habitat Areas (ESHAs).* Impacts to native habitat that does not constitute ESHA that cannot be avoided through the implementation of siting and design alternatives shall be fully mitigated, with priority given to on-site mitigation. Off-site mitigation measures shall only be approved when it is not feasible to fully mitigate impacts on-site or where off-site mitigation is more protective. Mitigation for impacts to native habitat shall be provided at a 3:1 ratio (CCDP 5.19). If located in or adjacent to ESHA, new development shall include an inventory conducted by a qualified biologist of the plant and animal species present on the project site. If the initial inventory indicates the presence or potential for sensitive species or habitat on the project site, a detailed biological study shall be required. Sensitive species are those listed in any of three categories: federally listed, state listed or designated species of special concern or fully protected species, and California Native Plant Society (CNPS) categories 1B and 2 (CCDP 5.13).

> *Prior to Project Approval of site-specific construction documents, the Project Proponent shall conduct surveys in compliance with paragraph XI above. Surveys shall analyze design alternatives that minimize impacts and determine appropriate locations for required mitigation with a preference for on-site mitigation.*

XII. *Definition of ESHA.* An ESHA means any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem, and which could be easily disturbed or degraded by human activities and developments. The following areas shall be considered ESHA, unless there is compelling site-specific evidence to the contrary (CCDP 5.9):

A. Any habitat area that is rare or especially valuable from a local, regional, or state-wide basis.
B. Areas that contribute to the viability of plant or animal species designated as rare, threatened, or endangered under state or federal law.
C. Areas that contribute to the viability of species designated as Fully Protected or Species of Special Concern under State law or regulations.
D. Areas that contribute to the viability of plant species for which there is compelling evidence of rarity, for example, those designated by the CNPS as "1b" (rare or endangered in California and elsewhere), such as Nuttall's scrub oak or "2" (rare, threatened or endangered in California but more common elsewhere), such as wart-stemmed ceanothus.

ESHA were identified as part of the environmental review process for the CVBMP, and are presented in Map C-1.

> *Prior to Project Approval of site-specific project plans, the Port/City will review and approve studies prepared by the Project Proponent or Port/City environmental consultant per paragraph XII above.*

XIII. *Coastal Sage Scrub on Berm.* At the time of adoption of the CVBMP, the Coastal Sage Scrub on the berm in the S-1 and S-2 parcel areas and the non-native grasslands located in various locations within the CVBMP footprint were not identified as ESHA. Site-specific studies to assess the extent and quality of natural resources on a site will be required at the time development is proposed (CCDP 5.11).

> *Prior to Project Approval of site-specific project plans, the Port/City will review and approve studies prepared by the Project Proponent per paragraph XIII above*

XIV. *Habitat Buffer Areas in Sweetwater District.* Phase I Signature Park improvements (including development of Parcel SP-2, within the Transition Buffer Areas and Limited Use zones of parcel SP-1, and the fencing of the No-Touch Buffer Area of Parcel SP-1) will be completed, prior to the issuance of Certificates of Occupancy for projects developed on either Parcel H-3 or H-23 and after any additional necessary environmental review. The public participation process for the design of the park will be completed prior to District staff seeking Concept Approval from the Board of Port Commissioners (Settlement Agreement 7; CCDP 18.2) (refer to Map 2-1).

Prior to the Certificates of Occupancy for H-3 or H-23, the Port and City shall complete the Phase I Signature Park Improvements per paragraph XIV above. The Port will hold public workshops inclusive of the Bayfront Cultural and Design Committee to review the park concept design.

Objective 2.2-2

Long-term Conservation. Provide long-term conservation and enhancement of habitat acreage and values within the footprint and WHAs.

I. *Wetland Habitat Values Protection.* The NRMP will promote, at a minimum: long term protection, conservation, monitoring, and enhancement of wetland habitat with regard to gross acreage as well as ecosystem structure, function, and value (Settlement Agreement 3.2.1.1; CCDP 1.3(a); MMRP 4.8-7).

This NRMP promotes these goals.

A. Promote ecosystem structure, function, and value that includes connections with appropriate adjacent habitats, including wetland/upland and wetland/bay transitions.

II. *Habitat Enhancement and Priorities.* Include habitat enhancement objectives and priorities (CCDP 1.4). The biological productivity and the quality of wetlands shall be protected and, where feasible, restored (Settlement Agreement 4.4.6.6; CCDP 2.1).

This NRMP includes habitat enhancement objectives and priorities.

III. *Marine Nursery and Bay-estuarine Fishes.* Protect fish nursery productivity and the unique assemblage of bay-estuarine marine species, their abundance and diversity. Target clear and specific functions for marine life in enhancement planning and implementation through the use of conservation planning species as a measure of success. Refer to Section 7.0: Moving Forward: Implementation of the NRMP, Monitoring for Adaptive Management, Addressing SLR, and Future Funding.

Map 2-1. Buffer Areas and the Chula Vista Bayfront Master Plan footprint.

A. This NRMP recognizes the important interconnection between the ocean, bay and estuarine environments. The transfer of nutrients, sediment and freshwater between the marine, bay and estuarine environments is critical for the health of this interlinkage of ocean, bay and estuarine systems, and the dynamics of energy and movement among biotic and abiotic elements of the system. The transfer of energy at the mouth of the bay, or estuarine/riverine system to the ocean holds special characterization creating eddies, currents and shoals augmenting ocean currents and acting as a biological (larval) transport system connecting bays, estuaries and the ocean. These energy systems create a special harmonic that leads to optimal functionality in the near shore. There is an augmentation of the littoral cell transport system for sand and sediment along beaches and the near shore in the coastal zone.

IV. *Habitat Enhancement Objectives.* Establish enhancement objectives for habitat features and complexity that favor native species reproduction, growth and biodiversity. Seek grant funding to enhance habitat size and complexity to support the natural life cycle functions of native upland flora and bay-estuarine dependent fish and wildlife. Attributes to be targeted are appropriately warm, shallow, quiet water with adequate tidal exchange; clean water and sediment; broad intertidal shorelines with gentle slopes connecting to upland refugia to provide protection during high tides, tidal surges, and sea level rise; islands; eelgrass; algae and emergent vegetation; a range of estuarine salinity conditions; fine sediment; and complex secondary microchannels. As a general principle, topographic and vegetation complexity with maximum edge habitat fosters productivity and biodiversity. For example, certain estuarine fish can shelter in secondary channels, invertebrate burrows, or attach eggs to macroalgae or emergent vegetation.

A. To protect the natural resources in the Chula Vista Bayfront one strategy is to look at conservation planning species or species groups that represent habitat conditions that support the south bay's core values (Section 1.3, Appendix C.2.1). The development of specific habitat objectives and priorities for assessing the effects of sea level rise, and planning restoration, and enhancement would consider the life cycle needs of these species. Refer to Section 7.0: Moving Forward: Implementation of the NRMP, Monitoring for Adaptive Management, Addressing SLR, and Future Funding.

B. Establish baselines for marine and tidal habitats area, function, and value. In addition to the standards described above, the NRMP will include establishment of baseline conditions (Settlement Agreement 4.4.6.5; CCDP 1.4).

1. Baseline conditions for the area, function, and value of marine and tidal habitats are defined within the CVBMP footprint, and for adjacent WHAs in this NRMP as of its issue date. Refer to Map 1-1, Map 1-2, and Map 1-6 for a view of these areas. Map 7-1, Map 7-2, Map 7-3, Map 7-4, Table 7-1, and Table 7-2 include depictions and details regarding their habitat acreage extents. For additional project work to describe these baseline conditions, please refer to Objective 2.2-3.I.A. below, and Section 7.0: Moving Forward: Implementation of the NRMP, Monitoring for Adaptive Management, Addressing SLR, and Future Funding.

Goal

Habitat Quality Improvement. *The quality of habitats in the CVBMP footprint and WHAs is protected and enhanced to its highest potential for supporting fish, wildlife, and flora that are indicators of a healthy ecosystem and the focus of conservation.*

Objective 2.2-3

Habitat for NRMP Conservation Planning Species. Establish baseline conditions and targets for habitat that support the NRMP conservation planning species to reflect and provide for their needs as opportunity arises.

I. Consider using conservation planning species to develop enhancement designs and success criteria. Conservation planning species, or species groups, that are dependent on the south bay conditions can add an important level of detail to a program of monitoring successful habitat enhancement or restoration. They help relate physical, chemical, and structural features to specific life history needs in its local use of the bay. The role of particular habitats or environmental factors may go undetected if at least some species are not examined at a fine, life-history scale. For example, the mudflat foraging conditions of tall-legged shorebirds differ from those with short legs. Refer to Section 7.0: Moving Forward: Implementation of the NRMP, Monitoring for Adaptive Management, Addressing SLR, and Future Funding.

   A. Describe baseline conditions cost-efficiently by integrating as shown in maps and tables in Section 7.0: Moving Forward: Implementation of the NRMP, Monitoring for Adaptive Management, Addressing SLR, and Future Funding and in Appendix C: Setting:

      1. Existing bay datasets, especially long-term sets, such as that of the long-term fish surveys (Port-Navy), avian surveys (Port-Navy); bathymetric data; Regional Harbor Monitoring Program, and other Port, Navy, university studies, LIDAR elevation data available from the county, and Audubon Christmas bird counts.
      2. Project-specific data sets.
      3. On an as-need basis, access new datasets as they are developed using broadly accepted and standardized methods of evaluating wetland habitat value, such as the California Rapid Assessment Method (CRAM). It is generally most reliable to monitor abiotic factors that relate to habitat value for the conservation planning species, rather than monitor for status or trends in the species themselves.
      4. Ecosystem service indicators as described in Chapter 7.

II. For upland transitions, the conditions for and presence of upland transition species are improved, where practicable, above pre-CVBMP development levels for:

   A. Flora: salt-tolerant types.

   B. Native pollinators.

   C. Fauna characteristic of upland areas adjacent to the bay shore.

III. For salt marsh, the marsh condition and the presence of salt marsh-dependent species are improved, where practicable, above pre-CVBMP development levels, as evaluated by the CRAM or a similar aquatic assessment method. Examples of conservation planning species could be curlews, or herons and rails as a group.

IV. For intertidal flats, mudflat condition is improved in quality, where practicable, above the pre-CVBMP development functional condition, as evaluated by CRAM, periodic avian and fish surveys, and Regional Harbor Monitoring Program (RHMP) and Southern California Coastal Water Research Project (SCCWRP) routine data and special studies programs (for invertebrates). Other ways to evaluate functional value are:

   A. Residence time of fish and shorebirds in mudflats (relates to usability of intertidal zone for life needs).

   B. Abundance of fish endemics as a group: gobies (arrow, shadow), deepbody anchovy, and slough anchovy (based on periodic baywide fish surveys which includes survey in habitats of the south bay).

   C. Migratory connectivity shorebirds: The consequences of habitat loss from sea level rise is believed to be magnified for shorebird populations, due to bottlenecks along their migratory pathways (Iwamura et al. 2013). Examples to consider as a group are: godwits, western sandpipers, curlew, phalarope, long-billed curlew, red knot (National Shorebird priority), or shorebirds as sub-guilds.

   D. Wetland invertebrates: ghost shrimp/California horned snail burrows, crab burrows, and predatory insects such as the mudflat tiger beetle.

V. *Continue to monitor nursery stock and endemics.* For subtidal marine life, total nursery stock and diversity of species are stable or improved, where practicable, above baseline levels. Consider monitoring the presence and abundance of significant nursery stock for all National Marine Fisheries Service (NMFS) trust resources and of endemic southern California estuarine species, by taking advantage of existing baywide fish surveys conducted periodically by the Port and Navy.

   A. Nursery Stock: Larval silversides, California halibut, yellow-fin croaker, giant kelpfish, spotted sand bass, and barred sand bass as reported in periodic fish surveys.

   B. Eelgrass and estuaries are designated by NMFS as Habitat Areas of Particular Concern (HAPCs), which are a subset of Essential Fish Habitat. under the Pacific Coast Groundfish Fishery Management Plan (FMP).The California scorpionfish is a NMFS trust resource under this FMP. The Pacific sardine is a NMFS trust resource under the Coastal Pelagic Species FMP. Other commercial fisheries supplied by south bay are: bonefish, shortfin corvina, striped mullet, California halibut, kelp bass, and barred sand bass.

   C. Twelve fish species endemic to southern California estuaries, including: deepbody anchovy, slough anchovy, arrow goby, California killifish, bay blenny, cheekspot goby, spotted sand bass, shadow goby, and bay pipefish.

   D. Production of Fish for Avian Foraging: Certain schooling fishes form an important forage base for rare seabirds. These include deepbody anchovy, slough anchovy, northern anchovy, California halfbeak, topsmelt, jacksmelt, and shiner perch. The most abundant in the south bay are slough anchovy, topsmelt, and shiner perch.

   E. Use of subtidal resources by migratory waterfowl and wading shorebirds. Black brant, lesser scaup, and dowitchers as reported in baywide periodic avian surveys.

   F. Presence of green sea turtles.

2.3 Improving Habitat and Community Connections

Goal

Quality of Habitats and Communities in Connected Areas. *The quality of WHAs adjacent to the CVBMP footprint and in other connected areas to the CVBMP footprint is protected and enhanced to its highest potential for supporting fish, wildlife, and flora that are indicators of a healthy ecosystem and the focus of conservation.*

Objective 2.3-1

Resilient Habitats Through Connectivity. Promote resilience to sea level rise, and to other threats, for CVBMP footprint and WHA habitats through protecting, restoring, and enhancing marine, intertidal, salt marsh, and upland transition connections.

I. *Protect and improve habitat connections over time.* Connections to incoming stream habitats, such as riparian, freshwater marsh, and brackish marsh to tidal communities promote functions of native biodiversity and productivity, and other ecosystem services, including assimilative capacity for water runoff and carbon sequestration.

II. *Enhance Connectivity Between the CVBMP footprint and the adjacent Refuge areas and sensitive habitats.* Contour or otherwise prepare the No Touch Buffers to facilitate future potential marsh migration in Sweetwater and Otay Districts. Over time, establish a habitat corridor/connection via redesign for E Street cross-over, allowing for movement of species between the CVBMP footprint and the NWR.

III. *J Street Marsh and Salt Pond Connectivity.* Improve the habitat connection between J Street Marsh and salt ponds, with NWR staff input, as predator control may be a concern. Look into the potential to maximize the amount of intertidal connection between J St. Marsh and salt ponds/intake/discharge channels.

IV. *J Street Channel Enhancement.* Consider the elimination of the bridge over the J Street Channel and the road it leads to, so that the wetlands there can be expanded and connected with the shoreline and the J Street Channel to enhance habitat value. Implement as a project mitigation opportunity.

V. *Fish Connections.* Where possible and effective, provide habitat connectivity for fish and wildlife movement and for migration during the stress of climate change adaptation, such as for species uniquely dependent on access to eelgrass, estuaries, marshes, stream mouths, and soft (not rocky) shores. Connectivity includes some brackish water, and upstream watershed elements.

VI. *Connectivity Indicators.* Consider connectivity for these conservation planning species:

   A. Fish habitat connections: presence of striped mullet, and California halibut

   B. Upland transition host plants and presence of migratory pollinators (periodic vegetation inventory).

   C. Migratory shorebird "stepping stone" functional groups (short-medium legged shorebirds, long-legged shorebirds)

   D. Avian habitat connections to upland.

   E. Recovery of salt marsh connections to intertidal mudflat, and connection of marsh fragments

VII. *Tidal Connectivity by Removing Lagoon Drive and Reconnecting to the F & G St. Marsh.* As a future and separate project, the District will investigate, in consultation with the USFWS, the feasibility of restoring an ecologically meaningful tidal connection between the F & G Street Marsh and the upland marsh on parcel SP-2, consistent with USFWS restoration concepts for the area. At a minimum the investigation will assess the biological value of tidal influence, the presence of hazardous materials, necessary physical improvements to achieve desired results, permitting requirements, and funding opportunities for establishing the tidal connection. This investigation will be completed prior to the initiation of any physical alteration of SP-2, F Street, and/or the F & G Street Marsh. In addition, once emergency access to the CVBMP project area has been adequately established, such that F Street is no longer needed for public right-of-way, the District and City will abandon/vacate the F Street right-of-way for vehicular use, but may reserve it for pedestrian and bicycle use if ecologically appropriate (Settlement Agreement 4.4.5; CCDP 14.5).

The Port will conduct an investigation into the feasibility of restoring the tidal connection between the F&G Street Marsh with the seasonal wetlands.

A. It is important to maintain and enhance where possible connectivity of impacted and degraded wetlands to enhance ecosystem services, including biodiversity, filtration, carbon sequestration etc., due to the habitat fragmentation that has occurred over time.

VIII. A pedestrian bridge is proposed to create a linkage over a tidal inlet associated with the F & G Street Marsh. Tidal habitats should be treated as ESHA and the bridge crossing must be designed to enhance the habitat values present and reduce erosion. This bridge span must be extended and the existing incised channel slope should be cut back, reducing the slope and then creating additional salt marsh habitat on the created floodplain. Site-specific studies to assess the extent and quality of natural resources at the site will be required at the time development is proposed (CCDP 5.12).

Prior to Project Approval, the Port/City will review the site-specific development proposal for compliance with the above.

IX. The Port/City will utilize as appropriate the California Coastal Commission's Sea level Rise Policy Guidance (2015).

Objective 2.3-2

Cooperative Agreements for Neighboring Habitats. Cooperate with entities managing nearby areas, adjacent to and/or influencing habitat conditions of the CVBMP footprint and WHAs to foster a resilient estuarine system, based on conservation indicators.

I. Cooperative Agreements for Habitat Management and Protection. The District will exercise diligent and good faith efforts to enter into the following cooperative agreements with the USFWS or other appropriate agency or organization (Settlement Agreement 4.4.1; CCDP 14.1).

A. An agreement providing for the long-term protection and management of the sensitive biological habitat, running north from the South Bay Boatyard to the Sweetwater River Channel (known as the Sweetwater Tidal Flats), and addressing educational signage, long-term maintenance, and additional protection measures such as increased monitoring and enforcement, shared jurisdiction and enforcement by District personnel with legal authority to enforce applicable rules and regulations ("District Enforcement Personnel"), shared jurisdiction and enforcement by District Enforcement Personnel and other appropriate Resource Agencies of resource regulations, and placement of enforcement signage. Subject to the cooperation of the applicable Resource Agency, such cooperative agreement will be executed prior to the Development Commencement of any projects subject to District's jurisdiction within the Sweetwater or Harbor Districts (Settlement Agreement 4.4.1.1; CCDP 14.1(a)).

B. An agreement for long-term protection and management of the J Street Marsh and addressing additional protective measures such as educational signage, long-term maintenance, and monitoring and enforcement by District Enforcement Personnel and enforcement of resource regulations by District Enforcement Personnel and other Resource Agencies and placement of enforcement signage. Subject to the cooperation of the applicable Resource Agency, such cooperative agreement will be executed prior to the Development Commencement within the Otay District (Settlement Agreement 4.4.1.2; CCDP 14.1(b)).

C. If either of the cooperative agreements contemplated above is not achievable within three years after Final EIR certification, the District will develop and pursue another mechanism that provides long-term, additional protection and natural resources management for these areas (Settlement Agreement 4.4.1.3; CCDP 14.1(c)).

The Port will consult USFWS with the goal of creating a cooperative agreement in accordance with the above requirement.

II. Working with USFWS or other appropriate agency or organization, develop early actions to forestall or minimize the severity of the sea level rise impacts to area resources. Examples could be to fast track the South Bay Power Plant restoration, improving connectivity of the F&G Street marsh to the on-site seasonal marsh, placing structures to retain or build up fine sediment, or many other possible actions (refer Appendix E: Potential Concepts for "Beyond Compliance" Conservation). The Port/City will utilize as appropriate the California Coastal Commission's Sea level Rise Policy Guidance (2015).

Goal

Habitat Quality Enhancement through Improved Watershed Function. *The long-term quantity and quality of marine and wetland habitats are enhanced through improvement in the natural watershed functions supporting them.*

Objective 2.3-3

Re-establish and Improve Watershed Connections. Design and maintain connections between the project area and the watershed to provide water filtering and other functions that benefit fish and wildlife.

This objective is addressed in Section 3.2.

2.4 Sea Level Rise and Buffer Areas

Goal

To Promote the Goal of No Net Loss of Habitat Value Due to Climate Change. *Assure no net loss of marine, wetland, and upland transition function and values, due to sea level rise and other effects of climate change, within the CVBMP footprint and WHAs.*

Objective 2.4-1

No Net Loss Due to Climate Change. Assure that the acreage, quality, function, and variety of habitats used by coastal shore, estuarine-, and eelgrass-dependent fish and wildlife within the WHA consistent with NRMP Controlling Documents, continue into the future with no net loss due to climate change.

I. *Managed Retreat.* Facilitate retreat as sea level rises in the Sweetwater and Otay Districts in a manner that will promote wetland and shoreline functions and values.

   A. Bayfront plans should accommodate habitat for marsh to migrate both vertically and horizontally. Horizontal migration may be constrained by hardened infrastructure, hence vertical migration will be critical to maintain the optimal structure and function of the ecosystem.

   B. Identify specific areas where habitat migration could occur within the Chula Vista Bayfront.

II. *Upland Transitions to Support Sea Level Rise Adaptation.* Upland areas in the Sweetwater and Otay Districts will be adaptively managed to provide additional habitat or protection to create appropriate transitional habitat, during periods of high tide, and taking into account future sea level rise (Settlement Agreement 3.2.1.3; CCDP 1.3(a), 1.3(b), 3.3).

> *Pursuant to this NRMP, the buffer areas will be adaptively managed per paragraph II above.*

III. Consider adding appropriate type of soil or sediment to elevate wetlands and mudflats, when needed to preserve area, functions, and values in spite of sea level rise.

IV. The Port/City will utilize as appropriate the California Coastal Commission's Sea Level Rise Policy Guidance (2015).

Goal

Multi-purpose Protective Buffer Areas. *Plan and manage the Buffer Areas and transition zones to maximize the protection of natural resources, allowing for habitat migration due to sea level rise and opportunities for human connection with nature.*

Objective 2.4-2

Habitat Migration. Design and manage the No-Touch, Limited Use, and Transitional Use Buffer Areas to accommodate habitat migration, due to sea level rise, as described in CCDP 3.1.

I. *Comply with CCDP obligations related to Sea Level Rise Buffer Areas.* Uses and development within buffer areas shall be limited to minor passive recreational uses, with fencing, desiltation or erosion control facilities, or other improvements deemed necessary to protect the habitat, to be located in the upper (upland) half of the buffer area; however, water quality features required to support new development shall not be constructed in wetland buffers. All wetlands and buffers identified and resulting from development and use approval shall be permanently conserved or protected through the application of an open space easement or other suitable device. All development activities, such as grading, buildings and other improvements in, adjacent to, or draining directly to a wetland must be located and built so they do not contribute to increased sediment loading of the wetland, disturbance of its habitat values, or impairment of its functional capacity (CCDP 3.1).

Prior to Project Approval of site-specific development proposals, the Port/City shall comply with paragraph I above.

A. In light of habitat migration due to sea level rise, review Buffer Areas, as necessary, so as to maintain a buffer between areas of human activity and sensitive fish and wildlife habitat, as practicable in light of existing and planned development. Consider sufficient buffering of sensitive habitat to protect its value for fish and wildlife, and to accommodate expected inundation and flooding from sea level rise. Refer also to Appendix D: Sea Level Rise, Climate Change, and Carbon Sequestration Assumptions.

B. Evaluate sea level rise progression. Compare actual rise with predicted levels to determine if early actions may be appropriate to forestall detrimental impacts of sea level rise.

C. Alter the design, as necessary, of the Buffer Areas as sea level rises.

D. As needed, provide for flexibility in Buffer Areas configuration based on sea level rise modeling using updated guidelines (local, state, federal) or peer-reviewed projections.

E. Identify and evaluate any other areas inland of the Buffer Areas that may be suitable and could be planned to accommodate habitat migration.

II. *City of Chula Vista Compliance for Sea Level Rise and Storm Drains.* Comply with City of Chula Vista requirements (for property within the City) regarding development within tidally influenced bayshore. Prior to Tentative Map Approval, or grading plan approval, ensure that: 1) the storm drain system for the project is designed to maintain at least one dry driving lane in each direction, during a 50 -year design storm that occurs at the highest high tide with a projected 1.5 feet of sea level rise; and 2) the storm drain system for the project is designed to prevent any property damage with a 100-year storm, occurring at the highest high tide with a projected 1.5 feet of sea level rise. This requirement will have a major impact on the sizing of the water treatment basins between the roads and the habitat areas. If this requires a basin area that is either impractical or too costly, consideration should be given to relaxing this requirement for specific locations. Implementing the City's requirement should not be done at the expense of water quality or erosion damage in the habitat areas.

A. In concert with this, the Port/City will utilize as appropriate the California Coastal Commission's Sea Level Rise Policy Guidance (2015).

III. Protect and maximize ecosystem functions of habitats and species, where practicable, to provide sustainable cultural, subsistence, recreational, and commercial benefits in a changing climate.

A. *Maintain Ecosystem Function Through Habitat Features.* Enhance habitat features, where necessary and practicable, to maintain ecosystem function and resiliency to climate change. Restore habitat quality elements that improve each area's ecosystem function and capacity to adapt to sea level rise, as project opportunities come up.

B. Use the life needs of conservation planning species groups to develop specific management approaches, such as elevations in relation to the tide, to address critical climate change impacts, where necessary and practicable.

Objective 2.4-3

Ensure Buffer Areas Add Habitat Value and Other Ecosystem Services. Design designated Buffer Areas to contain variable topography, complex edges and species composition so that they will, in the near term, function as intertidal and natural upland transition habitat, while adequately protecting adjacent sensitive resources from sea level rise.

I. Design Buffer Areas with appropriate vegetation structure to support intertidal wetland-dependent, native species that need upland refugia, and as transition zones to landscaped areas and for sea level rise.

II. Consider grading and contouring Buffer Areas to allow for future cordgrass establishment as sea level rise occurs.

III. Habitats in Buffer Areas should function as refugia by managing interaction with human activity. Provide upland transition and high tide refugia with vegetation cover, where practicable.

IV. Plant palettes used for the Buffer Areas should be restricted to native plants of the lower, middle and upper salt marsh and the marsh/upland transition of coastal southern San Diego County. To the maximum extent practicable, plant selection and placement should be pollinator-friendly for bats, birds, and insects and include larval host plants. Manage the Buffer Areas to support special status-flora species (refer to Appendix F: Comprehensive Plant List).

V. Develop an invasive plant management plan for the Buffer Areas, distinct from the invasive plant management plan for the built environment. The former would have a higher level of restrictions, due to the presence of sensitive habitat.

A. A prohibited-plant list should be included for each specific area. No areas should include invasive species as identified by the California Invasive Plant Council (Cal-IPC 2006).

B. Develop a volunteer program for hand-weeding, within the Buffer Areas.

C. Provide specific criteria for the use of herbicides, consistent with the requirement to use Integrated Pest Management (IPM).

VI. Avoid creating *sinks*, where practicable, through habitat creation or zoning of human activity. For example, drawing in sensitive wildlife to isolated habitat fragments without enough connectivity may increase their isolation and make them vulnerable to predators.

VII. Prevent unnaturally abundant raptor predation on special status species of the salt marsh by restricting line-of-sight perches in the Buffer Areas (refer to Section 4.0: A Wildlife Friendly Urban-Wildland Interface).

Objective 2.4-4 *Habitat Connectivity.* Plan for the greatest degree of habitat connectivity throughout the Buffer Areas and into the parks and open space areas so that they are wildlife-friendly.

I. Work with planners and designers to identify opportunities as they arise for benefiting fish and wildlife through improved connections among buffer, open space, and park areas.

Objective 2.4-5 *Buffer Area Use.* Ensure the primary purpose of the Buffer Areas is habitat, and the secondary purpose is to support ecological services/recreation/education.

I. The Signature park designer will consider use of shorter spur trails (as opposed to loop trails) within the Buffer Areas and integrate with the main trail in Signature Park. Limit trails in the Buffer Areas, minimizing impacts to wildlife, while facilitating wildlife viewing.

2.5 Effective Restoration to Meet NRMP Goals and Objectives for Climate Change Resilience and Habitat Value

Goal

Restoration for Resilience. *Promote effective restoration to meet NRMP goals for climate change resilience and habitat value.*

Objective 2.5-1 *Resilient Habitats Providing Ecosystem Services.* Optimize ecosystem services provided by habitats and the resilience of these services to climate change.

I. To the extent feasible, implement practices to reduce and/or sequester emission of carbon dioxide and other climate change gases in the CVBMP footprint and adjacent WHAs. Consider carbon sequestration value of habitats, such as salt marsh, when planning and funding habitat work. Carbon sequestration occurs at a very high level in salt marsh soils, and somewhat less in mudflats and in upland vegetation. This should be part of the equation when considering habitat goals and optimizing mitigation strategy (refer to Appendix D: Sea Level Rise, Climate Change, and Carbon Sequestration Assumptions).

II. Optimize opportunities to implement the Port and City Climate Action Plans.

III. Require that public access is sited, designed, and managed to avoid potential for significant adverse impacts from sea level rise and shoreline flooding, or is designated to withstand intermittent flooding.

IV. Improve resilience of existing habitats by protecting, restoring, and enhancing marine, intertidal, salt marsh, and upland transition elements that promote functions of native biodiversity and productivity, and other ecosystem services, including assimilative capacity for water runoff and carbon sequestration whenever possible.

A. As project opportunities arise, restore habitat quality elements that improve each area's ecosystem function and capacity to adapt to sea level rise. Enhance habitat size and complexity to support the natural life cycle functions of native flora and bay-estuarine fish and wildlife. Attributes to be targeted are warm, shallow, quiet water with adequate tidal exchange; clean water and sediment; broad and connected intertidal shorelines with gentle slopes; eelgrass; emergent vegetation; a range of estuarine salinity conditions; fine sediments; secondary microchannels, and upland refugia during tidal surges. Topographic and vegetation complexity foster productivity and biodiversity. For example, certain estuarine fish can shelter in secondary channels, invertebrate burrows, or attach eggs to macroalgae or emergent vegetation.

B. In partnership with other jurisdictions, look to provide habitat connectivity for fish and wildlife movement and for migration during the stress of climate change adaptation, such as for species uniquely dependent on access to eelgrass, estuaries, marshes, stream mouths, and soft (not rocky) shores. Connectivity includes some brackish water, and upstream watershed elements.

V. Create Transitional Gradients.

A. When site preparation is done in the Sweetwater and Otay Districts, re-contour the slope to prepare for sea level rise in the Buffer Areas.

B. Re-contour the slope of the shore along Sweetwater and Otay Districts, where practicable, to allow for high tide transitional habitat for improved wildlife value as sea level rise occurs.

C. Transitional native habitats may include cordgrass, estuary seablite *(Suaeda esteroa),* maritime succulent scrub/boxthorn, coastal sage scrub, beach and beach wrack, moist grassland, grassland/ephemeral wetland complex, or inland dunes.

D. Consider providing appropriate vegetation structure to support fauna that are conservation planning species.

Objective 2.5-2

Make the Most of Built Shorelines and In-water Structures. Maximize habitat quality of necessary built shore structures while allowing public access and optimizing other ecosystem services.

I. Promote soft infrastructure.

A. Soften and Connect Shorelines. Provide soft-sediment and connected shorelines wherever possible and avoid the use of armoring that is not natural to the bay, has relatively low habitat value for bay-estuarine dependent species, and can harbor invasive species.

B. Evaluate the use of bio-engineered materials as an alternative to riprap in the Harbor District.

C. Review designs for integrating soft shoreline protection into hard shoreline protection structures, whenever feasible. Where armoring is demonstrably needed, integrate hard and soft stream channel or wave/tidal energy solutions, such as living banks or living levees.

D. Evaluate subtidal levees as a locally meaningful management strategy.

E. The Port/City will seek grant funding to promote the use of soft infrastructure.

Objective 2.5-3

Ensure Built Structures Promote Water Quality and Habitat. For structures interfacing marine waters, apply design, engineering, and construction practices to maintain or restore physical conditions that promote native fish and wildlife, such as appropriate tidal circulation, light, substrate conditions, or sediment replenishment.

I. Where they are necessary or beneficial, design artificial structures in the intertidal and subtidal zone for improved habitat value for native organisms and other ecosystem services. Use construction designs that provide habitat function and contribute to conservation, including adapting to climate change.

   A. Design principles may include surface roughening, sinuosity, particle or feature size, tidal exposure, hardness, etc.

II. Maintain natural physical processes (such as tidal circulation), and, when feasible, implement engineering practices that promote restoration of these processes.

   A. Evaluate restoration of the South Bay Power Plant channels and determine the best manner to address the long connector levee that divides the water there.

Objective 2.5-4

Sediment Replenishment. Restore the functions of episodic flood and sediment replenishment supporting the bay-estuarine ecosystem, while achieving water quality improvement objectives.

I. Naturalize and invigorate Telegraph Creek and J Street Channel through processes such as sediment supply and episodic flood, consistent with functions as stormwater conveyance, which can benefit the estuarine ecosystem.

II. Consider creating a sediment management plan for restoring sediment functions for estuarine habitats.

   A. Excess dredge material from within the project area shall be tested for beach compatibility and placed on local beaches if suitable (CCDP 25.1).

> *Prior to Project Approval of site-specific development proposals, the Project Proponent will analyze if the dredge material is suitable for beach replenishment. If suitable, dredge material shall be offered for beach replenishment provided there is a not material impact to the project.*

   B. A process for beneficial re-use of dredge material as a source for benefiting marine habitat restoration and enhancement of marine life could include, but would not be limited to the following:

      1. Identify areas where natural sediment delivery could be enhanced or improved for habitat benefit.
      2. Identify areas that may require active placement of sediment to increase resiliency to sea level rise.
      3. Determine appropriate timing of sediment placement, using location-appropriate methods and monitoring.

III. Evaluate sediment placement options for sea level rise adaptation. As sea level rise continues over time, the water depth in the area undergoing sea level rise will increase. The reduction in sediment supply to San Diego Bay that has occurred historically and is expected to continue in the future will make it difficult for ground elevations to increase via sedimentation. Sediment could be added to the CVBMP WHAs if sediment augmentation is the strategy that all managers and resources agencies agree to counter the inundation effects of sea level rise.

A. Identify suitable sediment sources that could be used in the future to increase ground elevations in areas that are being inundated by sea level rise. For example, coastal salt marsh habitat would require the identification of marsh muds or terrestrial sediment conducive for production of marsh mud (e.g., clays and silts). In addition, the sediment would have to be free of contamination that might harm the ecological receptors that would use the habitat. Potential sources of suitable sediment would include sediment dredged from within, along, and adjacent to San Diego Bay as well as sediment from the watersheds that empty into San Diego Bay.

B. Two possible methods to introduce sediment to the system include: 1) Reduce, eliminate, or apply hydromodifications in the streams and creeks that empty into San Diego Bay, especially those closest to the locations most vulnerable to habitat transition associated with sea level rise. This method could provide a more natural approach to addressing the sea level rise impact; however, the volume, timing, and placement of sediment available utilizing this method might not match the needs of the particular locations. 2) Use equipment to place sediment directly in those areas in need of sediment. There must be an even transition gradient maintained between eelgrass beds and mudflat/estuarine plain, hence sediment placement will have to be implemented to mimic natural process through bioengineering and research. This will enhance both vertical and horizontal marsh migration as sea level rises maintaining ecological stability.

Objective 2.5-5

Restoration Priorities. Establish restoration priorities to ensure the protection of south bay-dependent ecosystems.

I. Use conservation planning species groups (see Section 2.2: Mitigation Compliance and Improving Habitat Quality in the CVBMP Footprint and WHAs), to consider specific habitat objectives and priorities for mitigation, restoration, and enhancement.

II. *Integrate hard and soft solutions.* Where feasible, the integrity of all systems from the eelgrass bed, mudflat, tidal creek, marsh plain and transition zone should be maintained by incremental sediment deposition in conjunction with using habitat as a buffer for sea level rise.

III. For streams, consider controlling the velocity of water coming into the system by using living systems that can accommodate flooding in the corridor, in cooperation with hydrologic engineers.

IV. *Marine Habitat Restoration at the Power Plant.* The District will include an analysis of the appropriate level and method for wetland and marine life habitat restoration of the intake/discharge channels associated with the South Bay Power Plant in the environmental review document for the demolition of the South Bay Power Plant that includes below grade or in water structures (Settlement Agreement 4.4.2; CCDP 14.2).

> *The requirement as noted above in paragraph IV shall be implemented in compliance with the Settlement Agreement and CCDP.*

Objective 2.5-6 *Multiple Benefits to Core Resource Values.* Promote restoration that benefits multiple indicators of ecosystem health rather than a single or narrow set of benefits, and that benefits the south bay's core resource value as a fish and avian nursery, migratory rest stop, and home for rare and endemic fish, wildlife, and plants.

I. The following are (preliminary) indicators of successful habitat restoration (see also Section 7 and Appendix C: Setting). Indicators should be adapted based on research and best science.

   A. Acres of habitat restored to level of quality above pre-existing functional quality, based on CRAM, Hydrogeomorphic Assessment Method, or other method. For example, enhanced complex creek networks in intertidal areas, because this maximizes the interface between marsh and water.

   B. Recovery of tidal flats, for which loss has been even greater than that for tidal marsh in southern California and San Diego Bay (Macdonald et al. 1990; Port and U.S. Navy 2013) (see Appendix C: Setting).

   C. Presence and abundance of diverse functional groups of wetland-dependent fish, wildlife, and plants.

   D. Presence and abundance of functional groups of upland transition-dependent wildlife and plants.

   E. Fine-textured, clean sediment source identified for restoration work.

Figure 2-1. Rendering of a design concept for a boardwalk.

Figure 2-2. Rendering of a design concept for the No-Touch Buffer Area.

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3.0 Minimizing Harm to Neighboring Wetlands and Marine Waters

Vision for the Future

The watershed promotes assimilation and purification of water to adjacent wetlands. The water and sediment that flows from or through the CVBMP footprint into adjacent wetlands contributes to healthy aquatic recreation, thriving wetland and marine habitats, and healthy, consumable fish and invertebrates in the Chula Vista Bayfront area. Preventing introduction and expansion of invasive aquatic species is promoted to contribute to aquatic habitat health.

3.1 Key Messages

Protecting water quality in the CVBMP area will minimize harm to wetlands and marine waters and sustain human and wildlife health. The CVBMP project is a component of the Sweetwater River and Otay River watersheds (refer to Map 1-6), which drain into San Diego Bay (Project Clean Water 2013; San Diego Coastkeeper 2013). The Chula Vista Bayfront area strategies for protecting water and sediment quality are an important element of watershed management. In this context, they are guided by localized challenges as well as larger watershed management objectives, such as the San Diego Bay Water Quality Improvement Plan (WQIP).

The landscape, within the boundaries of each watershed, is hydrologically connected because it drains (surface and subsurface) all water it receives to a common outlet, such as the San Diego Bay (ORWMP 2006).

The approach employed here emphasizes compliance with regulations, reducing or preventing potential impacts through the use of best management practices (BMPs), monitoring, coordination and enforcement to protect and restore water and sediment quality as a component of effective watershed management.

> Watershed management planning offers a comprehensive approach to the protection, enhancement, and restoration, as well as the uses of surface and groundwater (quality and quantity), floodplains, and estuaries within a logical landscape unit (ORWMP 2006).

The CCDP call for maintenance and improvement of water quality where possible and coordination with other entities charged with watershed protection activities (CCDP 1.3(f)).

Prevention of impacts is the preferred approach to maintain the health of wetland and marine habitats. As part of this, a range of BMPs are recommended, particularly to manage stormwater runoff effectively. When prevention is not possible, minimization and treatment are second lines of defense. A number of structural and non-structural BMPs included in this plan span the range of prevention, minimization and treatment approaches that are applicable to both construction and post-construction phases:

- Structural BMPs are a subset of BMPs which detains, retains, filters, removes, or prevents the release of pollutants to surface water (MS4 Permit 2013).
- "Non-structural BMPs are activities, programs and other non-physical measures that contribute to the reduction of pollutants from diffuse sources to the drainage system" (ORWMP 2006).

Decentralized and site-based applications of these strategies helps to manage both quantity and quality of runoff. Managing stormwater appropriately can provide benefits by reducing pollution, restoring natural hydrologic function, providing habitat and contributing to a healthier environment.

As a component of the proposed watershed approach, identifying and addressing existing and emerging threats will be important to sustaining thriving aquatic habitats. Moreover, monitoring that contributes to adaptive management and is consistent with regional approaches helps to derive greater interpretive power, which supports compliance obligations. In addition, to help address sea level rise impacts, the Port/City will utilize as appropriate the California Coastal Commission's Sea Level Rise Guidance document.

This Chapter is organized as follows:

3.2 Watershed Approach

Goal

Employ a Watershed Approach. *Activities in the CVBMP area employ a watershed approach to maintain and improve clean water and sediment for marine life, human health and compliance with relevant regulations.*

Objective 3.2-1

Compliance. Minimize impacts to water quality within the CVBMP footprint and WHAs, San Diego Bay, adjacent habitats or watershed areas by complying with and enforcing water quality requirements in the CVBMP project area. Protect the quality of coastal waters by promoting both the protection of water quality that meets state standards, and the restoration of waters that do not meet state standards (CCDP 13.2).

For new development:

I. Comply with the RWQCB Order No. R9-2007-0001, National Pollutant Discharge Elimination System (NPDES) Permit No. CAS0108758, Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems Draining the Watersheds of the County of San Diego, the Incorporated Cities of San Diego County, and the San Diego Unified Port District (Municipal Permit) as adopted, amended, and/or modified or replaced by the RWQCB with a new Municipal Permit. The Municipal Permit prohibits any activities that could degrade stormwater quality (CCDP 13.2(a)).

A. The most current permits include: RWQCB Order No. R9-2013-0001 and NPDES Permit No. CAS0109266 (June 2013)

Prior to Project Approval for site-specific development proposals, the City/Port will approve a Storm Water Quality Management Plan (SWQMP) prepared by the Project Proponent in accordance with the BMP Design Manual. The City/Port will ensure that the Project Proponent provides sufficient documentation to demonstrate that applicable requirements of the BMP Design Manual and the current Municipal Permit will be met.

II. Comply with the District Jurisdictional Urban Runoff Management Program (JURMP) Document and the District Standard Urban Stormwater Mitigation Plan, which provides BMP requirements for new development and redevelopment (CCDP 13.2(b)).

As required by the current Municipal Permit, the BMP Design Manual is an appendix of the updated 2015 Jurisdictional Runoff Management Plan and Standard Urban Stormwater Mitigation Plan. This Manual provides guidelines for compliance with post-construction storm water requirements in the current Municipal Permit. The Port developed the BMP Design Manual to implement the requirements of the Municipal Permit.

A. General operations and housekeeping, non-stormwater management, waste handling and removal, and employee training are among the BMPs designated by the BMP Design Manual to address potential pollutants associated with major municipal events.

III. Comply with all relevant mitigation measures in the MMRP for the CVBMP project, including guidance stipulating actions and approvals required prior to issuance of permits for grading, dredge or fill (MMRP 4.5-2, 4.5-3, 4.5-4).

The requirements as noted above in paragraph III related to dewatering, spill prevention/contingency planning, and dredging shall be implemented in compliance with the MMRP.

IV. Adhere to all applicable Clean Water Act and Porter-Cologne requirements.

V. Implement the Port's WQIP (2015).

Objective 3.2-2

Prevention. Avoid actions in the CVBMP footprint that result in urban runoff and pollution of stormwater that would adversely impact or degrade water quality in San Diego Bay or watershed areas, or impair efforts of other entities for protection of the watershed (Settlement Agreement 3.2.4; CCDP 1.3(e)). Include source-control BMPs, where feasible, in all developments (CCDP 13.2).

Source control BMPs are activities, practices, and procedures (primarily non-structural) designed to prevent urban runoff pollution. These measures either reduce the amount of runoff from the site or prevent contact between potential pollutants and stormwater. Source-control BMPs are often the best method to address non-storm (dry-weather) flows (ORWMP 2006). Examples can be found in the most recent BMP Design Manual.

I. Educate residents, visitors and recreational users about ways to reduce water-quality pollution. The District shall encourage and support public outreach and education regarding the water quality impacts of development (CCDP 9 and 13.2).

An Environmental Education Program is further outlined in Chapter 6.

A. Include messaging about water quality and pest control (relative to trash management) in appropriate locations. Facilitate recycling.

B. Facilitate collection of pet waste by pet owners by providing adequate waste collection and disposal stations, with messaging to educate about the problem.

C. Stencil storm drains with images or short phrases to discourage nearby dumping of trash or other waste that could reach the Bay through the storm drain system. Encourage reporting of illegal dumping of any substance (liquids, trash, etc.). Emphasize the County Household Toxics Program for disposal of household toxics (ORWMP 2006).

D. Enforce parking restrictions for street sweeping (ORWMP 2006).

E. Per the RWQCB Order No. R9-2013-0001, if individual residential vehicle washing occurs, wash water discharge should be directed to landscaped areas or other pervious surfaces, and other practices encouraged to prevent associated pollutants from entering the storm drain system. In addition, such discharges must be controlled through statute, ordinance, permit, contract, order, or similar means (RWQCB Order No. R9-2013-0001, E.2.a.(4)(b)).

F. Encourage residents, businesses and maintenance personnel to sweep sidewalks and to comply with existing regulations for washing impervious surfaces.

SDRWQCB Basin Plan, Water Quality Objectives for Toxicity: All waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life. Compliance with this objective will be determined by use of indicator organisms, analyses of species diversity, population density, growth anomalies, bioassays of appropriate duration, or other appropriate methods as specified by the Regional Board (Sect. 3, pg. 31).

See also the California Toxics Rule [40 Code of Federal Regulations 131.38] promulgated by the U.S. Environmental Protection Agency on May 18, 2000 and the National Toxics Rule [40 Code of Federal Regulations 131.36].

II. Train landscape maintenance staff to use integrated pest management to minimize the introduction of pesticides, fertilizers, or other harmful materials used in landscape practices into coastal waters.

A. Promote water conservation practices to prevent overwatering and runoff from areas with maintained landscapes.

B. Keep lawn clippings and other landscaping waste out of gutters and streets within the CVBMP footprint (ORWMP 2006; refer to Section 4.7: Trash Management).

C. Green waste compost station to be considered for future adaptive management.

SDRWQCB Basin Plan, Water Quality Objectives for Pesticides: No individual pesticide or combination of pesticides shall be present in the water column, sediments or biota at concentration(s) that adversely affect beneficial uses. Pesticides shall not be present at levels which will bioaccumulate in aquatic organisms to levels which are harmful to human health, wildlife or aquatic organisms (Sect. 3, pg. 29).

D. The use of insecticides, herbicides, rodenticides or any toxic chemical substance that drains into WHAs or which has the potential to significantly degrade ESHAs shall be prohibited within and adjacent to ESHAs, except where necessary to protect or enhance the habitat itself, such as eradication of invasive plant species, or habitat restoration. Application of such chemical substances shall not take place during the winter season or when rain is predicted within a week of application (Settlement Agreement 4.6.3; CCDP 13.5).

(See Section 5.0: Maximum Ecosystem Services in the Built Environment and Open Space).

E. Integrated Pest Management (IPM) must be used in all outdoor, public, buffer, habitat, and park areas (Settlement Agreement 4.6.3; CCDP 13.6).

Leases, contracts, and Covenants, Conditions & Restrictions (CC&Rs) will require compliance with Board of Port Commissioners' and City policies and regulations, which include IPM.

1. The Port's IPM Program is based on regular staff training; selected use of California-friendly plant species; proper irrigation scheduling; appropriately scheduled fertilizer applications; minimal use of pesticides and herbicides; proper storage and disposal of pesticides, herbicides, and fertilizer; elimination of toxicity Category I and pesticides containing a carcinogen; elimination of toxicity Category II pesticides; identification of pests that are considered potential public health problems an the least toxic method of eliminating or controlling them; and monitoring of pest population levels to determine treatment procedures. The Port's management of pesticides, herbicides and fertilizers also includes: use of drought-tolerant native plants; use of licensed Pest Control Advisor; and use of smart irrigation systems. See also Section 5.6: Landscape Maintenance.

2. Per RWQCB Order No. R9-2013-0001, BMPs must be implemented to reduce pollutants in stormwater discharges and effectively prohibit non-storm water discharges associated with the application, storage, and disposal of pesticides, herbicides and fertilizers from both commercial areas and residential facilities, including educational activities, permits, certifications and other measures for applicators and distributors (E.5.b.(1)(d) and E.5.b.(2)(d)). The public education program component for the above is discussed in E.7.a.(1) through (3) of RWQCB Order No. R9-2013-0001.

III. Seek to coordinate among jurisdictions and education partners for effective and unified outreach and messaging to target audiences.

Objective 3.2-3

Marina and Boating Impacts. Minimize impacts to water and sediment quality from increased marina and boating activities associated with the CVBMP project.

I. Educate marina users on practices that prevent pollution.

II. Promote and facilitate the use of BMPs to prevent water quality degradation.

A. An on-site pump out facility shall be required with the development of any new marinas (CCDP 13.3).

B. Boating in the project area will be managed in a manner that protects water quality and that ensures persons or employees maintaining boats in slips or using slips on a transient basis are made aware of water quality provisions (CCDP 10.6).

1. Approval of projects within CVBMP marinas shall include appropriate requirements from the District JURMP that includes appropriate BMPs for controlling adverse impacts to water quality related to the boating facilities, including those BMPs for activities occurring over water (CCDP 10.6(a)).
2. Approval of projects within the CVBMP marinas shall include a requirement for boating facilities to identify procedures for inspection of boater activities and sanctions for boaters that may be adversely impacting water quality (CCDP 10.6(b)).
3. Marinas in the CVBMP project area shall provide evidence of ongoing efforts to protect water quality, such as a current certification by the Clean Marinas program (cleanmarina.org), stormwater BMP Plan, or other equivalent documentation of clean marina practices (http://www.cleanmarina.org/cleanmanual.shtml) (CCDP 10.6(c)).
4. San Diego Bay is a federally designated No Discharge Zone. The District shall ensure that District-leased facilities are adequately informing their boater tenants of their responsibilities regarding the discharge of sewage and are providing information to boaters on ways to anonymously report violators (CCDP 10.6(d)).

A state or local peace officer who reasonably suspects that a vessel is discharging sewage in an area where the discharge is prohibited may board the vessel, if the owner or operator is aboard, for the purpose of inspecting the Marine Sanitation Device for proper operation and placing a dye tablet in the holding tank (California Harbors and Navigation Code, Section 782d; CCC 2013; California Clean Boating Network 2012).

Both boat basins within the Chula Vista Port Master Plan shall have a minimum of one pump out facility. Prior to project approval, Project Proponent shall ensure evidence of compliance with the MS4 Municipal Permit. Marinas are required to comply with Port policies and procedures.

a. Consider the use of dye tablets in boat waste holding tanks. If a boat illegally discharges any of its holding tanks, the dye is immediately visible in the surrounding water.

5. The District shall adopt an addendum to leasing agreements for boating facilities that specifies actions that should be taken to protect water quality. This addendum should reflect applicable water quality laws and regulations pertaining to San Diego Bay (CCDP 10.6(e)).

Port leasing agreements for boating facilities require compliance with State and Federal regulations and Port policies.

C. Comply with the Port's In-Water Hull Cleaning regulations (Port 2013b).

D. Encourage boaters to convert copper hull paints to alternative hull paints. A study conducted by the Port concluded that alternative hull paints are environmentally friendly, work well and can save money over the long term as they last longer than copper hull paints. The Port provides recommendations for a number of alternative hull paints, based on this research and boat type and use (Port 2013a).

Objective 3.2-4 *Deposition of Air Pollutants.* Minimize aerial deposition of pollutants within the CVBMP watershed and marine waters that comes from sources such as car exhaust, boat exhaust and fireworks.

I. A maximum of three fireworks events can be held, outside of California least tern nesting season (March 15 through August 31) except 4th of July, which may be allowed if in full regulatory compliance and if nesting colonies are monitored during the event with any impacts reported to the Wildlife Advisory Committee, so they can be addressed. All shows must comply with all applicable water quality and species protection regulations. All shows must be consistent with policies, goals, and objectives in the NRMP (Settlement Agreement 4.9.2; MMRP 4.8-6).

City/Port will review all permit applications for fireworks displays in the Chula Vista Bayfront relative to the requirement in paragraph I.

II. Encourage visitors to the CVBMP area to walk, bike, carpool or use public transportation to reach the area. See Section 5.0: Maximum Ecosystem Services in the Built Environment and Open Space.

Objective 3.2-5 *Watershed-Level Coordination.* Participate in alliances and partnerships with others and align programs and resources to more efficiently achieve the water quality standards in the Sweetwater and Otay District watersheds. The NRMP will promote, at a minimum, the maintenance and improvement of water quality where possible, and coordination with other entities charged with watershed protection activities (Settlement Agreement 3.2.5; CCDP 1.3(f)).

Objective 3.2-6 *BMP Monitoring.* Monitor effectiveness of BMPs to adjust or update as needed. Inspections and routine maintenance should be scheduled prior to and following storms and storm seasons (ORWMP 2006).

Construction BMPs: Prior to Project Approval of site-specific development proposals, the Port/City will approve a Storm Water Pollution Prevention Plan (SWPPP), if applicable, prepared by the Project Proponent to ensure compliance with the current General Construction Storm Water Permit. The review process will verify that the SWPPP includes requirements for inspection and evaluation of BMPs at least weekly and before, during, and after a rain event.

Post-construction BMPs: Prior to Project Approval for site-specific development proposals, the City/Port will approve a SWQMP prepared by the Project Proponent in accordance with the BMP Design Manual. The review process will verify the responsibility for on-going inspection and maintenance of structural BMPs.

Objective 3.2-7 *Enforcement.* Water-quality and runoff regulations are enforced.

3.3 Innovative and Best Practice Site Design and Management

Goal

Promote Best Practices. *Innovative and best practice site design and management minimize soil erosion and impacts to water and sediment quality.*

Objective 3.3-1 *Site Design and Best Management Practice for Stormwater and Erosion, and Sedimentation Control.* Construct, renovate or restore drainage systems within the CVBMP footprint that mimic the natural role of watersheds to process water and sediment, and provide habitat for native biodiversity.

All new development shall be designed and managed to minimize the introduction of pollutants into coastal waters to the maximum extent practicable and minimize increases in peak runoff rate and volume to avoid detrimental water quality impacts caused by excessive erosion or sedimentation (CCDP 13.2(c), 13.2(d)).

> *Prior to Project Approval for site-specific development proposals, the City/Port will approve a SWQMP prepared by the Project Proponent in accordance with the BMP Design Manual. The City/Port will ensure that the Project Proponent provides sufficient documentation to demonstrate that applicable requirements of the BMP Design Manual and the current Municipal Permit will be met.*

I. Provide protection and setbacks to wetland and aquatic habitats designated as ESHAs as stipulated in CCDP 5.

See Section 2.0: Sustainable and Improved Native Habitats and Communities, and Section 4.0: A Wildlife Friendly Urban-Wildland Interface.

> *Prior to Project Approval, Port/City shall review and approve project plans to ensure that wetland aquatic habitats are adequately protected and appropriate setbacks are maintained.*

II. Channelizations or other substantial alterations of streams shall be prohibited except for: 1) necessary water supply projects where no feasible alternative exists; 2) flood protection for existing development, where there is no other feasible alternative; and 3) the improvement of fish and wildlife habitat. Any channelization or stream alteration permitted for one of these three purposes shall minimize impacts to coastal resources, including the depletion of groundwater, and shall include maximum feasible measures to mitigate unavoidable impacts. Bioengineering alternatives shall be preferred for flood protection over "hard" solutions such as concrete or riprap channels (CCDP 14.6).

> *Prior to Project Approval of site-specific development proposals involving stream alterations, the Port/City will review project documentation to ensure compliance with paragraph II above.*

"Stream bed alteration to decrease the velocity of flow could use freshwater vegetation. This will not only alter flow it will act as a natural filter for toxics and it will entrap sediment and silt and act as a natural sediment basin. Bioengineering using a living rather than a non-living system will protect the watershed and riparian corridor as it enters the transition zone, the estuarine plain, mudflats, the bay and ultimately the ocean." - Mike McCoy, Southwest Wetlands Interpretive Association

III. Include site design best management and Low Impact Development (LID) practices, where feasible, in all developments (CCDP 13.2(e)) to minimize risks from run-off to marine, estuarine and marsh habitats.

> *Prior to Project Approval for site-specific development proposals, the Port/City will approve a SWQMP prepared by the Project Proponent in accordance with the BMP Design Manual. The City/Port will ensure that the Project Proponent provides sufficient documentation to demonstrate that applicable requirements of the BMP Design Manual and the current Municipal Permit will be met. The review process will verify that storm water quality objectives were considered in the project planning process and that opportunities to incorporate BMPs have been identified.*

A. Retain stormwater on-site as much as possible, and encourage infiltration.

B. Incorporate design features for harvesting rainwater and stormwater to help meet irrigation needs to the extent feasible and cost-effective. See also Section 5.0: Maximum Ecosystem Services in the Built Environment and Open Space.

Site design BMPs aim to conserve natural areas and minimize impervious cover, especially impervious areas "directly connected" to receiving waters to maintain or reduce increases in peak flow velocities from the project site (ORWMP 2006). Examples can be found in the most recent BMP Design Manual.

IV. Minimize impervious surfaces in new development, especially directly connected impervious areas. Where feasible, increase the area of pervious surfaces in redevelopment (CCDP 13.2(g)).

> *Prior to Project Approval for site-specific development proposals, the City/Port will approve a SWQMP prepared by the Project Proponent in accordance with the BMP Design Manual. The City/Port will ensure that the Project Proponent provides sufficient documentation to demonstrate that applicable requirements of the BMP Design Manual and the current Municipal Permit will be met. The review process will verify that storm water quality objectives were considered in the project planning process and that opportunities to incorporate BMPs have been identified.*

V. Minimize the land disturbance activities of construction (e.g., clearing, grading, and cut-and-fill), especially in erosive areas (including steep slopes, unstable areas, and erosive soils), to avoid detrimental water quality impacts caused by increased erosion or sedimentation (CCDP 13.2(i)).

> *Prior to Project Approval of site-specific development proposals, the Port/City will approve a SWPPP, if applicable, prepared by the Project Proponent to ensure compliance with the current General Construction Storm Water Permit. Port/City will provide on-site storm water inspections during construction to ensure compliance with the approved project SWPPP.*

Construction BMPs are the schedule of activities, prohibitions of practices, maintenance procedures and other management practices that reduce or eliminate stormwater pollutants during the construction phase. They are generally temporary measures including soil stabilization, construction materials handling procedures, and silt fence installation. The goal is to control erosion and sediment leaving the construction site (ORWMP 2006).

VI. Minimize erosion, sedimentation, and polluted runoff from construction-related activities of development, to the maximum extent practicable (CCDP 13.2(h)). Incorporate soil stabilization BMPs on disturbed areas as soon as feasible (CCDP 13.2(i)).

Prior to Project Approval of site-specific development proposals, the City/Port will approve a SWPPP, if applicable, prepared by the Project Proponent to ensure compliance with the current General Construction Storm Water Permit. Port/City will provide on-site storm water inspections during construction to ensure compliance with the approved project SWPPP.

VII. Prior to issuance of a grading, excavation, dredge/fill, or building permit for any parcel, the applicant shall submit a Spill Prevention/Contingency Plan for approval by the Port or City as appropriate. Among other elements, the plan shall ensure that hazardous or potentially hazardous materials used or generated during the construction and operation of any project as part of the Proposed Project shall be handled, stored, used, and disposed of in accordance with NPDES permitting requirements and applicable federal, state, and local policies (MMRP 4.5-3).

The requirements as noted in paragraph VII above shall be implemented in compliance with the MMRP.

SDRWQCB Basin Plan, Water Quality Objective for Sediment: The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses (Sect. 3, pg. 30).

SDRWQCB Basin Plan, Water Quality Objective for Suspended and Settleable Solids: Waters shall not contain suspended and settleable solids in concentrations of solids that cause nuisance or adversely affect beneficial uses (Sect. 3, pg. 30).

VIII. Prior to the commencement of in-water construction for all phases of development, the Port or Port tenants shall adhere to regulatory requirements, including the use of BMPs, which shall include use of silt curtains during all sediment suspension activities (MMRP 4.5-5).

A. Prior to issuance of a grading permit for marina redevelopment, the developer shall submit a work plan for approval by the RWQCB and Port/City that requires the implementation of BMPs, including the use of silt curtains, during in-water construction, to minimize sediment disturbances and confine potentially contaminated sediment if contaminated sediment exists. If a silt curtain is necessary, it shall be anchored along the ocean floor with weights and anchored to the top with a floating chain of buoys.

   The curtain shall wrap around the area of disturbance to prevent turbidity from traveling outside the immediate project area. Once the impacted region resettles, the curtain(s) shall be removed. If the sediment would be suitable for ocean disposal, no silt curtain shall be required. However, if contaminants are actually present, the applicant would be required to provide to the RWQCB and Port/City an evaluation showing that the sediment would be suitable for ocean disposal (MMRP 4.5-4).

The requirements as noted in paragraph VIII.A above shall be implemented in compliance with the MMRP.

IX. Where possible, minimize increased flow rates and durations likely to cause increased erosion of channel beds and banks, sediment pollutant generation, or other impacts to beneficial uses and stream habitat, due to increased erosive force.

X. Implement the requirements of Hydromodification Management Plan (County of San Diego 2011) developed pursuant to the Municipal Permit, as required (CCDP 13.2(f)).[a]

a. Hydromodification refers to changes in the magnitude and frequency of stream flows as a result of urbanization and the resulting impacts on receiving channels in terms of erosion, sedimentation, and degradation of in-stream habitat.

"What happens in the watershed ultimately happens in the estuarine, bay and ocean environment. It is important to keep this interlinkage in mind when implementing development projects that might threaten the services provided by the ecological integrity of the system. If hardscape is dealt with creatively in the watershed it will dissipate velocity of flow along the corridors to the Bay. - Mike McCoy, Southwest Wetlands Interpretive Association

Prior to Project Approval of site-specific development proposals, the Port/City will approve a SWQMP prepared by the Project Proponent in accordance with the BMP Design Manual. The City/Port will ensure that the Project Proponent provides sufficient documentation to demonstrate that applicable requirements of the BMP Design Manual and the current Municipal Permit will be met.

A. Where applicable, implement hydromodification mitigation measures so that post-project runoff flow rates and durations do not exceed pre-project flow rates and durations, where such increases would result in an increased potential for erosion or significant impacts to beneficial uses, per the RWQCB Order No. R9-2013-0001 (refer to Section 3.2: Watershed Approach). Such mitigation can provide: demonstration of no post-project increase in peak flow rates as compared to pre-project conditions; installation of practices, such as bioretention facilities, to control runoff flows and durations from new impervious areas; flow duration control basins; and in-stream rehabilitation controls to demonstrate that projected increases in runoff peaks or durations would not accelerate erosion.

See also Section 5.0: Maximum Ecosystem Services in the Built Environment and Open Space.

Objective 3.3-2

Stormwater Treatment Controls. Require treatment control BMPs, in addition to site design and source control measures, when the combination of site design and source control practice is not sufficient to protect water quality (CCDP 13.2(j)). Link treatments to maximize pollutant removal by designing the flow of water from source to discharge point.

I. All new development shall design, construct and maintain any required treatment control BMPs (or suites of BMPs) so that they treat, infiltrate, or filter the amount of storm water runoff produced by all storms up to and including the 85th percentile, 24-hour storm event for volume-based BMPs, and/or the 85th percentile, 1-hour storm event (with an appropriate safety factor of 2 or greater) for flow-based BMPs (CCDP 13.2(k)).

Prior to Project Approval of site-specific development proposals, the City/Port will approve a SWQMP prepared by the Project Proponent in accordance with the BMP Design Manual. The City/Port will ensure that the Project Proponent provides sufficient documentation to demonstrate that applicable requirements of the BMP Design Manual and the current Municipal Permit will be met.

A. Ensure the long-term viability of built and management strategies for stormwater treatment. As part of this, the Port/City will utilize as appropriate the California Coastal Commission's Sea Level Rise Guidance document.

II. Where necessary and feasible, select treatment BMPs to collect runoff from surrounding impervious surfaces to allow for sediment settling and to reduce the negative impacts of bacteria, metals, pesticides/fertilizers, floating debris and trash. Treat urban runoff at priority locations, including former power plant lands and J Street.

III. New runoff treatment infrastructure can be located and designed to facilitate routine maintenance with minimal disturbance to native flora and fauna.

A. Provisions for access for non-destructive maintenance and removal of litter and excess sediment will be integrated into these facilities (Settlement Agreement 4.6.1; CCDP 13.1).

B. In areas that provide for the natural treatment of runoff, a plant palette of bulrush, mulefat, willow, and the like are permissible (Settlement Agreement 4.6.1; CCDP 13.1).

Refer to Appendix F: Comprehensive Plant List for recommendations on grass and grass-like aquatic emergent vegetation suitable for such purposes.

C. Vegetation-based storm water treatment facilities, such as natural berms, swales, and detention areas are appropriate uses for Buffer Areas so long as they are designed using native plant species and serve dual functions as habitat areas (Settlement Agreement 4.6.1).

Prior to Project Approval of site-specific plans, plans for storm water berms, swales, and detention areas in buffers shall be reviewed to allow for adequate access and non-destructive maintenance, as well as the incorporation of native landscape materials where appropriate.

Figure 3-1. Rendering of stormwater mitigation concept.

D. Long-term, ongoing maintenance responsibility and mechanisms will be required for all post-construction BMPs and flow control facilities. If not properly designed or maintained, hydromodification flow control devices may create a habitat for vectors, such as mosquitoes or rodents (County of San Diego 2011).

IV. Fine trash filters are required for all storm drain pipes that discharge toward WHAs (Settlement Agreement 4.6.4; CCDP 13.7; MMRP 4.8-6).

A. Storm water and non-point source urban runoff into WHAs must be monitored and managed so as to prevent unwanted ecotype conversion or weed invasion. A plan to address the occurrence of any erosion or type conversion will be developed and implemented, if necessary. Monitoring will include an assessment of stream bed scouring and habitat degradation, sediment accumulation, shoreline erosion and stream bed widening, loss of aquatic species, and decreased base flow (Settlement Agreement 4.6.2; CCDP 13.4).

V. Water quality features required to support new development shall not be constructed in wetland buffers (CCDP 3.1).

Prior to Project Approval of site-specific development proposals, the City/Port will ensure the Project Proponent shall comply with the relevant design features and monitoring.

VI. Provide opportunities for on-site education on stormwater treatment to emphasize the CVBMP project footprint as a place of stewardship (See Section 5.0: Maximum Ecosystem Services in the Built Environment and Open Space and Section 6.0: Education to Inspire and Promote the Human Experience of Nature).

Stormwater "treatment control" and management BMPs provide treatment for stormwater emanating from the project site. The NPDES General Permit requires using such post-construction BMPs that remain in service to protect water quality throughout the life of the project. They include storage, filtration, and infiltration practices. The most frequently used include swales, buffer strips, infiltration basins and trenches, and extended detention basins and ponds (ORWMP 2006). Examples can be found in the most recent BMP Design Manual.

3.4 Existing and Emerging Threats

Goal

Protect Resources and Human Health from Threats. *Existing and emerging threats are addressed to protect human health and marine life from food web transfer of toxins residing in contaminated sediment, and the negative impacts of invasive species.*

Objective 3.4-1

Addressing Contaminants. Ensure protection of water and sediment quality from contaminants, which may affect human health or wildlife.

I. As part of the IPM, review new herbicide products before use.

II. Stormwater basins may be used to minimize pathways of migration or spread.

III. Parcels contaminated with hazardous materials will be remediated to levels adequate to protect human health and the environment (Settlement Agreement 8; CCDP 16.1).

Port/City shall seek to partner with or otherwise assist the relevant regulatory agencies to identify parties responsible for legacy contamination and to require that those responsible parties conduct the appropriate levels of investigation and remediation.

IV. As part of watershed partnerships, work with upstream partners to prevent contaminants from reaching the CVBMP footprint.

Objective 3.4-2 *Aquatic Invasive Species.* Ensure bay-estuarine communities and food webs thrive, without displacement from invasive species.

I. Educate boaters with regard to invasive species introductions whenever possible. See Chapter 6 Education.

II. Provide early detection with rapid response within the CVBMP area.

   A. Coordinate with the CDFW and other partners to provide a means for early detection of invasive species similar to that used for detecting the invasive algae *Caulerpa*.

   B. Coordinate with the CDFW's Draft Statewide Rapid Response Plan for controlling the spread of invasive species (Appendix A of California Department of Fish and Game 2008).

   C. Encourage the formation of volunteer efforts to identify and respond to (including the removal of) new infestations of invasive species at their first appearance.

III. Prior to commencement of any in-water development that involves disturbance of the subtidal water bottom, surveys will be done of the project area and a buffer area to determine the presence of the invasive alga *Caulerpa taxifolia*. The survey protocol shall be prepared in consultation with the RWQCB, the CDFW, and the National Marine Fisheries Service (CCDP 25.3).

> *The Project Proponent shall conduct* Caulerpa taxifolia *surveys prior to any in-water development.*

IV. Provide support for sustainable, long term resistance to invasion through integrated planning and restoring of natural habitat resilience to non-native organisms whenever possible. Design structures for natural habitat resilience to invasion by minimizing hardened structures that provide substrate for species that are not native to the bay. Determine the propensity of hardened structures to harbor invasive species and measures to prevent or control.

V. Provide support for programs and resources through alliances and partnerships with others to achieve early and efficient detection. Align with water quality education and outreach. Ensure the work undertaken is consistent with strategies in the CDFW Aquatic Invasive Species Plan (2008).

4.0 A Wildlife Friendly Urban-Wildland Interface

The CVBMP development strives to be a model for supporting and sustaining thriving native plant, wildlife, and aquatic habitats adjacent to an urbanizing area that provides opportunities for personal interaction with nature. Construction, design, management, and use of the CVBMP footprint avoids and minimizes disturbance of native wildlife behavior and life cycle needs. Nesting, residential, and migratory species are preserved, protected, and enhanced.

4.1 Key Messages

Avoiding and minimizing disturbance to native wildlife in the CVBMP project footprint and WHAs cuts across the entire spectrum of activities from construction and design of the development to its management and use. All areas within the CVBMP footprint contribute to sustaining and protecting wildlife from new and increased uses, ranging from the built environment to the designated WHAs.

To achieve this, innovative measures are proposed in built environment design, park design and maintenance, and public use management. Physical protective measures (e.g., buffers and fencing) are complemented by clear management directives and reinforced through comprehensive public education and enforcement in a wide variety of formats.

The goal is to accommodate the transformation of the CVBMP project footprint the increased and responsible use the new developments will attract, while preserving and sustaining the unique wildlife communities and habitats of south San Diego Bay.

This Chapter is organized as follows:

4.2 Use of Buffers to Protect Sensitive Habitat
Objective 4.2-1 Buffers and fencing

4.2 Use of Buffers to Protect Sensitive Habitats

Goal

Physical Protective Measures. *Wildlife and habitats within the CVBMP footprint and adjacent WHAs are protected and sustained through establishment and management of physical protective measures.*

Objective 4.2-1

Buffers and Fencing. Protect native wildlife and sensitive wildlife habitats from human, predator, and pest disturbances through design and installation of buffer areas and appropriate fencing (Figure 4-1).

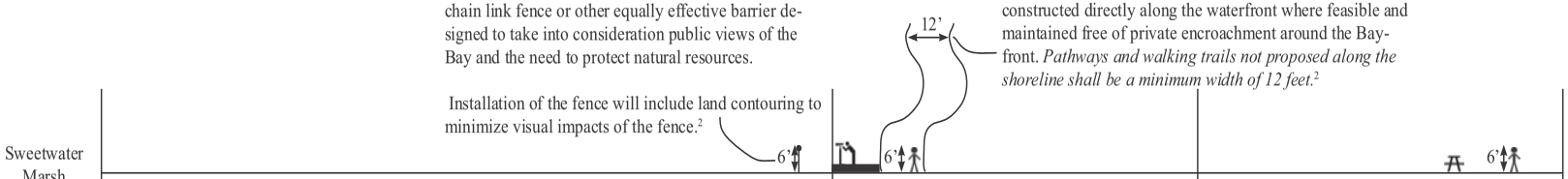
Buffer Areas in the Sweetwater District - Graphical Representation based on Controlling Documents

"Undeveloped land along the northern and western bountaries of the district will be established as a 400-foot-wide buffer/setback area. The buffer/setback is intended to preserve and protect the adjacent Sweetwater Marsh Wildlife Refuge from planned development and to provide a gradual transition from undeveloped native landscape to developed areas."[1]

Policy 5.1: 6' fence
The fence will be a minimum 6-foot high, black vinyl chain link fence or other equally effective barrier designed to take into consideration public views of the Bay and the need to protect natural resources.

Installation of the fence will include land contouring to minimize visual impacts of the fence.[2]

Policy 20.1
Shoreline promenades shall be a minimum of 25 feet in width allowing both pedestrians and bicyclists and shall be constructed directly along the waterfront where feasible and maintained free of private encroachment around the Bayfront. *Pathways and walking trails not proposed along the shoreline shall be a minimum width of 12 feet.*[2]



200 ft. No-Touch Buffer

The no-touch zone primarily consists of wetland and upland habitat.[1]

Mitigation Measure 4.8-6
The first 200 ft of buffer areas adjacent to sensitive habitats...will be maintained as a 'no touch' buffer and will not contain any trails or overlooks.[3]

Policy 5.2
Prohibit active recreation, construction of any road (whether paved or not), within No Touch Buffer Areas and "Transition Buffer Areas" as that term is defined and described in Exhibit 2, with the exception of existing or necessary access points for required maintenance.[2]

NRMP Framework and MMRP Mitigation Measure 4.8-7 include "Limited Use Buffer Areas"

Policy 23.4
Public views of the Bay and access along the waterfront shall be provided via a proposed "Baywalk" promenade. This pedestrian path will also connect to the Signature Park, and the pathway system within the Sweetwater District, ultimately linking the two districts and *enabling viewers to experience visual contact at close range with the Bay and marshlands*.[2]

100 ft. Limited Use Buffer

The limited use zone will contain outlook stations, open space areas, and a meandering trail system.[1]

The outlook stations, which will be connected by meandering trails designated as Promenade, will provide viewing areas of the bay and wildlife.[1]

Policy 19.1 (c)
Pedestrian and bike trails will be segregated where feasible. A meandering public trail will be provided along the entire length of the Bayfront. The meandering trail within the Sweetwater Park and adjacent to Buffer Areas will not be paved.[2]

Policy 11.1, Mitigation Measure 4.8-7
Walkways, paths, and overlooks near Wildlife Habitat Areas outside of the No Touch Buffer Areas will be designed in accordance with the following:
a)Alignment, design, and general construction plans of walkways and overlooks will be developed to minimize potential impacts to Wildlife Habitat Areas.
b)Path routes will be sited with appropriate setbacks from Wildlife Habitat Areas.
c)Paths running parallel to shore or marsh areas that will cause or contribute to bird flushing will be minimized throughout the Chula Vista Bayfront.
d)Walkways and overlooks will be designed to minimize and eliminate, where possible, perching opportunities for raptors and shelter for skunks, opossums or other Predators.
e)Walkways and overlooks that approach sensitive areas must be blinded, raised, or otherwise screened so that birds are not flushed or frightened. In general, walkway and overlook designs will minimize visual impacts on the Wildlife Habitat Areas of people on the walkways.[2, 3]

100 ft. Transitional Use Buffer

The transitional use zone will accommodate increased recreational uses such as picnic areas and trails, and consists of revegetated open space.[1]

Policy 20.3
Create a meandering pedestrian trail constructed of natural material that is easily maintained and interwoven throughout the Signature Park.[2]

[1]Chula Vista Bayfront Mater Plan & Port Master Plan Amendment (revised July 2012), certified by the California Coastal Commission
[2]Chula Vista Bayfront Development Policies (July 2012), certified by the California Coastal Commission
[3]Mitigation Monitoring and Reporting Program for the Chula Vista Bayfront Master Plan (May 2010)

Figure 4-1. No-Touch, Limited Use, and Transitional Use Buffer Areas in the Sweetwater District per NRMP Controlling Documents.

Buffer Purpose, Design, and Management:

The CVBMP area contains Buffer Areas along the shoreline within the Sweetwater and Otay Districts as well as buffers around sensitive resources within the project footprint. The purpose of the shoreline Buffer Areas ("no touch," "limited use," and "transitional use") is to preserve and protect the adjacent Sweetwater Marsh Wildlife Refuge and the J Street Marsh and wildlife reserve from planned development and to provide a gradual transition from undeveloped native landscape to developed areas (refer to Map 2-1). The purpose of the buffers around sensitive resources found within the project footprint is to protect them from both development and use impacts of the CVBMP area. Additional details for the design and permitted uses of each type of buffer are provided below as well as in Section 2.0: Sustainable and Improved Native Habitats and Communities.

I. All buffers shall be established and maintained by the Port/City (MMRP 4.8-6).

> *The requirement as noted above in paragraph I shall be implemented or cause to be implemented by the Port/City, their agents or designees, in compliance with the MMRP.*

II. All boating, human, and pet intrusion must be kept away from F&G Street channel mouth and marsh (Settlement Agreement 4.11.1; CCDP 10.1).

> *Appropriate signage will be installed. City and Port ordinances will be enforced.*

Resource-dependent uses include enhancement/restoration work, passive recreational parks and public access or recreational facilities such as trails and bike paths integrated into the natural environment and sited and designed to preserve, and be compatible with native habitat (CCDP 5.10)

III. New development shall be sited and designed to avoid impacts to ESHAs. ESHAs shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas. Development in areas adjacent to ESHA, parks, and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas (CCDP 5.10). ESHAs are defined in CCDP 5.9.

> *Prior to Project Approval, the site-specific development proposals will be reviewed for compliance with paragraph III above.*

IV. Development adjacent to ESHAs shall minimize impacts to habitat values or sensitive species to the maximum extent feasible. Native vegetation buffer areas shall be provided around ESHAs to serve as transitional habitat and provide distance and physical barriers to human intrusion. Buffers shall be of a sufficient size to ensure the biological integrity and preservation of the ESHA they are designed to protect (CCDP 5.14).

   A. All buffers around (non-wetland) ESHA shall be a minimum of 100 feet in width, or a lesser width may be approved by the District if findings are made that a lesser buffer would adequately protect the resource. However, in no case can the buffer size be reduced to less than 50 feet (CCDP 5.15).

   B. Habitat buffers shall include a 100-foot-wide buffer from the seasonal pond (SP-2) within the Sweetwater District, a 400-foot wide combined buffer in the Sweetwater District, and a minimum 100-foot buffer in the Otay District (Settlement Agreement 4.4.3; CCDP 5.8, 14.3).

> *Prior to Project Approval, the site-specific development proposals will be reviewed for compliance with paragraph IV above.*

Per the Port Master Plan: The limited use zone will contain outlook stations, open space areas, and a meandering trail system. The transitional use zone will accommodate increased recreational uses such as picnic areas and trails, and consist of revegetated open space.

C. No-Touch Buffer Areas will be defined as described in MMRP Exhibit 2 (Settlement Agreement 4.1.3; CCDP 5.1; MMRP 4.8-7). This includes the first 200 feet of buffer areas adjacent to sensitive habitats, or full width in the case of reduced buffer areas. They will not contain any trails or overlooks (MMRP 4.8-6). Refer to Map 2-1.

The requirements as noted above in paragraph C shall be implemented in compliance with the MMRP.

D. On Parcel S-4, fencing of the 100-foot buffer on the north side of the parcel is required prior to any physical alterations of the site. Also, at the time the project specific development is proposed on parcels S-4 and S-1, shading impacts, appropriate setbacks, step backs, and/or height reductions, will be analyzed as part of the necessary subsequent environmental review for those projects (Settlement Agreement 4.4.4; CCDP 14.4).

Prior to Project Approval of site-specific development proposals, the Port/City will ensure that the requirements noted in paragraph D above are implemented.

V. Active recreation and construction of any road (whether paved or not) are prohibited in the No-Touch Buffer Areas, "Transition Buffer Areas," and "Limited Use Buffer Areas" as defined in MMRP Exhibit 2, with the exception of existing or necessary points required for maintenance (Settlement Agreement 4.1.4; CCDP 5.2; MMRP 4.8-7).

The requirements as noted above in paragraph V shall be implemented in compliance with the MMRP.

A. In addition, roads should be sited as far from Buffer Areas as possible.

Refer to Section 2.0: Sustainable and Improved Native Habitats and Communities for additional strategies for managing habitat values and sea level rise adaptation benefits of Buffer Areas.

Fencing and Additional Controls:

VI. Measures including, but not limited to, signage, placement of boardwalks, and limited fencing shall be implemented as necessary to protect ESHA (CCDP 5.16).

Prior to Project Approval, the Port/City will review the site-specific development proposals for compliance with paragraph VI above.

VII. Permanent fencing: prior to approval of landscape plans, a conceptual site plan or fencing plan shall be submitted to the Port or City, as appropriate, for review and approval to ensure areas designated as sensitive habitat are not impacted. Fencing shall be provided within the buffer area only, and not in sensitive habitat areas (MMRP 4.8-6).

The requirements as noted above in paragraph VII shall be implemented in compliance with the MMRP.

Per the Port Master Plan: Fence installation shall include land contouring to minimize visual impact of the fence.

A. In Buffer Areas, fencing provided should be hidden, as much as possible or feasible, by vegetation or contouring (see Figure 4-2). Consider layers of fencing, where feasible and most effective.

Figure 4-2. Rendering of a hidden barriers concept design.

VIII. Fencing should be sufficient to protect the No-Touch Buffer Areas from impacts of the CVBMP project. This includes, but is not limited to fencing to protect the Sweetwater Marsh and Sweetwater parcel tidal flats, the J Street Marsh next to the San Diego Bay NWR, and the north side of parcel H-3 (Settlement Agreement 4.1.5; CCDP 5.3; MMRP 4.8-7).

The requirement as noted above in paragraph VIII shall be implemented in compliance with the MMRP.

IX. No-Touch Buffer Areas will contain fencing designed specifically to limit the movement of domesticated, feral, and nuisance predators (e.g., dogs, cats, skunks, opossums, and other small terrestrial animals [collectively, "Predators"]) and humans between developed park and No-Touch Buffer Areas and WHAs (Settlement Agreement 4.1.3; CCDP 5.1; MMRP 4.8-7).

A. The fence will be a minimum 6-foot high, black vinyl chain link fence or other equally effective barrier designed to take into consideration public views of the Bay and the need to protect natural resources (built to specifications described in EIR) (Settlement Agreement 4.1.3; CCDP 5.1; MMRP 4.8-7).

B. Fence design may include appropriate locked access points for maintenance and other necessary functions. Installation of the fence will include land contouring to minimize visual impacts of the fence (Settlement Agreement 4.1.3; CCDP 5.1; MMRP 4.8-7).

The requirements as noted above in paragraph IX shall be implemented in compliance with the MMRP.

C. The installation of such fencing in Sweetwater and Harbor Districts must be completed prior to the issuance of Certificates of Occupancy for development projects on either Parcel H-3 or H-23 (or the first buildings constructed in Phase I) and in conjunction with development or road improvements in the Sweetwater District (Settlement Agreement 4.1.3; CCDP 5.1; MMRP 4.8-6 and 4.8-7).

The requirements as noted above in section IX (A, B, and C) shall be implemented in compliance with the MMRP.

D. Fencing should not promote raptor or other predator perching and should comply with such strategies in Section 4.6: Management of Predators, Pests, and Pets.

X. Temporary fencing: Prior to issuance of any clearing and grubbing or grading permits, temporary orange fencing shall be installed around sensitive biological resources on the project site that will not be impacted by the Proposed Project. Silt fencing shall also be installed along the edge of the San Diego Bay NWR during grading within the western portion of the ecological buffer. In addition, the applicant must retain a qualified biologist to monitor the installation and ongoing maintenance of this temporary fencing adjacent to all sensitive habitats. This fencing shall be shown on both grading and landscape plans, and installation and maintenance of the fencing shall be verified by the Port's or City's Mitigation Monitor, as appropriate (MMRP 4.8-6).

The requirements as noted above in section X shall be implemented in compliance with the MMRP.

XI. Additional controls and strategies restricting movement of humans and predators into sensitive areas beyond the boundaries of the designated buffer areas may be developed (Settlement Agreement 4.1.6; CCDP 5.4).

See strategies identified in Section 4.6: Management of Predators, Pests, and Pets.

During review of site-specific development proposals, the Port/City may review and consider control strategies with Project Proponent.

A. Enforcement personnel should be trained in the importance of preventing human and pet encroachment in these areas.

B. Consider planting and cultivating native plants in the Buffer Areas that can contribute to reducing human and predator or pest intrusion into them and other sensitive wildlife habitats.

C. Appropriate signage will be installed adjacent to sensitive habitats and buffer areas to discourage public access and provide contact information for the Harbor Police to report trespassing within the sensitive areas (MMRP 4.8-6).

The requirement as noted above in paragraph C shall be implemented in compliance with the MMRP.

XII. Recreational Vehicle Parks within the CVBMP footprint are required to install fencing or other barriers sufficient to prevent passage of predators, [pets], and humans into sensitive adjacent habitat (Settlement Agreement 4.1.7; CCDP 5.5; MMRP 4.8-7).

The requirement as noted above in paragraph XII shall be implemented in compliance with the MMRP.

A. Identify and require, if needed, additional management strategies to protect wildlife values in the Sweetwater NWR and J Street Marsh (in Otay District), adjacent to the Recreational Vehicle parks.

XIII. Protection of ESHA and public access shall take priority over other development standards and where there is any conflict between general development standards and ESHA and/or public access protection, the standards that are most protective of ESHA and public access shall have precedence (CCDP 5.18).

XIV. For required development standards that are not related to ESHA protection (street setbacks, height limits, etc.), modifications shall be permitted where necessary to avoid or minimize impacts to ESHA (CCDP 5.17).

Prior to Project Approval, the Port/City will review the site-specific development proposals for compliance with paragraphs XIII and XIV above.

Also refer to the detailed depiction of regulated uses of the Buffer Areas in the Sweetwater District (Figure 4-1).

4.3 Low Impact Uses

Goal

Minimize Human Activity Impacts. *Opportunities, areas, and activities throughout the CVBMP footprint that allow for recreation and visitor interaction with nature are managed to avoid impacts to, and support the resiliency of, native wildlife communities and habitats.*

Objective 4.3-1

Low Impact Recreation. Provide and promote low impact passive recreational activities throughout the CVBMP footprint.

I. Park designer will consider designating and/or creating areas in the CVBMP footprint, appropriate for passive recreation and visitor interaction with nature, so that potential negative impacts to wildlife from these activities are contained and minimized.

A. Consider designing and managing specific areas within Signature Park to "bring nature to the people" by allowing hands-on play and interaction with habitats (Appendix B: Ecosystem-Based Management and Ecosystem Services and Section 5.0: Maximum Ecosystem Services in the Built Environment and Open Space).

B. Fishing and other resource uses, where permitted within the CVBMP footprint, should remain low impact and regulated by appropriate agencies (e.g., CDFW).

C. New access-ways and trails located within or adjacent to ESHA shall be sited to minimize impacts to ESHA to the maximum extent feasible. Public access-ways and trails are considered resource-dependent uses (CCDP 5.16).

Prior to Project Approval, the Port/City will review the site-specific development proposals for compliance with paragraph C above.

II. No hunting is permitted.

III. Collection of native plant materials is only allowed where expressly permitted; specific descriptions and instructions on plant collections will be detailed and, where applicable, educational signage will be present.

IV. Design walkways, paths and overlooks near the WHAs outside of the No-Touch Buffer Areas in accordance with the Settlement Agreement 4.2; CCDP 11.1, and MMRP 4.8-7. (See also Section 5.0: Maximum Ecosystem Services in the Built Environment and Open Space).

A. Alignment, design, and general construction plans of walkways and overlooks will be developed to minimize potential impacts to WHAs (Settlement Agreement 4.2.1, CCDP 11.1(a)).

B. Path routes will be sited with appropriate setbacks from WHAs (Settlement Agreement 4.2.2, CCDP 11.1(b)).

C. Paths running parallel to shore or marsh areas that could cause or contribute to bird flushing will be minimized throughout the CVBMP project (Settlement Agreement 4.2.3, CCDP 11.1(c)).

D. Design walkways and overlooks to minimize and eliminate, where possible, perching opportunities for raptors and shelter for skunks, opossums or other predators (see also Section 5.0: Maximum Ecosystem Services in the Built Environment and Open Space) (Settlement Agreement 4.2.4, CCDP 11.1(d))

E. Walkways and overlooks that approach sensitive areas will be blinded, raised, or otherwise screened so that birds are not flushed or frightened. In general, walkway and overlook designs will minimize visual impacts on the WHAs of people on the walkways (Settlement Agreement 4.2.5, CCDP 11.1(e))

Prior to approval of projects that include work in buffers, the Port/City will review the site-specific development proposals for compliance with paragraph V (A-E) above.

Objective 4.3-2

Reduce Impacts from Marine Recreation. Avoid and minimize impacts to native wildlife, particularly migrating, rafting, or feeding birds, from boating and recreational use of marine areas.

I. NRMP management objectives for WHAs promote the protection of nesting, foraging, and rafting wildlife from disturbance (Settlement Agreement 3.2.3, CCDP 1.3(d), and MMRP 4.8-7).

The requirements as noted in paragraph I above shall be implemented in compliance with the MMRP.

In addition to protecting migratory birds, this plan aims to minimize boating collisions with sea turtles and marine mammals, as well as boating activity-caused turbidity and eelgrass damage.

II. As feasible, take necessary action to protect biological use and values of F&G Street marsh, J Street marsh, and other marine areas identified as important for resting and migrating birds from frequent disturbance to avoid reducing birds' ability to recover and successfully return to nesting and breeding grounds.

Flocks of feeding, rafting, and resting water birds rely on the still waters of San Diego Bay to recover and prepare for migrations to their nesting grounds in the summer. The mouth of the F&G Street marsh is often full of resting and migrating shorebirds or Brant feeding on the eelgrass there. The J Street marsh and other offshore areas also provide rest and cover for many over-wintering species such as brant, pintail, scoters, etc. During the spring and summer, Ridgway's rails (formerly known as clapper rails), savannah sparrows, and many other species use the mudflats, shoreline and adjacent marsh areas.

Figure 4-3. Example of one bird blind design rendering.

III. Water areas will be managed with enforceable boating restrictions (Settlement Agreement 4.11.2; CCDP 10.2; MMRP 4.8-6).

A. No boating is allowed in the vicinity of J Street Marsh or east of the navigation channel in Sweetwater District during fall and spring migration and during the winter season when flocks of birds are present (Settlement Agreement 4.11.3; CCDP 10.2; MMRP 4.8-6).

B. No boating is allowed in the F&G Street channel mouth and marsh (Settlement Agreement 4.11.1; CCDP 10.1; MMRP 4.8-6).

C. All rentals of personal water craft (PWC)[1] are prohibited in the Chula Vista Bayfront (Settlement Agreement 4.11.4; CCDP 10.3; MMRP 4.8-6).

D. Use of PWCs is prohibited in WHAs, subject to applicable law (Settlement Agreement 4.11.5; CCDP 10.4; MMRP 4.8-6).

E. A five mile per hour speed limit will be enforced in areas other than the navigation channels (Settlement Agreement 4.11.6; CCDP 10.5; MMRP 4.8-6). Signage indicating the speed limit should be placed in appropriate areas. Consider installing "no wake" buoys in strategic areas.

F. Special exceptions to these restrictions may be made for bona fide research, law enforcement, or emergency activities (Settlement Agreement 4.11.7; MMRP 4.8-6).

G. The District will exercise diligent and good faith efforts to enter into a cooperative agreement with the Resource Agencies and Coast Guard to ensure monitoring and enforcement of no-boating zones and speed limit restrictions to prevent wildlife disturbances (Settlement Agreement 4.11.2).

1. A PWC is a motorboat less than 16 feet in length which uses an inboard motor powering a jet pump as its primary motive power and which is designed to be operated by a person sitting, standing, or kneeling on rather than in the conventional manner of sitting or standing inside the vessel (CCDP 10.3).

The requirements as noted above in section III shall be implemented in compliance with the MMRP utilizing the appropriate agency or law enforcement resource.

IV. Appropriate visual screening along shorelines in the Sweetwater and Otay Districts should be provided to minimize or avoid disruption to native wildlife. Screening to be integrated with design of Buffer Areas, including contouring anticipated for sea level rise adaptation and the placement of fencing to restrict access to sensitive WHAs. Such screening must comply with CCDP policies that regulate the preservation of harbor views and aesthetics. (See also Section 4.2: Use of Buffers to Protect Sensitive Habitats).

V. To protect native wildlife and habitats, protective measures for vulnerable mudflats and marine areas (or portions of them during critical seasons) shall be established to reduce visitor intrusion into those areas. These measures include, but are not limited to:[1]

A. Place buoys or other signage in the water to signal the edge of sensitive mudflats and waterfront channels as a *no access* area and to demarcate them from navigation channels.

B. Develop a plan to avoid and minimize avian disturbance in waters where recreational watercraft are allowed. This could take the form of improving escape cover, managing many levels of use, or managing routes taken.

C. Provide education to visitors to reduce bird flushing, during key seasons. Include relevant educational materials on flushing as part of kayak, fishing, and other water-based recreation rentals.

1. The management actions for strategies V.A through V.C are priority actions that will be a focus for early grant requests. In the event that grant funding is not secured prior to the issuance of a building permit in either Sweetwater District (including Signature Park), the Otay District, the residential development, or the resort conference center, Operations & Maintenance (O&M), Port Environmental funds, or other funding will be used to ensure these actions are implemented prior to issuance of the Certificate of Occupancy on any project located within the Sweetwater District (including Signature Park), the Otay District, or the resort conference center. If the first development is the residential development, the management actions contained in strategies V.A through V.C will be implemented no later than 90 days from the issuance of the first Certificate of Occupancy for any phase of any residential development.

4.4 Construction and Maintenance Impacts

Goal

Reduce Construction and Maintenance Impacts. *Construction and maintenance impacts to wildlife or habitats are avoided or minimized through permitting compliance, enforcement, effective control measures, education and design.*

Objective 4.4-1

Minimize Maintenance Needs Through Design. Design outdoor areas intended for public use, wildlife preserves, or treatment to minimize the need for maintenance that would otherwise impact native wildlife or plant communities.

I. Designate specific areas of Signature Park and Otay District park according to intended intensity of public use. All areas should be self-sustaining, according to anticipated public use, and require as little maintenance as possible to achieve both public use and habitat goals. Areas zoned for more intense use would likely require more maintenance than those zoned for infrequent or less impactful use. See also Appendix B: Ecosystem-Based Management and Ecosystem Services and Section 5.0: Maximum Ecosystem Services in the Built Environment and Open Space.

II. It is recommended that new runoff treatment infrastructure and drainage channels should be located and designed to replicate, to the extent feasible, natural pre-development flows, and to facilitate routine maintenance with minimal disturbance to native flora and fauna (as stipulated in RWQCB Order No. R9-2013-0001).

A. Provisions for access for non-destructive maintenance and removal of litter and excess sediment will be integrated into these facilities (Settlement Agreement 4.6.1; CCDP 13.1).

See also Section 3.0: Minimizing Harm to Neighboring Wetlands and Marine Waters.

Prior to Project Approval, the Port/City will review the site specific development proposals for compliance with paragraph A above.

B. All activities in drainages should be evaluated for conformance with Federal and State wetland permitting regulations. If required by law, federal (CWA, Section 404) and/or state (Fish and Game Code Section 1600 et seq.) permits should be obtained.

III. Establish protocols for routine and emergency maintenance activities that retain habitat value and avoid the breeding season (as feasible), so that while human life, health, and safety are given precedence, sensitive resources are also protected, as in stormwater basins or treatment areas.

Objective 4.4-2

Permitting, Conservation Measures, and Monitoring. Avoid construction and maintenance impacts to breeding birds and other sensitive resources through appropriate project timing, permitting, application of conservation measures, and monitoring.

I. Pursuant to permitting requirements of the Resource Agencies, preconstruction meetings will take place with all personnel involved with the project, to include training about the sensitive resources in the area (MMRP 4.8-6).

> *The requirements as noted in paragraph I above shall be implemented in compliance with the MMRP.*

II. Clean equipment in temporary staging areas, or other designated areas in accordance with BMPs, prior to entering and departing the project corridor to minimize the spread and establishment of non-native invasive plant species.

III. To the extent feasible, schedule construction activities in areas with suitable nesting habitat for migratory birds so that they begin outside of the avian breeding season (January 15 through August 31). This will allow any necessary habitat removal prior to nesting and encourage birds to selectively nest away from the construction disturbances.

IV. Prior to construction in any areas with suitable nesting habitat or locations for (a) raptors (such as trees, utility poles, or other suitable structures), (b) burrowing owl, or (c) migratory birds, and, if grading or construction occurs during the breeding season for nesting raptors (January 15 through July 31), burrowing owl (January 15 through July 31), or migratory birds (January 15 through August 31), the project developer(s) shall retain a qualified, Port- or City-approved biologist, as appropriate (MMRP 4.8-1, 4.8-2, 4.8-3).

   A. The biologist will conduct a pre-construction survey for active nests or burrows. It must be conducted no more than ten calendar days prior to the start of construction, the results of which must be submitted to the Port or City, as appropriate, for review and approval (MMRP 4.8-1, 4.8-2, 4.8-3).

   B. If an active raptor or migratory bird nest is present, an appropriate setback distance will be determined in consultation with the applicant, Port or City, USFWS, and CDFW. The construction set back shall be implemented until the young are completely independent of the nest or the nest is relocated with the approval of the USFWS and CDFW (MMRP 4.8-1, 4.8-3).

   C. If an active burrowing owl burrow is detected during the breeding season of January 15 to July 31, construction setbacks of 300 feet from occupied burrows shall be implemented until the young are completely independent of the nest. If an active burrow is found outside of the breeding season, or after an active nest is determined to no longer be active by a qualified biologist, the burrowing owl would be passively relocated according to the guidelines provided by the CDFW (1995) and in coordination with the CDFW (MMRP 4.8-2).

V. Prior to construction or grading in any areas of suitable nesting or foraging habitat for light-footed clapper rail, and, regardless of the time of year, the project developer(s) shall retain a qualified biologist who shall be approved by the Port or City, as appropriate, and shall be present during removal of southern coastal salt marsh vegetation within the inlet to the F & G Street Marsh to ensure that there are no direct impacts to foraging light-footed clapper rails. If a light-footed clapper rail is encountered, construction will be temporarily halted until the bird leaves the area of construction. The project developer(s) shall consult with the USFWS prior to impacting any areas of suitable nesting or foraging habitat for light-footed clapper rail so as not to prevent any unauthorized take of the light-footed clapper rail. Any take must be authorized by USFWS (MMRP 4.8-4).

VI. A biomonitor shall be present on site during initial grubbing and clearing of vegetation to ensure than perimeter construction fencing is being maintained. The biomonitor shall also perform periodic inspections of the construction site during all major grading to ensure that impacts to sensitive plants and wildlife are minimized. Depending on the sensitivity of the resources, the City and/or Port shall define the frequency of field inspections. The biomonitor shall send a monthly monitoring letter report to the City and/or Port detailing observations made during field inspections. The biomonitor shall also notify the City and/or Port immediately if clearing is done outside of the permitted project footprint (MMRP 4.8-1, 4.8-2, 4.8-3, 4.8-4).

The requirements as noted in paragraphs IV (A-C), V, and VI above shall be implemented in compliance with the MMRP.

4.5 Management of Operational and Construction Noise

Goal

Manage Noise to Avoid Impacts. *Noise levels associated with construction and regular use of the CVBMP project footprint are reduced as much as possible to protect wildlife from disturbance and to maintain the tranquility of the bayfront area.*

Objective 4.5-1

Fireworks Shows. Regulate and monitor fireworks shows to avoid and minimize impacts to native wildlife.

I. Per the Settlement Agreement and the MMRP of the EIR:

A. A maximum of three fireworks events can be held (Settlement Agreement 4.9.2; MMRP 4.8-6).

B. All shows are to be held outside of California least tern nesting season, except 4th of July fireworks show which is permitted only if it is in full regulatory compliance and is accompanied by monitoring of nesting colonies during the event. Any impacts to the nesting colonies during the event would be reported to the WAG so they can be addressed (Settlement Agreement 4.9.2; MMRP 4.8-6).

C. All shows must comply with all applicable water quality and species protection regulations and be consistent with all other goals and objectives contained in this NRMP (Settlement Agreement 4.9.2; MMRP 4.8-6).

The requirements as noted above in paragraphs A-C above shall be implemented in compliance with the MMRP.

II. Fireworks shows should be appropriately located and timed to avoid as much disturbance to wildlife as possible. Adaptive management for placement and timing, based on monitoring results, is recommended.

III. Fireworks shows are encouraged to be low-noise producing and display altitudes adjusted pursuant to the best available science to minimize disruption to bird species. Duration of shows should remain as short as feasible to limit the duration of potential noise impacts. Whirling, sonic booms, and similar types of fireworks are discouraged.

Objective 4.5-2

Operation and Maintenance Noise. Minimize noise resulting from routine operation and maintenance of the CVBMP footprint.

I. Use Best Practice Designs as required to manage noise levels. The objective should be to generate the sound up instead of out and may include the following:

A. Consider using temporary wall structures for large/staged events.

B. Consider using temporary design structures or other innovative management techniques to protect against extreme and impulse noise that could create impacts beyond ambient noise levels.

C. To manage noise levels in the Recreational Vehicle Parks, consider requiring the use of electrical plug-in stations, instead of generators, and implement quiet hours.

D. Provide sufficient space between recreational vehicle slips and campsites, where feasible, as well as native vegetation throughout the area, to dissipate and absorb noise.

II. Noise levels from the following uses shall not exceed 60 dB(A) Leq. at the boundaries of the F&G Street Marsh and the J Street Marsh during the typical breeding season of January 15 to August 31 (MMRP 4.8-6):

A. Loading and unloading areas;

B. Rooftop heating, ventilation, and air conditioning facilities;

C. Other noise-generating operational equipment (MMRP 4.8-6). When feasible, use non-gasoline driven equipment that produce noise levels below 60 dBA Leq., particularly near buffers and sensitive wildlife areas.

The requirements as noted above in paragraph II shall be implemented in compliance with the MMRP.

III. Noise levels from use of operational and maintenance equipment adjacent to sensitive habitat areas should also be minimized, to the extent practical, during the migratory bird overwintering season.

IV. General outdoor use areas (excepting the areas described above) shall not be exposed to noise levels exceeding 65 dBA Community Noise Equivalent Level. Project developers are required to submit site plans to the Director of Planning and Building of the City to demonstrate compliance. Prior to the issuance of building permits, noise barriers shall be installed to reduce sound levels below this level (MMRP 4.7-2, 4.7-6).

The requirements as noted above in paragraph IV shall be implemented in compliance with the MMRP.

A. While the use of glass or plexiglas as a sound barrier is permitted (per MMRP 4.7-2 and MMRP 4.7-6), use of these materials should be avoided, to the extent feasible, to reduce potential bird strikes and disorientation. No clear glass or plexiglas should be used; if glass or plexiglas is used, measures outlined in Section 4.8: Design of the Built Environment describing glass treatments should be required to minimize bird disorientation and mortality.

V. Prior to the approval of Design Review for the Pacifica project, the applicant shall submit a design plan for the project demonstrating to the satisfaction of the City's Director of Planning and Building that the noise level from operation of mechanical equipment will not exceed 50 dB(A) Leq. at any property line. Noise control measures may include, but are not limited to, the selection of quiet equipment, equipment setbacks, silencers, and/or acoustical louvers. Such measures must be designed and installed so as to achieve a cumulative sound level from mechanical equipment that does not exceed 40 dB(A) at 50 feet from the building façades adjacent to Marina Parkway, Street C, and J Street or 54 dB(A) at 50 feet from the building façades facing Street A (MMRP 4.7-4).

The requirements as noted in paragraph V above shall be implemented in compliance with the MMRP.

VI. Use of amplified sound equipment will be prohibited in Otay and Sweetwater District Parks (Settlement Agreement 6.7.1; CCDP 19.1 (g)(i)).

The requirements in paragraph VI above shall be implemented with applicable regulations and permitting processes.

VII. Amplified sound from the Harbor District should be effectively buffered or directed away from sensitive wildlife areas.

Objective 4.5-3

Construction Noise. Control construction noise using established methods and thresholds to minimize impacts to WHAs and the species using them, particularly during breeding season (Settlement Agreement 4.9.1; CCDP 8.1)

I. When possible, schedule construction activities in areas with suitable nesting habitat for migratory birds so that they begin outside of the avian breeding season (January 15 through August 31). This will allow any necessary habitat removal prior to nesting and encourage birds to selectively nest away from the construction disturbances.

II. Construction activity noise levels adjacent to sensitive wildlife areas must not exceed 60 dB(A) Leq., or ambient noise levels if higher than 60 dB(A) during the general avian breeding season (MMRP 4.7-1, 4.7-4, 4.8-6).

Construction-related noise shall be limited adjacent to the Sweetwater Marsh and South San Diego Bay Units of the San Diego Bay NWR, F&G Street Marsh, the mudflats west of the Sweetwater District, and the J Street Marsh, during the general avian breeding season of January 15 to August 31 (MMRP 4.7-1, 4.8-6). The current accepted threshold is 60 dB(A) Leq (MMRP 4.7-9).

III. If construction does occur during the breeding season or adjacent to sensitive WHAs, the project developer(s) shall prepare and submit to the Port/City for review and approval an acoustical analysis and nesting bird survey to demonstrate that the 60 dB(A) Leq. noise level is maintained at the location of any active nest within the marsh. The analysis shall occur prior to the issuance of a building permit (or in the case of the Pacifica Project, prior to the approval of Design Review) (MMRP 4.7-1, 4.7-4, 4.7-9, 4.8-6).

IV. If the noise threshold is anticipated to be exceeded at a nest location per the acoustical analysis, the project developer shall construct noise barriers or implement other noise control measures to ensure that construction noise levels do not exceed the threshold (MMRP 4.7-1, 4.7-4, 4.7-9). Specific noise reducing measures for F&G Street Marsh include:

   A. The developer of Parcel H-3 shall install and place a 20-foot-high temporary noise barrier or wall along the northeast project property line and returns along the east and west property lines. This mitigation would be necessary for construction activity occurring within 800 feet of the habitat during the extended breeding season. The barrier must be of solid construction, with no gaps or cracks through or below the wall, and must have a minimum density of 3.5 pounds per square foot (refer to Figure 4.7-11 of the CVBMP EIR). The barrier must block line-of-sight between the source and receiver and be long enough to prevent flanking around the ends. Prior to the start of construction, upon selection of a contractor and once specific equipment models and locations, phasing, and operational duration, etc. are known, a detailed analysis shall be conducted by the project developer and approved by the Port and/or City to determine proper placement of the temporary noise barrier (MMRP 4.7-1, 4.7-5, 4.8-6).

   B. The developer shall install a 3-foot-high noise barrier along the east right-of-way of E Street for the extent of the habitat (refer to Figure 4.7-12 of the CVBMP EIR). The barrier must be of solid construction, with no gaps or cracks through or below the wall, and have a minimum density of 3.5 pounds per square foot. The barrier must block line-of-sight between the source and receiver and be long enough to prevent flanking around the ends (MMRP 4.7-7).

V. If noise attenuation measures, modifications to construction activities, or other methods are unable to reduce the noise level below 60 dB(A), either the developer(s) must immediately consult with the USFWS to develop a noise attenuation plan or construction in the affected areas must cease until the end of the breeding season (MMRP 4.7-1, 4.7-9, 4.8-6).

VI. Construction biomonitors could monitor noise levels at construction sites to ensure compliance with noise regulations, as well as monitor any adverse response of wildlife to peak noises.

VII. To avoid significant construction-related noise impacts, the following additional measures shall be followed (MMRP 4.7-8):

A. Construction activity shall be prohibited Monday through Friday from 10:00 P.M. to 7:00 A.M., and Saturday and Sunday from 10:00 P.M. to 8:00 A.M., pursuant to the Chula Vista Municipal Code Section 17.24.050 (Paragraph J).

B. All stationary noise generating equipment, such as pumps and generators, shall be located as far as possible from noise sensitive receptors, as practicable. Where practicable, noise-generating equipment shall be shielded from noise sensitive receptors by attenuating barriers or structures. Stationary noise sources located less than 200 feet from sensitive receptors shall be equipped with noise reducing engine housings. Water tanks, equipment storage, staging, and warm-up areas shall be located as far from noise sensitive receptors as possible.

C. All construction equipment powered by gasoline or diesel engines shall have sound control devices at least as effective as those originally provided by the manufacturer; no equipment shall be permitted to have an unmuffled exhaust.

D. Any impact tools used during demolition of existing infrastructure shall be shrouded or shielded, and mobile noise generating equipment and machinery shall be shut off when not in use.

E. Construction vehicles accessing the site shall be required to use the shortest possible route to and from Interstate 5, provided the route does not expose additional receptors to noise.

F. Construction equipment shall be selected as those capable of performing the necessary tasks with the lowest sound level and the lowest acoustic height possible to perform the required construction operation.

G. Construction equipment shall be operated and maintained to minimize noise generation. Equipment shall be kept in good repair and fitted with "manufacturer recommended" mufflers.

The requirements as noted above in paragraphs II, III, IV (A-B), V, and VII (A-G), shall be implemented in compliance with the MMRP.

4.6 Management of Predators, Pests, and Pets

Goal

Protect WHAs. *Predators, pests, and pets do not impact native wildlife or WHAs.*

Objective 4.6-1

Management by Design, Education, and Control Measures. Prevent predators and pests through design, education, and control measures that are sequenced and staged in a model predator and pest management plan that integrates all existing resources, including partnerships, to distribute educational materials and support enforcement.

I. Reduce the attractiveness of urban interface areas to generalist and disturbance-tolerant pest species that displace native fauna through predation, competition, or other means.

II. Design and implementation of physical exclusion, targeting unwanted predators, should be as passive as possible.

III. Assure that all aspects of NRMP implementation do not foster a predator management problem.

Reducing Predator Perches

IV. In landscape design and maintenance plans, minimize, to the extent possible, perches that provide potential line of sight to sensitive WHAs for predatory raptors, while staying consistent with a natural sense of place.

A. Vegetation growth in Buffer Areas and other relevant areas of the CVBMP should be restricted, as feasible, to prevent line of sight perches to the salt marsh/tidal habitats and shoreline.

1. For example, no trees will be planted in the No-Touch Buffer Areas or directly adjacent to a NWR, J Street Marsh, or SP-2 areas where there is no Buffer Area (Settlement Agreement 4.7.4; CCDP 6.1(d); MMRP 4.8-6). However, trees are specifically permitted in the Harbor District per CCDP 23.1 and 23.12.

B. All buildings, signage, walkways, overlooks, light standards, roofs, balconies, ledges, and other structures that could provide line of sight views of WHAs will be designed in a manner to discourage their use as raptor perches or nests (Settlement Agreement 4.3.4; CCDP 12.1(d)). The following design criteria will be identified in the CVBMP master landscape plan and incorporated into all building/structure and landscape plans with line of sight views to sensitive WHAs (MMRP 4.5-1, 4.8-7, 4.8-6):

1. Light posts shall have anti-perching spike strips along any portions that would be accessible to raptors (MMRP 4.5-1, 4.8-7, 4.8-6).
2. The top edge of buildings shall be rounded with sufficient radius to reduce the amount of suitable perching building edges (MMRP 4.5-1, 4.8-7, 4.8-6).
3. If building tops are hard corners, spike strips shall be used to discourage raptors from perching and building nests (MMRP 4.5-1, 4.8-7, 4.8-6).
4. Decorative eaves, ledges, or other protrusions shall be designed to discourage perching by raptors (MMRP 4.5-1, 4.8-7, 4.8-6).
5. To the extent practicable, buildings on Parcels S-1, S-4, and S-2 will be oriented to reduce raptor perches within the line of sight to adjacent sensitive habitats (MMRP 4.5-1, 4.8-7, 4.8-6).
6. All predator exclusion devices will be checked and cleaned, repaired, or replaced as needed following site inspections.

The requirements as noted above shall be implemented in compliance with the MMRP.

Trash Management to Prevent Pests and Predators

V. Predator and pest attraction and trash management shall be addressed for all areas of the CVBMP project by identifying clear management measures and restrictions. Examples include design of trash containers, including those in park areas and commercial dumpsters, to be covered and self-closing at all times, design of containment systems to prevent access by sea gulls, rats, crows, pigeons, skunks, opossums, raccoons, and similar animals and adequate and frequent servicing of trash receptacles (Settlement Agreement 4.3.3; CCDP 12.1(c); MMRP 4.5-1, 4.8-7).

The requirements as noted above shall be implemented in compliance with the MMRP.

A. The Port is to prepare a Predator, Pest, and Trash Management and Implementation Plan with clear management measures and restrictions, prior to the opening of the first park or project. Refer to measures presented in Section 4.7: Trash Management.

Feral Animal Control

VI. Potentially partner with agencies and organizations to prevent the establishment of feral animal colonies through management and monitoring. Remove feral animals that establish in the area.

A. The parks will include enforcement signage that prohibits tenants, employees, residents, or visitors from feeding or encouraging feral cat colonies and prevents feral cat drop-off or abandonment of pets or unwanted animals (Settlement Agreement 6.6; CCDP 19.1 (f)).

Prior to Project Approval, the Port/City will review the site specific development proposals for compliance with paragraph A above. Provide signage and information for animal control offices and shelters where unwanted pets can be taken.

B. Integrate other programs and materials as appropriate to educate the public about feral cat and dog prevention and management to promote synergy of efforts. For example, use American Bird Conservancy materials or National Audubon Society materials to provide education on the potential impact to native species.

C. Coordinate with other jurisdictions, as appropriate, to address adjacent cat colonies that affect native wildlife in the CVBMP footprint.

Objective 4.6-2 *Adaptive Predator and Pest Management.* Implement adaptive management to minimize the threat of predators and pests.

I. Year-round, funded predator management will be implemented for the life of the Chula Vista Bayfront project with clearly delineated roles and responsibilities for the District, City, and Resource Agencies. The primary objective of such provisions will be to adequately protect terns, rails, plovers, shorebirds, over-wintering species, and other species of high management priority as determined by the Resource Agencies (Settlement Agreement 4.3.1; CCDP 12.1(a); MMRP 4.5-1, 4.8-7).

The requirements as noted in paragraph I above shall be implemented in compliance with the MMRP and funds for year-round predator management will be provided each year for the life of the project.

A. Continue current predator and pest management activities in concert with those required or recommended below. Currently, control actions are taken to protect the California least tern nesting colony located within Port jurisdiction and as necessary to respond to observed pest or predator problems within other areas of Port jurisdiction (E. Maher, pers. com. 2013).

B. Identify problem areas and effective prevention and control strategies, particularly for pigeons, rats, opossums, skunks, mice, and cats, among other pests. Provisions for predator management should build on existing predator management reports to establish a baseline for the level of effort and location.

C. Measures installed to discourage perching and nesting of predators in areas with line of sight views to sensitive WHAs should be inspected as feasible to assess their effectiveness and to maintain them in good working condition. If some measures prove ineffective even when in good working condition, alternatives should be considered and implemented.

D. Regular foot patrols and tracking techniques will be utilized to find and remove domestic or feral animals (Settlement Agreement 4.3.2; CCDP 12.1(b); MMRP, 4.8-7).

The requirements as noted in paragraph D above shall be implemented in compliance with the MMRP.

E. Review design options to include strategic sites within the CVBMP footprint where predator management staff can perform their work effectively in a manner that does not interface with the general public. Predator management should be as humane as possible.

F. Enforce no feeding of wildlife and feral animals (CCDP 19.1(f)).

1. Educate visitors on this policy. Interactive educational programs should consider incorporating information on the importance of not feeding the wildlife.

II. Prior to the issuance of a CCDP, the project developer shall prepare a raptor nest management plan to be implemented once the project is built (MMRP 4.8-6). A biologist retained by the project developer and approved by the Port and/or City shall be responsible for:

A. Monitoring the buildings and associated landscapes to determine whether raptor nests have been established on Port or City lands within 500 feet of the Preserves. If a nest is discovered, the nest would be removed in consultation with USFWS, CDFW, and the Port/City, outside of the raptor breeding season of January 15 to July 31 (MMRP 4.8-6).

B. Monitoring raptor non-native prey populations such as rats, mice, and pigeons, as feasible. In the event that pest populations should increase as a result of raptor deterrence, a biologist in consultation with USFWS, CDFW, and the Port/City should develop a control plan for the pest populations that will not harm desired wildlife species.

III. If rodenticides are required for pest control as part of IPM, they should be used in a manner that contains the target animal after ingestion so that they cannot be preyed on by other animals and result in secondary poisoning. This will help avoid harm to higher trophic levels through bioaccumulation, including raptors.

The requirements as noted above in Section II shall be implemented in compliance with the MMRP.

Objective 4.6-3

Managing Impacts from Pets. Prevent disturbance to native wildlife from resident and visiting pets (cats and dogs) in the CVBMP footprint.

I. Pets will be kept away from F&G Street channel mouth and marsh (Settlement Agreement 4.11.1; CCDP 10.1; MMRP 4.8-6)

II. In all areas of the CVBMP project, especially on the foot path adjacent to the marsh on the Sweetwater District property, mandatory leash laws shall be enforced. Appropriate signage shall be posted indicating human and domestic animal access is prohibited within the designated Preserve areas (MMRP 4.8-6). Enforcement to be the responsibility of the Port and City.

A. Dogs will be leashed at all times except in any designated and controlled off-leash areas (Settlement Agreement 4.1.8; CCDP 5.6; MMRP 4.8-7). Leash-free areas are prohibited near Sweetwater and Otay District buffers (Settlement Agreement 6.6; CCDP 19.1(f)).

B. Consider developing a residential dog park in the Harbor District (north of J Street), on land outside of Port jurisdiction[1]. A potential location could include the area of residential development in the Harbor District, on land owned by the City of Chula Vista or within the Pacifica project area.

C. Dogs shall not be allowed on any trails in Buffer Areas unless under the owner's control and held on a leash, due to potential for disturbance to native species.

D. Docents should help orient and instruct visitors with pets regarding pet policies, areas where pets are not permitted, and any designated leash-free areas.

E. Educational signage should be provided to communicate the reasoning for leash-required and leash-free areas.

F. Strict enforcement of leash laws and disposal of pet waste in accordance with existing regulations will be pursued.

III. Dog waste baggie stations and trash receptacles should be placed strategically throughout the CVBMP project footprint, particularly along the promenade and in the parks. Baggie stations should be refilled frequently.

IV. All resident cats will be kept indoors at all times (Settlement Agreement 4.1.9; CCDP5.7; MMRP 4.8-7).

V. Encourage pet owners living within the CVBMP to microchip their pets; such identification helps to reunite lost pets with their owners.

VI. Residential developments are required to provide education to owners and/or renters regarding the rules and restrictions regarding the keeping of pets (Settlement Agreement 4.1.9; CCDP 5.7; MMRP 4.8-7).

The requirements as noted above in paragraphs I, II (A, C-E), III, IV, and VI, shall be implemented in compliance with the MMRP.

1. Because lands within Port jurisdiction are state tidelands, all land uses must qualify as a state-wide use. Dog parks are considered a local use, not a state-wide use; as a result, they are not permissible within Port jurisdiction.

4.7 Trash Management

Goal

Effective Trash Management Facilitates Resource Protection and Human Enjoyment. *Trash management reduces litter in public areas and WHAs, reduces attraction of pests and predators, and promotes recycling as a responsible way to dispose of waste, all contributing to protection of native wildlife and a pleasant outdoor experience.*

Objective 4.7-1

Meeting Trash Management Needs. Meet the wide variety of disposal needs including volume, location, and type of trash through effective trash management in the CVBMP project footprint. Use education and enforcement to reinforce responsible trash disposal. Encourage recycling and innovative management techniques.

I. Easily accessible trash cans and recycling containers are provided in public areas and are adequate to handle the volume of trash or recycled materials received (MMRP 4.6-6, 6.8-3, 4.8-6). In particular, containers will be placed along all walking and bike paths and shop walkways. Trash shall be emptied daily or more often if required during high use periods (MMRP 4.8-6), as is currently standard operating procedure for public spaces under Port jurisdiction (E. Maher, per. com. 2013; CCDP 1.4).

II. Buildings and stores shall have large dumpsters in a courtyard or carport that is bermed and enclosed. This ensures that, if stray trash falls to the ground during collection, it does not blow into the Bay or marshes (MMRP 4.8-6).

III. Interior and exterior storage areas are provided for recyclables and green waste (MMRP 4.6-6, 6.8-3).

IV. Identify green waste composting station(s) to facilitate re-use of materials on site and to reduce trash sent to landfills (see also Section 3.2: Watershed Approach and Section 5.0: Maximum Ecosystem Services in the Built Environment and Open Space).

V. Establish and maintain monofilament fishing line collection areas at the pier.

VI. In addition to trash can design guidelines provided in this section, use trash can designs that are spill resistant, discourage vandalism, are resistant to gulls and other nuisance animals, and have low maintenance and energy requirements (one possible option is a solar-powered, compacting trash can design).

VII. Litter will be prevented from being wind-blown off-site to the satisfaction of the Port/City as appropriate pursuant to their water quality technical reports (MMRP 4.5-1).

A. Implement measures to collect trash, including monofilament fishing line, at in-water and shoreline areas.

VIII. Construction and demolition waste is reused and recycled (including but not limited to soil, vegetation, concrete, lumber, metal, and cardboard) (MMRP 4.6-6, 6.8-3).

IX. Public education and other publicity campaigns are implemented on a regular basis to raise awareness about reducing waste and available recycling services (MMRP 4.6-6, 6.8-3).

A. Encourage vendors to reduce the amount of packaging associated with products or consumable items that they sell (e.g., plastic bags and Styrofoam containers). Use of non-recyclable packaging should be strongly discouraged.

X. Trash resulting from events will be collected and disposed of properly.

XI. Illegal dumping and littering shall be prohibited within the Preserve areas (MMRP 4.8-6).

XII. The project applicant shall include trash control measures as a condition of approval for Tenant Design Plan for projects within the Port's jurisdiction and as a condition of the approval of a Final Map for projects within the City's jurisdiction (MMRP 4.5-1). Suitable measures are those provided in this NRMP.

The requirements as noted above in paragraphs I, II, III, V, VI, VII, VIII, IX, XI, and XII, shall be implemented in compliance with the MMRP.

Objective 4.7-2

Discouraging Pests and Predators. Discourage attraction of pests and predators through effective design of trash receptacles and trash management measures in the CVBMP footprint.

I. Trash management measures in the recommended Port Predator, Pest, and Trash Management and Implementation Plan (refer to Section 4.6: Management of Predators, Pests, and Pets) should include, but are not limited to:

A. Design of trash containers and other containment systems, including those in parks and other outdoor use areas and commercial dumpsters, to be animal-proof to discourage scavenger animals from foraging in them (such as sea gulls, rats, crows, pigeons, skunks, opossums, raccoons, and similar animals); this includes containers that are covered and self-closing at all times (Settlement Agreement 4.3.3; CCDP 12.1(c); MMRP 4.5-1, 4.8-6);

B. Adequate and frequent servicing of trash receptacles at least as often as is necessary to prevent any overflow trash occurring (Settlement Agreement 4.3.3, 4.4.6.3; CCDP 12.1(c)). Per current standard operating procedure for public spaces under Port jurisdiction, trash is emptied daily (E. Maher, pers. com. 2013; CCDP 1.4);

C. Specifications for increases in trash pickup for special events (CCDP 1.4);

1. Currently, the permit application for large events in parks within Port jurisdiction specify that the applicant must have a waste removal plan and use BMPs such as covered trash dumpsters and prompt trash removal. Fines can be assessed if additional clean-up is required after the event;

D. Specifications for the frequency of emptying dog waste stations and restocking bags.

E. Identifying departments and personnel etc. required for trash and pest control. Currently, control actions are taken to protect the California least tern nesting colony located within Port jurisdiction and as necessary to respond to observed pest or predator problems within other areas of Port jurisdiction (E. Maher, pers. com. 2013).

F. Measures for food vendors to help manage the trash resulting from customer purchases. This could include signs encouraging customers to use trash receptacles and vendor staff clearing up trash in their service area and vicinity several times a day.

II. No unattended food vending is allowed in Sweetwater and Otay District parks (Settlement Agreement 6.5; CCDP 19.1(e)).

Prior to Project Approval, the Port/City will review the site specific development proposals for compliance with the above.

4.8 Design of the Built Environment

Goal

Minimizing Impacts of the Built Environment. *Design of the CVBMP built environment minimizes impacts to native wildlife, including resident and migratory birds.*

Objective 4.8-1

External Lighting. Design of all external lighting and illumination in the CVBMP footprint minimizes any impact on sensitive WHAs. Operations and maintenance of the CVBMP footprint ensures appropriate long-term education and control of light impacts (Settlement Agreement 4.8.2, 4.8.3; CCDP 7.4; MMRP 4.8-6).

I. Light impacts to WHAs will be minimized to the maximum extent feasible.

A. Beacon and exterior flood lights are prohibited where they would impact a WHA and use of this lighting will be minimized throughout the project (Settlement Agreement 4.8.2; CCDP 7.2; MMRP 4.8-6).

B. All roadways shall be designed, and where necessary edges bermed, to minimize penetration of automobile lights in the WHAs, subject to applicable City and District roadway design standards (Settlement Agreement 4.8.1; CCDP 7.1; MMRP 4.8-6).

C. Ambient light impacts to the Sweetwater or J Street Marshes will be minimized to the maximum extent feasible (Settlement Agreement 4.8.3; CCDP 7.4; MMRP 4.8-6).

D. Artificial lighting of marine areas, which may trigger altered life cycle functions of marine life, should be avoided.

E. The height of lighting structures should be minimized in both the built environment and in Sweetwater and Otay District parks to the extent practicable.

F. Where feasible, low light-emitting diode (LED) lights that are directed downward shall be used.

G. Laser light shows are prohibited (Settlement Agreement 4.8.6; CCDP 7.6; MMRP 4.8-6).

The requirements as noted in paragraph G above shall be implemented in compliance with the MMRP.

1. If laser light shows are demonstrated to pose fewer impacts to sensitive wildlife than fireworks shows, reconsidering the possibility of conducting them within the CVBMP footprint as an alternative to fireworks shows may require revisiting CCC approvals since the prohibition is specified in the Controlling Documents.

H. Construction lighting is controlled to minimize WHAs impacts (Settlement Agreement 4.8.7; CCDP 7.7; MMRP 4.8-6).

The requirements as noted in paragraph H above shall be implemented in compliance with the MMRP.

I. The Recreational Vehicle Parks and campground shall install and direct visitors to use downward focused lighting to prevent lighting impacts to sensitive WHAs. This practice is in line with lighting already in place at the Chula Vista Marina.

II. Prior to issuance of a building permit (or the construction of parks/park amenities), each applicant within the Port's or City's jurisdiction shall prepare a lighting design plan including specifications for outdoor lighting locations and other intensely lighted areas, including a photometric analysis, to be reviewed by the Port or City, as appropriate. Specifications shall identify the lighting intensity needs and design light fixtures to direct light toward intended uses. Each plan shall illustrate the location of the proposed lighting standards and type of shielding measures and shall incorporate specific design features including, but not limited to the following, as appropriate to the specific locations (MMRP 4.8-6, 4.9-6, 4.4-2):

A. All exterior lighting (including in parking lots) shall be directed away from adjacent properties as well as the habitat buffers, Preserve Areas, habitats, or open water, wherever feasible and consistent with public safety (MMRP 4.8-6, 4.9-6).

B. Where necessary, lighting of all developed areas adjacent to the habitat buffers, Preserve Areas, habitats, or open water shall provide adequate shielding with non-invasive plant materials (preferably native), berming, and/or other methods to protect the habitat buffers, Preserve Areas, habitats, or open water and sensitive species from night lighting (MMRP 4.8-6, 4.9-6).

C. The light structures themselves shall have shielding (and incorporate anti-raptor perching criteria); but the placement of the light structures shall also provide shielding from wildlife habitats and shall be placed in such a way as to minimize the amount of light reaching adjacent habitat buffers, Preserve Areas, habitats, or open water. This includes street lights, pedestrian and bicycle path lighting, and any recreational lighting (MMRP 4.8-6, 4.9-6).

D. All exterior lighting immediately adjacent to habitat buffers, Preserve Areas, habitats, or open water shall be low-pressure sodium lighting or other approved equivalent and be low to the ground (CCDP 7.8; MMRP 4.8-6, 4.9-6).

III. All street and walkway lighting will be shielded to minimize sky glow (Settlement Agreement 4.8.2; CCDP 7.3; MMRP 4.8-6). This includes lighting on building exteriors.

IV. All event lighting shall be directed downward and shielded, unless directed downward or shielded to minimize light spill beyond the area for which illumination is required (MMRP 4.4-2).

V. In Sweetwater and Otay District parks, lighting will be limited to that which is necessary for security purposes (Settlement Agreement 4.8.4; CCDP 7.8; MMRP 4.8-6).

A. Security lighting will be strictly limited to that required by applicable law enforcement requirements and all lighting proposed for the parks and the shoreline promenade will be placed only where needed for human safety (Settlement Agreement 4.8.4; CCDP 7.8; MMRP 4.8-6).

B. Lights will be placed on low-standing bollards, shielded, and flat-bottomed, so the illumination is directed downward onto the walkway and does not scatter (Settlement Agreement 4.8.4; CCDP 7.8; MMRP 4.8-6). Where appropriate, lighting of pathways should be located in the path with low light.

C. Lighting that emits only a low-range yellow light will be used to minimize ecological disruption (Settlement Agreement 4.8.4; CCDP 7.8; MMRP 4.8-6).

D. No lighting for active sports facilities is permitted, particularly on the recreation fields near J Street Marsh or Sweetwater Marsh (Settlement Agreement 4.8.4; CCDP 7.8; MMRP 4.8-6). This also includes open areas near J Street Marsh and Sweetwater Marsh.

E. The parks will open and close in accordance with District Park regulations (Settlement Agreement 4.8.5; CCDP 7.5; MMRP 4.8-6).

The requirements as noted above in Sections I (A, B, C) and II through V, shall be implemented in compliance with the MMRP.

Objective 4.8-2

Avoiding Bird Strikes and Disorientation. Avoid bird disorientation and mortality through design principles for buildings, use of materials, and landscaped areas.

I. Prior to issuance of any building permits, building plans shall be reviewed by a qualified biologist retained by the developer and approved by the District, to verify that the proposed building has incorporated specific design features to avoid or to reduce the potential for bird strikes, including additional measures provided under the subheadings below (CCDP 4.1; MMRP 4.8-23).

The requirements as noted above in paragraph I shall be implemented in compliance with the MMRP.

II. Place power lines and electrical infrastructure underground to the extent possible to achieve a goal of no bird strikes with electrical infrastructure. This will also reduce raptor perching and nesting platforms.

III. Consider employing a building design and management checklist, similar to the one used by the City of San Francisco (2011), shown below.

Lighting:

Lighting provided in and around buildings will be minimized to discourage bird attraction or disorientation (CCDP 4.1.1; MMRP 4.8-23). This includes the measures specified above as well as the following:

IV. No solid red or pulsating red lights shall be installed on or near the building unless required by the Federal Aviation Administration (CCDP 4.1.1(a); MMRP 4.8-23).

V. Where lighting must be used for safety reasons (Federal Aviation Administration 2000 Advisory Circular), minimum intensity, maximum off-phased (three seconds between flashes) white strobes shall be used (CCDP 4.1.1(b); MMRP 4.8-23 and 4.4-2).

VI. No solid spot lights or intense bright lights shall be used during bird migration periods in the spring (from March to May) and fall (from August to October). All event lighting shall be directed downward and shielded, unless such directed and shielded minimized light spills beyond the area for which illumination is required (CCDP 4.1.1(c); MMRP 4.8-23, 4.4-2).

VII. Exterior lighting shall be limited to that which is necessary and appropriate to ensure general public safety and way finding, including signage for building identification and way finding (CCDP 4.1.1(d); MMRP 4.8-23, 4.4-2).

VIII. Exterior lighting shall be directed downward and shielded to prevent upward lighting and to minimize light spill beyond the area for which illumination is required (CCDP 4.1.1(e); MMRP 4.8-23, 4.4-2).

IX. Office space, residential units, and hotel rooms shall be equipped with motion sensors, timers, or other lighting control systems to ensure that lighting is extinguished when the space is unoccupied (CCDP 4.1.1(f); MMRP 4.8-23, 4.4-2).

X. Recommend daytime cleaning of offices to minimize light usage outside of business hours.

XI. Office space, residential units, and hotel rooms shall be equipped with blinds, drapes, or other window coverings that may be closed to minimize the effects of interior night lighting (CCDP 4.1.1(g); MMRP 4.8-23, 4.4-2).

The requirements as noted in paragraphs IV-IX and XI above shall be implemented in compliance with the MMRP.

Glass and Reflective Surfaces:

Best practices for glass and other reflective surfaces should be used to reduce bird collisions and disorientation (see also City of San Francisco Bird-Safe Building Checklist [2011]).

XII. Use of reflective glass or reflective coatings on any glass surface is prohibited (Settlement Agreement 4.5; CCDP 4.1.2(a); MMRP 4.8-23, 4.4-2).

XIII. Buildings shall incorporate measures to the satisfaction of the District or the City to indicate to birds that the glass surface is solid by creating visual markers and muting reflection (CCDP 4.1.2(b); MMRP 4.8-23).

A. Focus treatment on the first four stories or up to tree height in the surrounding area (City of Toronto 2007; City of Calgary 2011). The City of Portland suggests up to 40 feet (2012).

XIV. Project design standards will encourage window stenciling and angling (Settlement Agreement 4.5.3; CCDP 4.1.2(c); MMRP 4.8-23).

A. High priority should be placed on angling windows to reflect the ground, not the sky.

B. Investigate the use of streamers in front of or near high-risk windows to determine if they could be an effective design element.

XV. Additional measures may include, but are not limited to the following (CCDP 4.1.2(d); MMRP 4.8-23):

A. Glass surfaces which are non-reflective (CCDP 4.1.2(d)(i)).

B. Glass surfaces which are tilted at a downward angle (CCDP 4.1.2(d)(ii)).

1. A minimum 20 degree angle is recommended; a 40 degree angle is preferred (City of Toronto 2007; City of Calgary 2011).

C. Glass surfaces which use fritted or patterned glass (CCDP 4.1.2(d)(iii)).

1. Patterns applied on the outside of the glass are preferred (City of Portland 2012).

D. Glass surfaces which use vertical or horizontal mullions or other fenestration patterns (CCDP 4.1.2(d)(iv)).

1. City of Toronto Green Development Standard (2007) and City of Calgary (2011) recommend 10–28 centimeters maximum separation when using grills, screens, louvers, or mullions. City of Portland (2012) suggests spacing of 4 inch vertical x 2 inch horizontal maximum.

E. Glass surfaces which are fitted with screening, decorative grills, or louvers (CCDP 4.1.2(d)(v)).

F. Glass surfaces which use awnings, overhangs, bris sole, or other exterior sun-shading devices (CCDP 4.1.2(d)(vi)).

G. Glass surfaces which use external films or coatings perceivable by birds (CCDP 4.1.2(d)(vii)).

VI. Bird-Safe Building Checklist

Use of this checklist: This checklist serves three purposes: 1) assessing risk factors and determining risks which must be addressed by the requirements); 2) increasing awareness of risk factors that are de minimis and don't require treatment; and 3) evaluating buildings for certification as a bird-safe building.

1 REQUIREMENTS FOR THE MOST HAZARDOUS CONDITIONS: The conditions that warrant special concern in San Francisco are designated by red-shaded boxes. These red boxes indicate prohibited building conditions or conditions which are only permitted if the glazing is installed with bird-safe glazing treatments. If the project combines a glass façade with a high-risk location ("location-related hazard", line 5-7), glazing treatments will be required for the façade(s) such that the amount of untreated glazing is reduced to less than 10% for the façade facing the landscaping, forest, meadow, grassland, wetland, or water. If a project creates a new bird-trap or "feature-related hazard" (lines 19-22) or remodels an existing feature-related hazard, bird-safe treatment will be required.

2 INCREASING AWARENESS: Owners of buildings with a façade of greater than 50% glass (lines 9 -10) are strongly encouraged to evaluate the building against the checklist and to help provide future tenants with copies of this guide. Use this checklist to evaluate design strategies for building new structures and retrofitting existing buildings throughout the City. This checklist summarizes conditions that could contribute to bird mortality and will help to identify the potential risks. Interested neighborhood groups and trade associations are encouraged to contact the Department for suggestions on how to proactively increase awareness of the issue and make bird safety practices a part of the construction lexicon.

3 VOLUNTARY RATINGS: Project sponsors interested in submitting a project for "Bird-Safe Certification" may use this form. The Department will partner with local artists to produce appropriate artwork and/or plaques to acknowledge those who actively seek to reduce bird collisions on their property. The ratings system will create tiers certification to recognize projects that meet minimum requirements as well as those projects that exceed the requirements.

RISK ASSESSMENT LEGEND:

Potential Risk Factors: These shade indicate factors that may present hazards to birds. Note: actual risks vary greatly depending upon building and site-specific variables.

GRAY: This shade indicates potential increased risk. NOTE: *The net assessment of total risk varies with the combination of building factors. While every building in San Francisco will present some element of risk to birds, only combinations with "red" boxes present a risk level necessitating bird-safe treatments.*

RED: This shade indicates prohibited conditions or conditions which are prohibited unless bird-safe treatment is applied.

CERTIFICATION LEGEND:

Bird-Safe Building Certification and Acknowledgement: Buildings which avoid creating hazards or which enhance bird safety with treatments identified as effective in this document would be acknowledged by the City and could be marketed as such. This document proposes three levels of certification by the City. Certification is determined by applying the checklist criteria.

By checking all of the boxes for one (or more) of these colors on the Bird-Safe Building Checklist (page 39), a building owner is eligible to apply to the Planning Department for Bird-Safe Building Certification.

Yellow: Bird-Safe Building The building meets the minimum conditions for bird-safety. This level focuses on ensuring "bird-hazards" and "bird traps" are not created or are remedied with bird-safe treatments.

Green: Select Bird-Safe Building The building meets all of the minimum requirements; commits to "lights out" practices during migratory seasons; reduces untreated glazing beyond the requirements; and commits to educating future building occupants.

Blue: Sterling Bird-Safe Building This is the highest level of Bird-Safe Building certification possible. The building meets all of the conditions of the other certification levels, plus the building reduces the amount of glass on the façade, avoids or treats additional hazards—beyond the requirements, and features year-round best management practices for lighting.

BIRD-SAFE BUILDING CHECKLIST

Using the key on page 38, complete this checklist to evaluate potential bird-hazards or eligibility for Bird-Safe Building Certification.

		QUESTION		YES	NO
MACRO-SETTING (PAGE 12, 16)	1	**Is the structure located within a major migratory route?** (All of San Francisco is on the Pacific Flyway)			
	2	**Is the location proximate to a migratory stopover destination?** (Within 1/4 mile from Golden Gate Park, Lake Merced or the Presidio)			
	3	**Is the structure location in a fog-prone area?** (Within 1/2 mile from the ocean or bay)			
MICRO-SETTING (LOCATION-RELATED HAZARD) (PAGES 12, 16, 28-29)	4	**Is the structure located such that large windows greater than 24 square feet will be opposite of, or will reflect interlocking tree canopies?**			
	5	**Is the structure inside of, or within a distance of 300 feet from an open space 2 acres or larger dominated by vegetation?** (Requires treatment of glazing, see page 28)			
	6	**Is the structure located on, or within 300 feet from water, water features, or wetlands?** (Requires treatment of glazing, see page 28)			
	7	**Does the structure feature an above ground or rooftop vegetated area two acres or greater in size?** (Requires treatment of glazing, see page 29)			
GLAZING QUANTITY (PAGE 8)	8	**Is the overall quantity of glazing as a percentage of façade:** (Risk increases with amount of glazing)	**Less than 10%?**		
			More than 50%? (Residential Buildings in R-Districts must treat 95% of unbroken glazed segments 24 square feet or greater in size if within 300 feet of an Urban Bird Refuge.)		
	9	**Will the glazing be replaced?**	**More than 50% glazing to be replaced on an existing bird hazard (including both feature-related hazards as described in lines 19-22 and location-related hazard as described in lines 4-7)?** (Requires treatment see pages 29 and 31.)		
GLAZING QUALITY (PAGE 6, 7)	10	**Is the quality of the glass best described as:**	**Transparent** (If so, remove indoor bird-attractions visible from outside the windows.)		
	11		**Reflective** (If so, keep visible light reflectance low (between 10-20%) and consider what will reflect in the windows. Note: Some bird-safe glazing such as fritting and UV spectrum glass may have higher reflectivity that is visible to birds.)		
	12		**Mirrored or visible light reflectance exceeding 30%.** (Prohibited by Planning Code.)		
GLAZING TREATMENTS (PAGE 18-21)	13	**Is the building's glass treated with bird-safe treatments such that the "collision zone" contains no more than 10% untreated glazing for identified "location-related hazards" (lines 4-7) and such that 100% of the glazing on "feature-related hazards" (lines 19-22) is treated?**			
	14	**Is the building's glass treated for required "bird hazards" (as described in line 13) *and* such that no more than 5% of the collision zone (lower 60') glazing is untreated but not for the entire building?**			
	15	**Is the building glazing treated (as described above in lines 14 and 15) *and* such that no more than 5% of the glazing on the exposed façade is left untreated?**			
BUILDING FAÇADE GENERAL (PAGE 8, 13)	16	**Is the building façade well-articulated (as opposed to flat in appearance)?**			
	17	**Is the building's fenestration broken with mullions or other treatments?**			
	18	**Does the building use unbroken glass at lower levels?**			
BUILDING FEATURE-RELATED HAZARDS AND BIRD TRAPS (PAGE 8, 30-31)	19	**Does the structure contain a "feature-related" hazard or potential "bird trap" such as:**	**Free standing clear-glass walls, greenhouse or other clear barriers on rooftops or balconies?** (Prohibited unless the glazing is treated with bird-safe applications.)		
	20		**Free standing clear-glass landscape feature or bus shelters?** (Prohibited unless the glazing is treated with bird-safe applications.)		
	21		**Glazed passageways or lobbies with clear sight lines through the building broken only by glazing?**		
	22		**Transparent building corners?**		
LIGHTING DESIGN (PAGE 10, 28)	23	**Does the structure, signage or landscaping feature uplighting?** (Prohibited within 300 feet of an Urban Bird Refuge)			
	24	**Does the structure minimize light spillage and maximize light shielding?**			
	25	**Does the structure use interior "lights-out" motion sensors?**			
	26	**Is night lighting minimized to levels needed for security?**			
	27	**Does the structure use decorative red-colored lighting?**			
LIGHTING OPERATIONS (PAGE 12, 24-25)	28	**Will the building participate in San Francisco Lights Out during the migration seasons?** (February 15-May 31 and August 15-November 30th) To achieve "sterling" certification the building must participate in year-round best management practices for lighting.			
OTHER BUILDING ELEMENTS (PAGE 23)	29	**Does the structure feature rooftop antennae or guy wires?**			
	30	**Does the structure feature horizontal access wind generators or non-solid blades?** (Prohibited within 300 feet of an Urban Bird Refuge)			
CONSENT (PAGE 34)	31	**Does the building owner agree to distribute San Francisco's Bird-Safe Building Standards to future tenants?**			

Authorized Signature X _____ Date: _____

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1. Example products include CollidEscape and ABCBirdTape.

H. Artwork, drapery, banners, and wall coverings that counter the reflection of glass surfaces or block "see through" pathways (CCDP 4.1.2(d)(viii)).

Prior to Project Approval, the Port/City will review the site specific development proposals for compliance with the Glass and Reflective Surfaces paragraphs XII-XV (A-H) above.

Building Articulation:

Buildings to be articulated within the CVBMP built environment such that they minimize potential for bird strikes.

XVI. Structure design will include secondary and tertiary setbacks and, to the maximum extent possible, stepped back building design, protruding balconies, recessed windows, and mullioned glazing systems, shall be incorporated to the extent feasible. Balconies and other elements will step back from the water's edge (Settlement Agreement 4.5; CCDP 4.1.3(a); MMRP 4.8-23).

XVII. The tallest buildings on Parcel H-3 will be located generally on the southern portion of the parcel with building heights decreasing towards the north and west. The foregoing will not be interpreted to preclude incorporating secondary and tertiary setbacks along public streets (Settlement Agreement 4.5.5; CCDP 23.14; MMRP 4.8-23). Hotel structures shall be no more than a maximum height of 240 feet and the conference facility height is limited to a maximum of 120 feet (CCDP 23.14).

XVIII. Parcels containing surface parking, such as those depicted for the Sweetwater District, will be designed with parking lots located nearer to the WHAs. Site plans on parcels adjacent to WHAs will maximize distance between structures and such areas (Settlement Agreement 4.5.2; CCDP 4.1.3(d); MMRP 4.8-23).

XIX. Buildings shall be sited and designed to minimize glass and windows facing WHAs to the maximum extent possible. Design for towers on Parcel H-3 should avoid east-west monolith massing and should include architectural articulation (Settlement Agreement 4.5.1; CCDP 4.1.3(c) and 23.14; MMRP 4.8-23).

XX. Design features that increase the potential for bird strikes, such as walkways constructed of clear glass and "see through" pathways through lobbies, rooms and corridors, shall be avoided except for minor features intended to enhance view opportunities at grade level and only when oriented away from large open expanses (CCDP 4.1.3(b); MMRP 4.8-23).

The requirements as noted above in paragraphs XVI, XVII, XVIII, XIX, and XX shall be implemented in compliance with the MMRP.

Landscaped Areas:

Landscape plants used in the built environment (both within and outside of buildings) should be placed in a way as to minimize bird disorientation caused by reflection.

XXI. Exterior trees and other landscape plants shall be located [away from windows] and glass surfaces shall incorporate measures so that landscape plants are not reflected on building surfaces (CCDP 4.1.4(a); MMRP 4.8-23).

XXII. In small exterior courtyards and recessed areas, the building's edge shall be clearly defined with opaque materials and non-reflective glass (CCDP 4.1.4(b); MMRP 4.8-23).

XXIII. Interior plants shall be located a minimum of 10 feet away from glass surfaces to avoid or reduce the potential for attracting birds (CCDP 4.1.4(c); MMRP 4.8-23).

Prior to Project Approval, the Port/City will review the site specific development proposals for compliance with the above.

Objective 4.8-3

Bird Strikes Monitoring and Education. Monitoring for and public education about bird strikes is ongoing, adaptive and identifies problem areas to be addressed through refinement of management and strike prevention measures.

I. For Phase I projects, the project applicant shall retain a qualified biologist to design a protocol and schedule, in consultation with the USFWS and subject to the approval of the District or City, as appropriate depending on jurisdiction, to monitor bird strikes which may occur during the first 12 months after the completion of construction. Within 60 days after completion of the monitoring period, the qualified biologist shall submit a written report to the District or the City, which shall state the biologist's findings and recommendations regarding any bird strikes that occurred. Based on the findings of those reports, the District or the City, as appropriate depending on jurisdiction, in coordination with the USFWS, will evaluate whether further action is required, which may include further monitoring or redesign of structures for future phases (CCDP 4.1.6; MMRP 4.8-23). Reports will be shared with the WAG.

II. Continue to monitor bird strikes throughout the life of the development. Develop measures to address persistent problem areas in accordance with this NRMP (Settlement Agreement 4.5.4; CCDP 4.2; MMRP 4.8-23)

   A. Nighttime lighting in tower buildings will be addressed and evaluated through adaptive management such that impacts on birds are avoided and minimized (Settlement Agreement 4.5.4; CCDP 4.2; MMRP 4.8-23). Lighting will be screened to the maximum extent possible (see detail above).

   B. Minimization of impacts of buildings on birds and the WHAs will continue to be a priority in the selection of window coverings, glass color, other exterior materials, and design of exterior lighting and lighting of signs (Settlement Agreement 4.5.4; CCDP 4.2; MMRP 4.8-23).

   C. Seek to coordinate bird strike monitoring efforts with partners and volunteer organizations. Share monitoring results as appropriate (e.g., USFWS, CDFW, CCC, City of Chula Vista, Port, and the public upon request).

III. Public education regarding the potential for and danger of bird strikes in the built environment should target tenants, residents, and visitors to the CVBMP area. Education programs and materials should be updated as needed, based on bird strike monitoring results.

A. The owner or operator of each building shall implement an ongoing procedure to the satisfaction of the District or the City to encourage tenants, residents, and guests to close their blinds, drapes, or other window coverings to reduce or avoid the potential for bird strikes (CCDP 4.1.5(a); MMRP 4.8-23).

B. The owner or operator of each building shall enroll in the Fatal Light Awareness Program's "Bird-Friendly Building Program" and shall implement ongoing tenant, resident, and guest education strategies, to the satisfaction of the District or the City, to reduce or avoid the potential for bird strikes, such as elevator and lobby signage and educational displays, e-mail alerts and other bulletins during spring and fall migratory seasons, and other activities designed to enlist cooperation in reducing bird collisions with the building (CCDP 4.1.5(b); MMRP 4.8-23).

The requirements as noted above in paragraphs I, II, and III.A and III.B, shall be implemented in compliance with the MMRP.

Figure 4-4. Concept of a furnishing for the urban-wildland interface.

5.0 Maximum Ecosystem Services in the Built Environment and Open Space

"Ecosystem services are taken for granted and until recently have not been calculated as part of the economic equation. We have separated ourselves from the natural process rather than understanding we are part of it. Our global civilization rests on the foundation of natural capital. This includes climate regulation, filtration of fresh water through wetlands, soil production, natural freshwater reservoirs retained by snowpack and glaciers, plant pollination, production of the forest ecosystems and the world's oceans." -Mike McCoy, Southwest Wetlands Interpretive Association

Built environments often have a net negative impact on ecosystem services (i.e., they use more than they produce),. The purpose of this chapter is to focus attention on strategies that provide a net benefit to the environment.

Maximizing ecosystem services in the built environment begins with principles of sustainable design of buildings and landscapes. Net-positive impacts to ecosystem services can be reached using green space between buildings through ecological grounds design and maintenance, stormwater retention, wildlife friendly gardens and parks, and edible gardens. Typically, development of built environments consumes natural resources such as forest products, agricultural land, water and air to provide for the consumption needs of inhabitants. Development and maintenance policies for municipal infrastructure, purchasing, and service delivery can have a negative impact on ecosystem services, but this need not be the case. By taking less and providing more, the balance sheet of ecosystem services consumed and produced within the built environment and open space approaches neutral to positive impact as compared to the current environment.

A compelling case can be made that implementation of reasonable and sustainable design, construction, and management guidelines for the built environment, prior to the initiation of the CVBMP development, can provide ecosystem services. Appropriate landscape design serves to reduce the *ecological footprint* of the CVBMP development as well as provide for the production of ecosystem services.

This chapter provides goals, objectives, and strategies to achieve that end, while complying with agency requirements.

5.1 Key Messages

- Maximizing ecosystem services and natural resource protection in the CVBMP area is an overarching strategy for achieving sustainability.
- Effective management of the water cycle within the built environment and open space can significantly reduce the consumption of ecosystem services, while contributing to ecological and human well-being.
- Integration of open space with the built environment supports all residents, employees, guests and the general public and draws people to the Chula Vista Bayfront.

- Alternative modes of transportation reduce greenhouse gas (GHG) emissions and contribute to ecosystem services.
- Appropriate planning, design, and maintenance of built environment and open space landscapes maximize the production of ecosystem services.
- The two featured parks in Sweetwater and Otay Districts are the natural jewels of the CVBMP footprint.
- Parks and Buffer Areas are integral to adaptation to sea level rise.
- Open space, including parks and Limited Use Buffer Areas, provides for a unique sense of place.

This chapter is organized in five sections:

5.2 The Built Environment

Goal

Sustainability and Resource-Use Efficiency. *Planning, development and management of the built environment establishes sustainability and resource-use efficiency.*

Objective 5.2-1

Balanced Ecosystem Services. The use and production of ecosystem services within the built environment are balanced.

I. Optimize ecosystem services in the built environment by designing for LID,[1] conservation of natural resources and ecosystem benefits (Port of San Diego Climate Action Plan 2013).

Three Design Principles Inspired by Natural Systems
Everything is a resource for something else. In nature, the discharge of one system becomes food for another. Buildings can be designed to be disassembled and safely returned to the soil (biological nutrients), or re-utilized as high quality materials for new products and buildings (technical nutrients).
Use renewable energy. Living things thrive on the energy of current solar income. Similarly, human constructs can utilize renewable energy in many forms-such as wind, geothermal and gravitational energy-thereby capitalizing on these abundant resources while supporting human and environmental health.
Celebrate diversity. Around the world, geology, hydrology, photosynthesis and nutrient cycling, adapted to locale, yield an astonishing diversity of natural and cultural life. Designs that respond to the unique challenges and opportunities offered by each place fit elegantly and effectively into their own niches.
Source: William McDonough and Partners 2014[a]

a. McDonough is one of the principal innovators and practitioners of green architecture in North America. The former Dean of the College of Architecture at the University of Virginia is now in private practice in Charlottesville, Virginia.

II. Reduce the impacts of urban heat islands, such as parking lots, with the use of cool paving, cool roofs, shade trees and other technologies.

III. Incorporate technologies that enhance water quality and improve stormwater management where appropriate and effective. These include permeable pavement, rooftop gardens, rain gardens and similar LID technologies.

IV. Consistent with all provisions of the PMP, place new structures a sufficient distance landward or incorporate other sea level rise adaptation strategies to eliminate or minimize, to the maximum extent feasible, hazards associated with anticipated sea level rise over the expected economic life of the structure (CCDP 3.2).

> *Prior to Project Approval for site-specific development proposals, the Port/City will require the Project Proponent to provide documentation to ensure the above requirements are met.*

Objective 5.2-2

Efficient Water Use. Water, a primary natural resource within the CVBMP footprint, is used as efficiently as possible to reduce overall volume of water consumed. Water reuse and recycling is implemented where feasible.

I. Create water-efficient landscapes (MMRP 4.6-6, 6.8-3).

   A. Install state-of-the-art water-efficient irrigation systems and devices, such as soil moisture-based irrigation controls and subsurface irrigation delivery systems (MMRP 4.6-6, 6.8-3).

   B. Use reclaimed water for landscape irrigation in new developments and on public property where appropriate. Install the infrastructure to deliver and use reclaimed water (MMRP 4.6-6, 6.8-3).

1. In LID, hydrological functions of storage, infiltration, and groundwater recharge, as well as the volume and frequency of discharges are maintained through the use of integrated and distributed micro-scale stormwater retention and detention areas, reduction of impervious surfaces, and lengthening of flow paths and runoff time (Coffman 2000). This contrasts with conventional approaches that typically convey and manage runoff in large facilities located at the base of drainage areas.

C. Incorporate a network of rainwater harvesting structures such as rain barrels or cisterns to collect rooftop rainwater, to maximize its reuse for maintained landscapes.

II. Design buildings to be water efficient (MMRP 4.6-6, 6.8-3).
   A. Install water-efficient fixtures and appliances (MMRP 4.6-6, 6.8-3).
   B. Use gray water from on-site buildings for irrigation use. (Gray water is untreated household wastewater from bathtubs, showers, bathroom wash basins, and water from clothes washing machines. Gray water can also be treated on-site to remove undesirable contents such as soaps and detergents.) For example, install dual plumbing in all new development allowing gray water to be used for landscape irrigation (MMRP 4.6-6, 6.8-3).
      1. When gray water is used for irrigation, the soil in the area being irrigated will be periodically monitored.

III. Regulate watering methods (e.g., prohibit systems that apply water to non-vegetated surfaces) and strictly control runoff (MMRP 4.6-6, 6.8-3).

IV. Regulate the use of water for cleaning outdoor surfaces and vehicles (MMRP 4.6-6, 6.8-3). See also Section 3.0: Minimizing Harm to Neighboring Wetlands and Marine Waters.

V. Implement LID development practices that maintain the existing hydrologic character of the site to manage stormwater and protect the environment. (Retaining stormwater runoff on-site can significantly reduce the need for energy-intensive imported water at the site) (MMRP 4.6-6, 6.8-3). See also Section 3.0: Minimizing Harm to Neighboring Wetlands and Marine Waters.

VI. During the development planning phase, devise a comprehensive water conservation strategy. The strategy may include many of the specific items listed above, plus other innovative measures that are appropriate. A comprehensive strategy may also provide for a stance of readiness to adopt water recycling technologies as these become approved by local water authorities (MMRP 4.6-6, 6.8-3).

VII. Take advantage of all opportunities to educate residents, employees and the public about water conservation and available programs and incentives (MMRP 4.6-6, 6.8-3).

> *The requirements as noted in paragraphs II-VII above shall be implemented in compliance with the MMRP.*

Objective 5.2-3

Energy Efficiency and Renewable Energy. Ensure that the CVBMP development is comprised of high performance and highly energy-efficient buildings and clean, efficient generation. The development of the CVBMP offers the Port and City a unique opportunity to demonstrate the viability of responsible and sustainable development practices (Settlement Agreement 15; CCDP 15).

I. Prior to the issuance of certificates of occupancy or building permits, the project applicant shall demonstrate that the Proposed Project complies with the above for Title 24 of the California Energy Efficient Standards for Residential and Nonresidential Buildings. These requirements, along with the following measures, shall be incorporated into the final project design to the satisfaction of the Port and the Director of Planning and Building for the City (MMRP 4.16-1 through 4.16-6):

A. Use of low NOx emission water heaters;

B. Installation of energy-efficient and automated air conditioners when air conditioners are provided;

C. Energy-efficient parking area lights;

D. Exterior windows shall be double paned.

"Energy efficiency combined with alternative energy could eliminate space heating demands and would produce enough electricity to power more than one building in a complex servicing efficient appliances. This project could serve as a model for energy efficiency and electrical energy production." - Mike McCoy, Southwest Wetlands Interpretive Association

II. Energy efficiency and renewable energy strategies may include, but are not limited to:

A. Design buildings to be energy efficient. Site buildings to take advantage of shade, prevailing winds, landscaping, and sun screens to reduce energy use (MMRP 4.6-6, 6.8-3).

B. Install efficient lighting and lighting control systems. Use daylight as an integral part of lighting systems in buildings (MMRP 4.6-6, 6.8-3).

C. Install light colored "cool" roofs, cool pavements, and strategically placed shade trees (MMRP 4.6-6, 6.8-3; see also 5.1, first objective II).

D. Provide information on energy management services for large energy users (MMRP 4.6-6, 6.8-3).

E. Install energy-efficient heating and cooling systems, appliances and equipment, and control systems (MMRP 4.6-6, 6.8-3).

F. Install LEDs for traffic, street, and other outdoor lighting (MMRP 4.6-6, 6.8-3).

G. Limit the hours of operation for outdoor lighting (MMRP 4.6-6, 6.8-3).

H. Use solar heating, automatic covers, and efficient pumps and motors for pools and spas (MMRP 4.6-6, 6.8-3).

I. Provide education on energy efficiency (MMRP 4.6-6, 6.8-3).

J. Install solar and wind power systems, solar and tankless hot water heaters, and energy-efficient heating ventilation and air conditioning. Educate consumers about existing incentives (MMRP 4.6-6, 6.8-3).

K. Install solar panels on carports and over parking areas (MMRP 4.6-6, 6.8-3).

L. Use combined heat and power in appropriate applications (MMRP 4.6-6, 6.8-3).

M. Recover by-product methane to generate electricity (MMRP 4.6-6, 6.8-3).

The requirements as noted in paragraphs A-M above shall be implemented in compliance with the MMRP.

Credits towards energy reduction requirements:

III. Participation in a City of Chula Vista sponsored energy efficiency program provided that the resulting energy reduction may be calculated and verified. The methodology for calculating the amount of the credit toward the minimum of a fifty (50) percent energy reduction requirement under the Title 24 Path and the LEED Path is described in Exhibit 3 (Settlement Agreement 15.2.2.3; CCDP 15.1(f); see Appendix G: Energy Efficiency Requirements).

IV. Participation in one of SDG&E's Voluntary Demand Reduction (DR) utility rates will be awarded a waiver for three (3) percent credit against the Baseline to determine compliance with the minimum of a fifty (50) percent energy reduction requirement (Settlement Agreement 15.2.2.5; CCDP 15.1(h)).

V. Participation in one of SDG&E's Mandatory DR utility rates will be awarded a waiver for five (5) percent credit against the Baseline to determine compliance with the minimum of a fifty (50) percent energy reduction requirement (Settlement Agreement 15.2.2.6; CCDP 15.1(i)).

VI. Incorporation of natural ventilation into design such that at least 75% of the condition area is naturally ventilated according to the guidelines set forth in Exhibit 3 (see Appendix G: Energy Efficiency Requirements), and if this benefit was not included in the energy efficiency calculations, the project will be awarded either: a waiver for five (5) percent credit against the Baseline to determine compliance with the minimum of a fifty (50) percent energy reduction requirement; or, a waiver for ten (10) percent credit will be awarded if the natural ventilation system is coupled with an energy or cooling system that does not draw from the grid if and when natural ventilation is not used. This may be prorated if less than seventy-five (75) percent of the conditioned area is naturally ventilated (Settlement Agreement 15.2.2.7; CCDP 15.1(j)).

VII. Each Development will develop, implement, and for the life of the each Development, maintain a measurement and verification plan ("M&V Plan") (Settlement Agreement 15.2.2.4; CCDP 15.1(g)).

   A. Such participation has been shown to increase the persistence of energy efficiency ("EE") and also to provide a way of recognizing and encouraging the ongoing conservation efforts of occupants and facility managers and will be awarded a waiver for five (5) percent credit against the Baseline to determine compliance with the minimum of a fifty (50) percent energy reduction requirement (Settlement Agreement 15.2.2.4; CCDP 15.1(g)).

   B. The District will include in all leases the requirement to perform an energy audit every three (3) years for the convention centers and hotel Developments over 300 rooms and five (5) years for all other Developments to ensure that all energy systems are performing as planned or corrective action will be taken if failing to meet EE commitments (Settlement Agreement 15.2.2.4; CCDP 15.1(g)).

Prior to Project Approval for applicable site-specific development proposals, the Port/City will require the Project Proponent to provide documentation to ensure the above requirements are met.

VIII. Within one year following the CCC approval of a PMP amendment substantially consistent with the CVBMP, the District will in good faith consider adoption of an ordinance in a public hearing process that, if approved by the Board of Port Commissioners, will require the following: (Settlement Agreement 15.2.5; CCDP 15.2)

A. Within six (6) months following adoption of the ordinance and every three (3) years thereafter, the District will conduct an energy efficiency and renewable energy analysis that will (Settlement Agreement 15.2.5.1; CCDP 15.2(a)):

1. Assess the feasibility and cost-effectiveness of programs and options to reduce demand on the electric grid from all lands under District's jurisdiction; and, (Settlement Agreement 15.2.5.1(1); CCDP 15.2(a)(i))
2. Include, but not be limited to, an assessment of the potential for reduction in energy use on all land under District's jurisdiction through increases in energy efficiency, demand response, clean renewable and distributed energy generation and other methods and technologies. (Settlement Agreement 15.2.5.1(2); CCDP 15.2(a)(ii))

B. Upon the completion of each analysis, the District will consider good faith implementation of cost-effective programs and options as part of its commitment to GHG reductions and global climate change prevention activities consistent with Assembly Bill 32. (Settlement Agreement 15.2.5.2; CCDP 15.2(b))

C. The results of each analysis will be published on the District's website and received by the District's Board of Port Commissioners in a public forum (Settlement Agreement 15.2.5.3; CCDP 15.2(c)).

The Port will prepare a Sustainable Leasing Policy to be considered for adoption by the Board of Port Commissioners.

Objective 5.2-4

Transportation. The design and management of the CVBMP footprint promotes alternative modes of transportation that contribute to reducing congestion and GHG emissions, provide easy access to the CVBMP footprint, and enhance the user's experience in both the built and natural environments.

I. Design and encourage the use of alternate transportation by including the H Street transit center close to the rail line, bike and pedestrian pathways, water taxis, and a private employee parking shuttle (CCDP 24.1).

Prior to Project Approval, the Port/City will review the site-specific development proposals for consistency with the transit policy described in paragraph I above.

A. Allow for spaces for car-share program vehicles within or adjacent to the CVBMP footprint for resident, visitor and worker use to encourage reduction in the number of vehicles used in the area.

II. Include connections to the planned Bayshore Bikeway and provide an additional local bikeway loop that will be safer and more scenic as it is located closer to the water (CCDP 24.2).

Prior to Project Approval, the Port/City will review the site-specific development proposals for consistency with paragraph II above.

A. Plan and implement a bike-share or bike rental program within the CVBMP footprint.

III. The District and City shall explore the operating and funding potential for a shuttle service that would link various destinations within the western portions of Chula Vista, including the CVBMP area. Implementation of the Chula Vista Bayfront Shuttle is anticipated to include participation by commercial development within the CVBMP area (CCDP 24.3).

The CVBMP project's transportation system was developed to focus vehicular activity on the eastern edges of the property, near I-5 and its interchanges, by placing a majority of the common parking areas on the eastern properties, while designing for pedestrian connections and transit service. This will result in narrower, more pedestrian-friendly streets along the waterfront. In order to reduce traffic-related impacts within the CVBMP area, the following transit policies shall be considered in the development of the CVBMP (CCDP 24).

IV. The Chula Vista Bayfront shuttle will service the CVBMP area with a key focus on connecting general users to and from: downtown areas east of Interstate 5, the resort conference center, the residential project, park areas, and existing trolley stops. The shuttle system shall be designed with the following design considerations: (CCDP 24.4).

A. Ensure that it has fewer stops than a conventional bus and is located as close as possible to the major traffic generators (CCDP 24.4(a)).

B. Plan the general route of the transit shuttle to travel along Third Avenue between F Street and H Street, along F Street between Woodlawn Avenue and Third Avenue, along Woodlawn Avenue between E Street and F Street, along E Street, Marina Parkway, Street C, and Street A within the Bayfront development area, and along H Street between the Bayfront and Third Avenue (CCDP 24.4(b)).

C. Plan the route to operate as a two-way loop with stops in both directions (CCDP 24.4(c)).

D. Plan for shuttles to initially run every 15 minutes (CCDP 24.4(d)).

E. Consider a private shuttle system to transport employees between the H-18 parking structure and the H-3 parcel in the Harbor District (CCDP 24.4(e)).

F. Evaluate the use of an electric or reduced-emissions shuttle.

V. Shuttle service shall be phased concurrent with development. At a minimum, service shall be provided upon the issuance of Certificate of Occupancy for either the H-3 resort conference center hotel or the 500th residential unit. Additional stops shall be provided at the Signature Park, the Recreational Vehicle Park, the H-18 parking structure, and the Park in Otay District, as these uses are developed (CCDP 24.5).

VI. In the Harbor District, typical parking requirement standards for high intensity uses may be reduced if it can be demonstrated that the use will be adequately served by alternative transit (CCDP 24.6).

Prior to Project Approval, the Port/City will review the site-specific development proposals for consistency with the above.

VII. In order to reduce transportation-related air quality impacts, the following items should be encouraged at the project-level planning phase (CCDP 24.7; MMRP 4.6-6, 6.8-3):

A. Limit idling time for commercial, non-refrigerated vehicles, including delivery and construction vehicles. Refrigerated delivery trucks may remain idling while at loading docks (CCDP 24.7(a); MMRP 4.6-6, 6.8-3).

B. Use low or zero-emission vehicles, including construction vehicles (CCDP 24.7(b); MMRP 4.6-6, 6.8-3).

C. Promote ride sharing programs; e.g., by designating a certain percentage of parking spaces for ride sharing vehicles, designating adequate passenger loading and unloading and waiting areas for ride sharing vehicles, and providing a web site or message board for coordinating rides (CCDP 24.7(c); MMRP 4.6-6, 6.8-3).

D. Provide the necessary facilities and infrastructure to encourage the use of low or zero-emission vehicles (e.g., electric vehicle charging facilities and conveniently located alternative fueling stations) (CCDP 24.7(d); MMRP 4.6-6, 6.8-3).

E. Provide public transit incentives, such as free or low-cost monthly transit passes (CCDP 24.7(e); MMRP 4.6-6, 6.8-3).

F. For commercial projects, provide adequate bicycle parking near building entrances to promote cyclist safety, security, and convenience. For large employers, provide facilities that encourage bicycle commuting, including, e.g., locked bicycle storage or covered or indoor bicycle parking (CCDP 24.7(f); MMRP 4.6-6, 6.8-3).

G. Institute a telecommuter work program. Provide information, training, and incentives to encourage participation. Provide incentives for equipment purchases to allow high quality teleconferences (CCDP 24.7(g); MMRP 4.6-6, 6.8-3).

H. Provide information on all options for individuals and businesses to reduce transportation-related emissions. Provide education and information about public transportation (CCDP 24.7(h); MMRP 4.6-6, 6.8-3).

The requirements as noted in paragraphs VII (A-H) above shall be implemented in compliance with the MMRP.

5.3 Open Space

Goal

Compatible Open Space Fosters Positive Experiences. *Open space in the built environment and the designated park areas of the CVBMP footprint provides for a positive human experience of nature and is compatible with its surrounding natural communities.*

Objective 5.3-1

Engaging Visitors in Open Space. Open spaces and other public areas are pedestrian-oriented and provide an engaging interface with natural areas of the CVBMP footprint designed for public use, such as parks.

I. Open spaces integrated into hotels must include activating uses such as restaurants, outdoor sitting and dining areas and retail shops, which would be open to the public as well as hotel patrons (CCDP 20.5).

II. Public access and other path-finding signage should be placed at strategic locations throughout the hotel complexes and to guide guests and visitors to and from public use areas, shops and restaurants, restrooms and other facilities (CCDP 20.6).

III. To help integrate all publicly accessible areas and provide convenience and low cost services for the general public, the ground floor of the hotel developments and associated outdoor areas should contain a variety of pedestrian-oriented amenities, which may include reasonably priced restaurants, newspaper stands, outdoor cafes with sit down and walk up service, informational kiosks, ATM's, public art, or gift shops easily accessible to the public (CCDP 20.7).

IV. The design of the Resort Conference Center development must provide a strong public interface with the adjacent Signature Park by including publicly accessible areas with convenience and low cost services for the general public. Other public amenities that may be provided at various locations around the hotel site include public wireless connectivity, drinking fountains, bike racks, horticultural interpretive labels on landscape elements, educational and historic plaques/displays, and dog drinking fountains. These elements represent public recreational opportunities and will encourage access to and around the site (CCDP 20.8).

Prior to Project Approval, the Port/City will review the site-specific development proposals for consistency with the above.

Objective 5.3-2

Pedestrian and Bicycle Pathways. Pathways for pedestrians and bicycle users are designed and designated to provide safe circulation and enjoyment of the CVBMP built and natural environments, while minimizing disturbances to sensitive WHAs and other users (Map 5-1).

I. Provide a continuous open space system, fully accessible to the public, which would seamlessly connect the Sweetwater, Harbor, and Otay Districts through components such as a continuous shoreline promenade and a continuous bicycle path linking the parks and ultimately creating greenbelt linkages (CCDP 20.2).

II. Shoreline promenades shall be a minimum of 25 feet in width [in the Harbor District] allowing both pedestrians and bicyclists and shall be constructed directly along the water front where feasible and maintained free of private encroachment around the Bayfront. Pathways and walking trails not proposed along the shoreline shall be a minimum width of 12 feet (CCDP 20.1).

Prior to Project Approval, the Port/City will review the site-specific development proposals for consistency with paragraphs I and II above.

A. Design of pedestrian paths in the Sweetwater and Otay Districts, including the shoreline promenade, will be sensitive to the paths' adjacency to sensitive resources at the F&G Street Marsh, the Sweetwater Marsh NWR, and the J Street Marsh. The pedestrian trail serving as the promenade along the western side of the Sweetwater District and Otay District will be approximately 12-feet wide (CVBMP Public Access Program Section 3 (p. 5), San Diego Unified Port District and City of Chula Vista, 2012). Continue cooperative evaluation of narrower paths for meandering trails and spur paths.

B. Collaborative efforts will be made to work with the Coastal Commission and the Port/City to evaluate reducing minimum path widths.

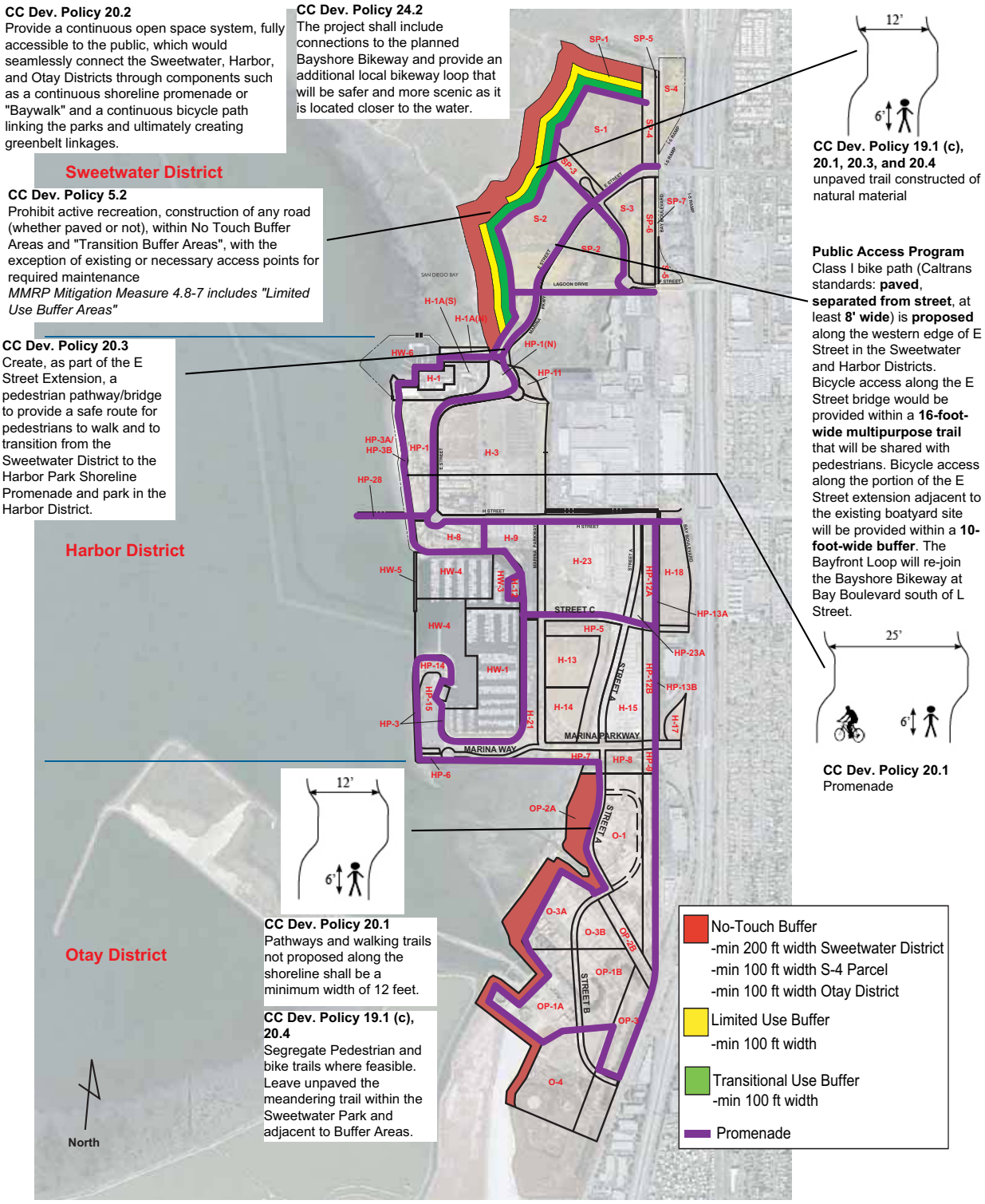


Exhibit 2 – Buffer Areas

(Defined by § 4.1.3 and 4.1.4 of the Chula Vista Bayfront Master Plan Settlement Agreement; the agreement prevails over any conflict with this exhibit)

Map 5-1. MMRP Exhibit 2 illustrating CVBMP Buffer Areas and Promenade. Overlay of Chula Vista Bayfront Development Policies (CCDP) identify guidelines for creation and use of Buffer Areas, and for construction of various pedestrian and bicycle pathways within the CVBMP.

III. Create a meandering pedestrian trail constructed of natural material that is easily maintained and interwoven throughout the Signature Park. Create, as part of the E Street Extension, a pedestrian pathway/bridge to provide a safe route for pedestrians to walk and to transition from the Sweetwater District to the Harbor Park Shoreline Promenade and park in the Harbor District (CCDP 20.3). A meandering public trail will be provided along the entire length of the Bayfront. The meandering trail within the Sweetwater Park and adjacent to Buffer Areas will not be paved (Settlement Agreement 6.3; CCDP 19.1(c), 20.4). Minimize the impacts of trails in the buffers consistent with quality of human experience and habitat protection.

IV. Pedestrian and bike trails will be segregated where feasible (Settlement Agreement 6.3; CCDP 19.1(c), 20.4).

Prior to Project Approval, the Port/City will review the site-specific development proposals for consistency with paragraphs III and IV above.

A. Locate bike trails outside of the Sweetwater and Otay District Buffer Areas. A separate bikeway for commuting or fast cyclists is recommended to avoid use conflicts or dangerous situations with lower intensity and lower speed users, such as families with strollers, etc.

V. Walkways, paths and overlooks near the WHAs outside of the No-Touch Buffer Areas will be designed in accordance with the Settlement Agreement 4.2, CCDP 11.1, and MMRP 4.8-7.

A. Alignment, design, and general construction plans of walkways and overlooks will be developed to minimize potential impacts to WHAs (Settlement Agreement 4.2.1; CCDP 11.1(a)).

B. Path routes will be sited with appropriate setbacks from WHAs (Settlement Agreement 4.2.2; CCDP 11.1(b)).

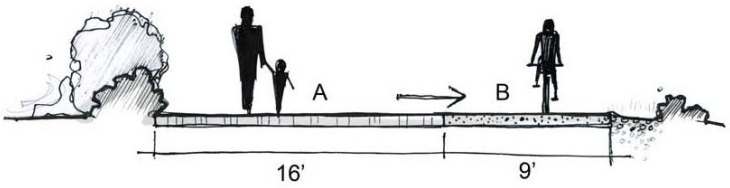
C. Paths running parallel to shore or marsh areas that could cause or contribute to bird flushing will be minimized throughout the CVBMP footprint (Settlement Agreement 4.2.3; CCDP 11.1(c)).

D. Design walkways and overlooks to minimize and eliminate, where possible, perching opportunities for raptors and shelter for skunks, opossums or other predators (see also Section 4.0: A Wildlife Friendly Urban-Wildland Interface) (Settlement Agreement 4.2.4; CCDP 11.1(d)).

E. Walkways and overlooks that approach sensitive areas will be blinded, raised, or otherwise screened so that birds are not flushed or frightened. In general, walkway and overlook designs will minimize visual impacts on the WHAs of people on the walkways (Settlement Agreement 4.2.5; CCDP 11.1(e)).

The requirements as noted in paragraphs V (A-E) above shall be implemented in compliance with the CCDP.

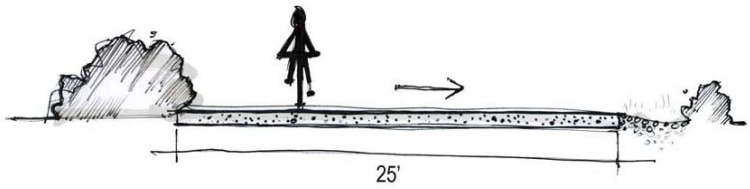
Figure 5-1 through Figure 5-6 provide conceptual design options for pedestrian and bike paths, and maintenance crossings.



Promenade Trail Type I: Multi-use pedestrian and bike path
Location: Harbor District
Pedestrian Criteria (A): Permanent, accessible, env. friendly, and slightly discouraging to bicyclists
Bicycle Criteria (B): Class I - permanent, environmentally friendly, and smooth
Drainage System: Sub-surface and sloped to adjacent bioswale
Appropriate Material: A- Permeable paver system **B**- Stabilized crushed aggregate such as Natural Pave.

LUTSKO ASSOCIATES landscape

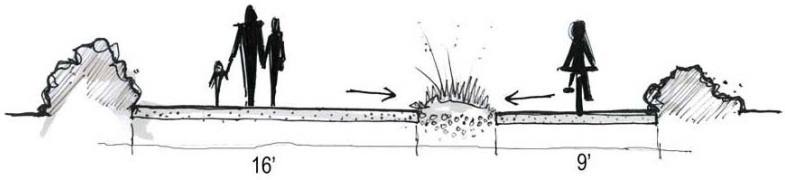
Figure 5-1. The 25-foot wide Promenade in the Harbor District Type 1 with segregated but undivided pedestrian-bicyclist use.



Promenade Trail Type II: Multi-use pedestrian and bike path
Location: Harbor District
Criteria: Non segregated, pedestrian appropriate paving. Permanent, accessible, & environmentally friendly
Drainage System: Sloped to adjacent bioswale
Appropriate Materials: Stabilized crushed aggregate such as Natural Pave

LUTSKO ASSOCIATES landscape

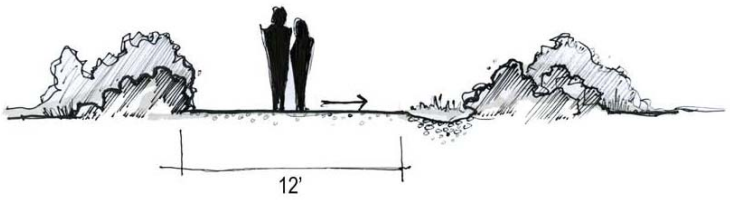
Figure 5-2. The 25-foot wide Promenade in the Harbor District Type 2 with no segregation between bicyclists and pedestrians.



Promenade Trail Type III: Multi-use pedestrian and bike path segregated where feasible by vegetated swale
Location: Harbor District
Pedestrian Criteria (A): Permanent, accessible, env. friendly, and slightly discouraging to bicyclists
Bicycle Criteria (B): Class I - permanent, environmentally friendly, and smooth
Drainage System: Sub-surface and/or sloped to central bioswale where feasible
Appropriate Material: Permeable paver system and/or Stabilized crushed aggregate such as Natural Pave.

LUTSKO ASSOCIATES landscape

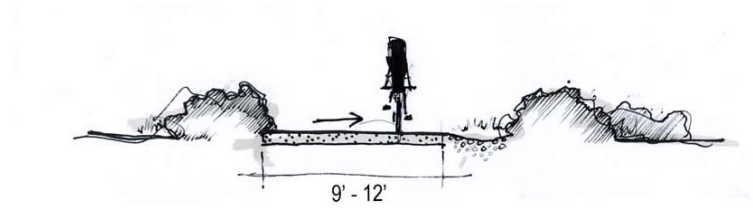
Figure 5-3. The 25-foot wide Promenade in the Harbor District Type 3 with pedestrians and bicyclists segregated by a vegetated swale.



Meandering Pedestrian Path: Pedestrian only
Location: Sweetwater & Otay Buffer and Promenade
Criteria: Unpaved
Drainage System: Sloped to bioswale **Alt:** None
Appropriate Material: Compacted site soil (unpaved) **Alt:** Stabilized crushed stone (D.G.) or Amended site soil with crushed stone additive

LUTSKO ASSOCIATES landscape

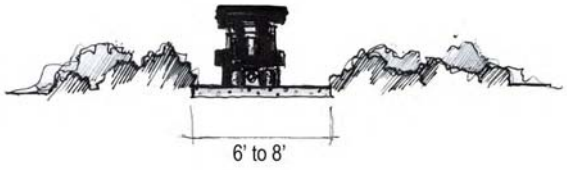
Figure 5-4. Pedestrian path conforming to CCDP 20.1 guidelines for pedestrian pathways not proposed along the shoreline, such as in Transitional Use or Limited Use Buffer Areas in the Sweetwater and Otay Districts, park areas and open space.



Meandering Bike Path: Bicyclists only
Location: Sweetwater, Harbor, & Otay Districts
Criteria: Class I Bikeway - permanent, env. friendly, smoothly paved
Drainage System: Sloped to bioswale **Alt:** None
Appropriate Material: Stabilized crushed aggregate paving system such as Natural Pave

LUTSKO ASSOCIATES landscape

Figure 5-5. Class I bicycle path conforming to CVBMP Public Access Program (Section 4) guidelines.



Secondary Access Paths: Pedestrian and vehicular maintenance access
Location: Sweetwater & Otay District 200' No Touch Zones
Material Comments: Compacted site soil, **Alt:** stabilized crushed stone

LUTSKO ASSOCIATES landscape

Figure 5-6. Rendering of maintenance crossing design concept conforming to Chula Vista Bayfront Master Plan guidelines.

Objective 5.3-3

Viewpoints and view-sheds. Public views of the beach, lagoons, and along the shoreline as well as to other scenic resources from major public viewpoints are protected (CCDP 23.1).

I. Development that may affect an existing or potential public view shall be designed and sited in a manner so as to preserve or enhance designated view opportunities. Street trees and vegetation shall be chosen and sited so as not to block views upon maturity (CCDP 23.1).
   A. Buildings and structures shall be sited to provide unobstructed view corridors from the nearest view corridor road. These criteria may be modified when necessary to mitigate other overriding environmental considerations such as protection of habitat or wildlife corridors (CCDP 23.3).
   B. The impacts of proposed development on existing public views of scenic resources shall be assessed by the District or City prior to approval of proposed development or redevelopment (CCDP 23.2).

II. Existing views to the water from the following view corridor roads shall be protected and enhanced: E Street, F Street, Bay Boulevard between E and F Streets, Marina Parkway, and G and L Streets (in the City of Chula Vista); as shall the new views of the Bay created from the H Street corridor. These protected views shall be denoted by the "vista" icons on the Precise Plan for Planning District 7 (CCDP 23.5).
   A. Building setbacks and coordinated signage shall be provided along Marina Parkway (CCDP 23.6).
   B. View corridors to the Bay shall be established on Marina Parkway between H and J Streets approximately every 500 feet as denoted by the "vista" icon on the Precise Plan for Planning District 7 (CCDP 23.8).
   C. Landscape design and installation along Marina Parkway shall frame and enhance this scenic corridor, as well as on E Street and Bay Boulevard, adjacent to the project site (CCDP 23.9).
   D. In order to protect views and as a condition for issuance of the CCDP, buildings fronting on H Street shall be designed to step away from the street. Building design plans shall protect open views down the H Street Corridor by ensuring that an approximate 100-foot right-of-way width (curb-curb, building setbacks, and pedestrian plaza/walkway zone) remains clear of buildings, structures, or major landscape features. Visual elements above 6 feet in height shall be prohibited in this zone if features would reduce visibility by more than ten percent. In order to reduce the potential for buildings to encroach upon view corridors, and to address the scale and massing impact, buildings shall step back at appropriate intervals or be angled to open a broader view corridor at the ground plane to the extent feasible. All plans shall be subject to review and approval by the District. All development proposals shall conform to Port design guidelines and standards to the satisfaction of the District (CCDP 23.12; MMRP 4.4-1).

E. Bayfront Gateway Objective/Policies: Certain points of access to the Bayfront will, by use, become major entrances to the different parts of the CVBMP footprint. A significant portion of the visitors' and users' visual impressions are influenced by conditions at these locations. Hence, special consideration should be given to roadway design, including signage and lighting, landscaping, the protection of public views towards the Bay, and the siting and design of adjoining structures. Concurrent with the preparation of Phase I infrastructure design plans for E and H Streets, a Gateway plan shall be prepared for E and H Streets. Prior to issuance of certificates of occupancy for any projects within the District's jurisdiction in Phase I, the E and H Street Gateway plan shall be approved by the District and City's Directors of Planning and Building. The E and H Street Gateway plan shall be coordinated with the Gateway plan for J Street. All Gateway plans must conform with the setback policies and height limits in the PMP (CCDP 23.10).

III. Prior to approval of development in the Otay District, views of the Bayfront from Bay Boulevard shall be identified and preserved (CCDP 23.7).

IV. Signs shall be designed and located to minimize impacts to visual resources. Signs approved as part of commercial development shall be incorporated into the design of the project and shall be subject to height and width limitations that ensure that signs are visually compatible with surrounding areas and protect scenic views. Permitted monument signs shall not exceed eight feet in height. Freestanding pole or roof signs are prohibited. Permanent advertising signs and banners shall be prohibited in public beaches and beach parks (CCDP 26.1).

V. Prior to issuance of coastal development permits (CDPs) for projects within the District's jurisdiction, the project developer shall ensure that design plans for any large scale projects (greater than two stories in height) shall incorporate standard design techniques such as articulated facades, distributed building massing, horizontal banding, stepping back of buildings, and varied color schemes to separate the building base from its upper elevation and color changes such that vertical elements are interrupted and smaller scale massing implemented. These plans shall be implemented for large project components to diminish imposing building edges, monotonous facades and straight-edge building rooflines and profiles, and to avoid the appearance or effect of "walling off" the Bayfront (CCDP 23.13; MMRP 4.4-1).

VI. Public views of the Bay and access along the waterfront shall be provided via a proposed Promenade. The pedestrian path will also connect to the Signature Park and the pathway system within the Sweetwater District, ultimately linking the two districts and "enabling viewers to experience visual contact at close range with the Bay and marshlands" (CCDP 23.4).

Prior to Project Approval, the Port/City shall review the site-specific development proposals for consistency with paragraphs I-VI above.

5.4 Landscape Design

Goal

Landscape Design Facilitates Ecosystem Services and Enjoyment. *The landscapes of the built environment and open spaces are planned so as to maximize the protection of natural resources, capture a sense of place, and provide for touchable habitat and connection with nature.*

Objective 5.4-1

Compliance. Landscape design complies with all CCDP and MMRP requirements.

I. Prior to final approval of Phase 1 infrastructure design plans, the Port and City shall collectively develop a master landscape plan for the project's public components and improvements. The plan shall provide sufficient detail to ensure conformance to streetscape design guidelines and that future developers/tenants, as applicable, provide screening of parking areas. The streetscape landscape shall be designed to enhance the visitor experience for both pedestrians and those in vehicles. Specifically, detailed landscape plans shall be developed to enhance marina Parkway, a designated scenic roadway and shall provide, where appropriate, screening of existing industrial uses and parking areas until such time as these facilities are redeveloped. Street landscape design shall be coordinated with a qualified biologist or landscape architect to ensure that proposed trees and other landscape elements are appropriate for the given location. For instance, vegetation planted adjacent to open water/shoreline areas must not provide raptor perches. Landscape plantings shall be drought tolerant or low-water use, and invasive plant species shall be prohibited (MMRP 4.4-1).

II. Prior to approval of a tentative map or site development plan for future residential development, the project developer shall submit a landscape design plan for on-site landscape improvements that is in conformance to design guidelines and standards established by the City of Chula Vista. The plan shall be implemented as a condition of project approval (MMRP 4.4-1).

III. The concept approval for the Signature Park will include a refined plan to address the linkage between the parks over the F&G Street channel. The design will ensure that the linkage between the two parks is easily accessed, obvious, and allows visitors to flow naturally and safely between the two parts of the park. A separate pedestrian bridge will be evaluated and, if necessary, a supplemental environmental review will be performed to address any necessary issues prior to the concept approval being forwarded to the Board of Port Commissioners (Settlement Agreement 7; CCDP 18.1).

IV. Invasive plant species (as listed in the Cal-IPC Inventory list or Cal-IPC Inventory database or updates) will not be used within the CVBMP footprint. Any such invasive plant species that establishes itself within the CVBMP footprint will be immediately removed to the maximum extent feasible and in a manner adequate to prevent further distribution into WHAs. A condition of approval for CDPs will require applicants to remove any such invasive plant species that become established within the CVBMP footprint (Settlement Agreement 4.7.1; CCDP 6.1(a)).

V. Note that much of the land designated for Buffer Areas or parks, especially in the Otay District, are highly invaded with noxious, non-native plant species, and may require a multi-year program of eradication prior to restoration or improvement.

VI. Restoration and planting of the Buffer Areas will be accomplished as part of the site preparation of each District.[1]

VII. Coordinate invasives removal and planting events to assist in restoration.

VIII. Only designated native plants will be used in the No-Touch Buffer Areas, habitat restoration areas, or in the Limited and Transitional zones of parcel SP-1 adjacent to the WHAs (Settlement Agreement 4.7.2; CCDP 6.1(b)). Refer to Section F.9: Trees.

IX. Non-native plants will be prohibited adjacent to WHAs and will be strongly discouraged and minimized elsewhere where they may provide breeding for undesired scavengers (Settlement Agreement 4.7.3; CCDP 6.1(c)).

X. No trees will be planted in the No-Touch Buffer Areas or directly adjacent to a NWR, J Street Marsh, or SP-2 areas where there is no buffer (Settlement Agreement 4.7.4; CCDP 6.1(d)). See also Section 4.0: A Wildlife Friendly Urban-Wildland Interface.

XI. The landscape designs and standards shall include a coordinated street furniture palette include waste containers and benches, to be implemented throughout the CVBMP footprint at appropriate locations (CCDP 23.11).

Prior to Project Approval, the Port/City will review the site-specific development proposals for consistency with paragraphs VII-XI above.

Objective 5.4-2

Wetland Creation. Created wetlands for stormwater catchment are incorporated into the landscape design of open space that exclusively calls for native plant species that provide habitat value to wildlife.

I. Incorporate seasonal wetlands into the master landscape plan for functional retention of stormwater and as an attractive landscape feature.

II. Where seasonal wetlands are implemented, develop a management plan that seeks to maintain a healthy aquatic environment, a diversity of native plant species, and does no harm to fauna.

III. Include features that will allow removal of sediments and litter to improve water quality or support native wildlife.

See also Section 3.0: Minimizing Harm to Neighboring Wetlands and Marine Waters.

Objective 5.4-3

Visual Appeal. Landscape design plans emphasize beauty and year-round interest.

I. Consider plantings that bloom for the majority of the year in prime locations (for example, high traffic areas).

II. Other locations may include important native plants of concern (e.g., those with a CNPS Rare Plant Rank of 1B[2]), even if they are not beautiful year round.

1. The management actions under Objective 5.4.1 are priority actions that will be a focus for early grant requests. The Port/City shall revegetate all areas of the SP-1 Buffer, except areas with existing sensitive habitat, surrounding Parcel S-1 as habitat mitigation related to that project. In the event that grant funding commitments are not secured prior to the issuance of a building permit in either the Sweetwater District (including Signature Park) or the Otay District, O&M, Port Environmental funds, or other funding will be used to ensure completion of these actions in the adjacent buffer area prior to issuance of the Certificate of Occupancy.

2. California Rare Plant Rank 1B: Plants rare, threatened, or endangered in California and Elsewhere.

Objective 5.4-4 *Native and Local Plants.* Plant palettes emphasize natives of coastal southwestern San Diego County and native plant diversity with an emphasis on plants that would have naturally occurred in the project area.

I. Where possible, drought-tolerant landscaped areas will emulate the habitat structure and specific components of coastal sage scrub, coastal strand, maritime chaparral, and maritime succulent scrub.

II. Develop plant palettes for specific areas within the CVBMP footprint that can meet the visual, interactive or wildlife needs, using local natives. Appendix F: Comprehensive Plant List, provides an extensive list of suitable plant species.

III. Turf Grass Use. Grass selection will be based on proposed uses and functions of the grass. Mowed turf grass is native or other drought tolerant type, and provides functional gathering spaces. Meadow turf (mow-free) composed of native species may also be used, where appropriate.

   A. Native species that withstand mowing are cool season grasses. Native bent grass (*Agrostis pallens*) is the first choice for California native lawn areas in low-impact areas. It is extremely drought tolerant, withstands low mowing, and provides and effective weed barrier. With occasional summer irrigation, it maintains a deep green color.

   B. The high-traffic areas may use dwarf bermudagrass, such as Tifway.

   C. Bioswales may include San Diego salt grass, seashore paspalum (non-native, non-invasive), and other native grasses.

IV. Incorporate meadow grasses, grass-like plants and wildflowers, where appropriate and feasible. Appendix F: Comprehensive Plant List provides suggestions

Objective 5.4-5 *Promoting Pollinators.* Native pollinator-plant species are included in transition areas between the built environment and parks that may support abundant and diverse native pollinators.

I. Use pollinator plants in areas where the public can safely observe pollinator activity. Most native pollinators are harmless to people. Many of the plants in Appendix F: Comprehensive Plant List are suitable. All of the annual and perennial species (Section F.1: Annuals and Section F.2: Perennials) are suitable. Notable among the shrubs (Section F.7: Shrubs) are the genera *Arctostraphylos* (manzanita), *Bahiopsis* (San Diego sunflower), *Berberis* (barberry), *Ceanothus* (California lilac), *Eriogonum* (buckwheat), *Fremontodendron* (flannel bush), *Lupinus* (lupine), *Malacothmnus* (chaparral mallow), *Prosopis* (mesquite), *Prunus* (evergreen cherry), *Salvia* (sage, highly recommended), and *Trichostema* (wooley blue-curls).

Objective 5.4-6 *Special Interest Gardens.* Special interest gardens within the built environment are planned, where feasible, and managed to emphasize public education about the local flora, fauna, and ethnobotany. Special interest gardens may focus on the interaction of flora and fauna.

I. Special interest gardens within the landscape master plan emphasize discovery, observation, and interpretation. A garden room concept (gardens that are semi-enclosed with vegetation or low profile structures) may be appropriate to create a quiet environment for contemplation. Interpreted interactions between fauna and flora in mini-gardens or garden rooms should be encouraged.

II. Edible gardens within the residential area are encouraged for individual and community use.

III. Encourage residents interested in growing their own food to utilize programs such as San Diego's Master Gardeners.

IV. Interpret edible gardens as a sustainable alternative to food transported long distances.

V. Explore the feasibility of establishing a farmer's market to bring locally produced food to the bayfront.

VI. Incorporate bird-nesting boxes, where feasible, to encourage native insect-eating species in the edible gardens (and throughout the CVBMP footprint).

5.5 Park Design and Management

Goal

Promoting Wildlife. *Maximize wildlife-related ecological functions provided by the parks through design and educational opportunities.*

Objective 5.5-1

Sea Level Rise and Climate Change Planning. Park planning and adaptive management should be consistent with up-to-date best knowledge of sea level rise and climate change.

I. Use current sea level rise maps to determine areas of possible habitat migration to guide park design. Adaptive management of sea level rise may require periodic adjustments of habitat migration projections.

II. Within areas affected by sea level rise, plan to maintain a buffer vegetation plant palette that includes a suite of species from salt marsh to upland transition (see Section F.9: Trees). Keep in mind the minimum requirement of a 100-foot buffer from salt marsh habitat (refer to Section 2.2: Mitigation Compliance and Improving Habitat Quality in the CVBMP Footprint and WHAs, and to CCDP 2.6 and 3.1).

III. Locate permanent paved pathways and promenades outside of zones impacted by sea level rise (50-year projections)

IV. Consider shade structures and vegetation to accommodate people during intensifying heat waves (that are designed to discourage predator perching).

V. Consider the placement of structures such as a *cooling center* building within the CVBMP footprint to be constructed as prolonged extreme hot weather events become more common (current projections indicate that *cooling centers* may be warranted within the next 40 years).

Objective 5.5-2

Park Plant Palettes. To the greatest degree possible, plant species used in park design are native species within southwestern coastal San Diego County and are propagated from within the local gene pool.

I. Use contract-grown nursery plants from a reliable nursery experienced with the propagation and production of local California native plants.

II. Design park perimeters as transition zones into habitat, while allowing for habitat migration due to sea level rise.

III. Consider a small botanical display garden of plant species of special interest and/or status.

IV. Use plant palettes in Appendix F: Comprehensive Plant List, which are consistent with directives to use native plants.

V. Emphasize plants that provide support value for a variety of wildlife species, especially those that will be interesting and educational to park visitors.

Figure 5-7. Rendering of a design concept for passive-use parks.

Goal

Park Recreation. *Parks are planned and managed to provide for passive recreation, human connections with nature, education and a sense of place.*

Objective 5.5-3

Positive Interaction with Nature and Minimizing Impacts. Sweetwater and Otay District Parks are designed and managed to promote positive experiences in nature, including opportunities for passive recreation for a variety of visitors, while minimizing access and disturbances to native wildlife and WHAs.

I. The parks contain minimal permanent structures to facilitate such interaction; they will be limited to single-story heights and primarily function to provide restrooms, picnic tables, shade structures and overlooks (Settlement Agreement 6.1; CCDP 19.1(a)).

II. The parks do not include athletic field amenities (Settlement Agreement 6.4; CCDP 19.1(d)).

III. No unattended food vending is allowed (Settlement Agreement 6.5; CCDP 19.1(e)).

IV. The use of amplified sound equipment is prohibited (Settlement Agreement 6.7.1; CCDP 19.1(g)(i)). Refer also to Section 4.0: A Wildlife Friendly Urban-Wildland Interface.

V. Reservations for group events and activities are prohibited (Settlement Agreement 6.7.2; CCDP 19.1(g)(ii)).

VI. The parks are constructed using low water-use ground cover alternatives where possible (Settlement Agreement 6.2; CCDP 19.1(b)).

VII. The parks provide passive interaction, including passive recreation, with nature that emphasizes the open space aspect of the parks and which involves a low level of development, including picnic areas and trails (Settlement Agreement 6.1; CCDP 19.1(a)).

Prior to Project Approval, the Port/City will review the site-specific development proposals for consistency with paragraphs I-VII above.

VIII. Consider planning and managing parks for human appeal that provide places where children can play and adults can exercise and relax.

A. Where feasible, design specific areas for more intensive use. Provide for more intensive management of these areas.

B. Seek approval of natural resource agencies to allow a new category of "educational and interactive habitats" to be able to be created and maintained within Signature Park to encourage direct experience and interaction with habitats and wildlife without impacting existing sensitive habitats.

C. Specifically design areas for children to play in a natural setting (see Figure 5-8).

IX. Maximize the visitor-nature experience whenever possible.

A. Where feasible, design to bring wetlands and upland transition habitat into Signature Park to increase their interface with the public.This strategy would also support goals for adaptive management and creation of transitional habitat per Settlement Agreement 3.2.1.3 and CCDP 1.3(a), 1.3(b), 3.3.

B. Consider providing for themed plant rooms within the perimeter of parks that offer visitors a close-up and touchable connection with native plants and views of wildlife.

C. Provide well-trained docents to interact with visitors. See also Section 6.0: Education to Inspire and Promote the Human Experience of Nature.

Figure 5-8. Rendering of a design concept for a children's play area.

5.6 Landscape Maintenance

Goal

Efficient and Effective Landscape Management. *Maintenance of built environment and open space landscapes uses resources efficiently, minimizing impacts, and adaptively employs BMPs.*

Objective 5.6-1

Performance Standards and Integrated Pest Management. Landscape maintenance adheres to the highest level of performance (e.g., evaluation standards, skill requirements of landscape contractors, etc.) and includes an IPM program and an accountable, best practices evaluation procedure.

I. IPM must be used in all outdoor, public, buffer, habitat, and park areas (Settlement Agreement 4.6.3; CCDP 13.6).

A. Use the Port and City IPM policy that is easily understood and implemented by all practitioners of landscape care and maintenance. Offer gardeners training in IPM principles and practices. See also Section 3.2: Watershed Approach.

B. Design a best practices guide for a variety of landscape maintenance requirements. For City of Chula Vista property, the requirements should be in accordance with the City of Chula Vista standards for landscape maintenance for public spaces.

C. In the garden areas, include information and displays demonstrating the environmental and health benefits of benign pest control measures such as IPM.

II. The Port/City will develop maintenance guidelines for incorporation into landscape maintenance contracts.

Objective 5.6-2

Irrigation. State-of-the-art irrigation equipment and practices are implemented throughout the CVBMP footprint.

I. Consider using subterranean irrigation for turf and meadow plantings.

II. For shrub plantings, consider the use of efficient area delivery systems (e.g., MP Rotator Shrub Heads). Avoid drip irrigation on drought tolerant plants because such technology hydrates concentrated areas leaving the interspaces completely dry.

III. Regularly maintain all irrigation systems, avoiding runoff, wetting of unvegetated areas, and making delivery adjustments according to season.

See also Section 5.2: The Built Environment.

Objective 5.6-3

Invasive Species Management. An invasive plant management plan is in place that reinforces strict adherence to pesticide label instructions and restrictions for chemicals carrying a caution warning label.

I. Pesticides are applied by licensed individuals and firms.

II. Pesticide use is reported as required by law. Copies of pesticide use reports are maintained by the appropriate land managers.

III. Use best practices for prevention and control of weeds that include mulching with local organic materials, such as wood chips. For the most drought tolerant plants, such as native succulents, mulch with mineral material such as clean pea gravel or ¼-inch rock.

Objective 5.6-4

Fertilizer Use. Fertilizer use is regulated to avoid misuse or over-use, which could result in harm to wildlife.

I. Fertilizers are Organic Materials Review Institute (OMRI)-approved. These are organic fertilizers that are naturally slow release, avoiding the nutrient-pulse that often results from soluble chemical fertilizers. Soluble nutrients, especially nitrogen, often dissolve in water and are carried away from plant roots as outflow, becoming a serious form of water pollution.

II. Fertilizer use occurs with proper horticultural evaluation of nutrient need, and is minimized. In practice this means recognizing and feeding plants when they need to be fed, rather than according to a calendar schedule.

III. Composting is recommended on-site to the degree feasible. Addition of composted organic matter into the sandy soils of the CVBMP would improve soil health, promote soil-building, conserve moisture and increase nutrient-holding capacity (see also Section 4.0: A Wildlife Friendly Urban-Wildland Interface).

6.0 Education to Inspire and Promote the Human Experience of Nature

The CVBMP project footprint offers opportunities for human encounters with nature that are engaging, tranquil, support human health and well-being, and are accessible to all. The goals, objectives, and strategies articulated in this plan will transform the way we conserve and restore nature in coastal urban environments with a changing global climate, and will preserve precious natural resources for generations to come. Education is a key element in both appreciating the natural environment and supporting ongoing conservation efforts.

6.1 Key Messages

The educational portion of this plan aims to inspire natural resources stewardship across various groups, create a cultural and ecological sense of place within the CVBMP footprint, and present a model of sustainability and connectivity to the larger social and ecological landscape. This includes:

I. Education and stewardship that will reach diverse audiences and provide a range of experiences designed to inspire a commitment to conservation.
   A. Attract and engage a range of visitors.
   B. Instill a reverence for ecological diversity and natural resources of the area, and inspire its stewardship.
   C. Promote educational programs for employees so they can be ambassadors for the area.
   D. Encourage park and trail use, while minimizing environmental harm.

II. Education that communicates cultural and ecological sense of place, including cultural, ecological, and conservation history.
   A. Native tribal use of natural resources.

B. Landscape evolution, pre-settlement to present.

C. How preservation of the area was achieved and what attracts people to the site.

III. Education that exhibits both local and global connections to create a model of sustainable living and ecosystem connectivity.

A. How the Chula Vista bayfront system fits within larger systems.

B. Climate change and sea level rise education.

C. The CVBMP project area as a model for sustainability.

D. Role in animal migration and protection of resources.

E. Presence in the U.S.-Mexico border region.

6.2 Key Audiences

There are opportunities to shape CVBMP promotion and educational strategies to target a wide spectrum of audiences, including:

- Families, seniors, children
- Schools: administrators, teachers, parents, students
- Residents, surrounding and underserved communities
- Tourists, convention center visitors
- Persons under the Americans with Disabilities Act of 1990
- Community and other Non-profit organizations
- Commercial enterprises: hotels, service companies, environmental and sustainability organizations and groups
- Staff: hotel, residence building, office, maintenance employees
- Birders, photographers, fishers, boaters, scientists
- Elected officials, local politicians, government directors and other personnel, and government staff
- Media
- Multi-lingual communities

6.3 Natural Resource Stewardship

Goal

Natural Resource Stewardship. *Residents, visitors, and employees in the CVBMP will experience the outdoors, learn about its ecosystems and habitats, and will be inspired with a deeper understanding, personal stewardship, and respect.*

Objective 6.3-1

Diverse Visitors and Learning Opportunities. Attract and engage the whole spectrum of residents and visitors in outdoor interpretive opportunities and experiential learning through different forms.

Drawing People to the Site

An environmental education program will be developed and implemented and will include the following (Settlement Agreement 4.10, 4.10.1 and 4.10.2; CCDP 9.1):

- The program must continue for the duration of the Chula Vista Bayfront project and must target both residential and commercial uses as well as park visitors.
- The program's primary objective will be to educate Bayfront users, residents, visitors, tenants and employees about the natural condition of the Bay, the ecological importance of the Chula Vista Bayfront area and the public's role in the restoration and protection of wildlife resources of the bay.

Prior to Project Approval of site-specific development proposals, the City will require the residential developer's homeowners association to include in its CC&Rs an educational program in accordance with Objective 6.3-1.

Directly following Project implementation, after the first Certificate of Occupancy, the Port will implement an education program to educate CVBMP users, residents, visitors, tenants, and employess per Objective 6.3-1.

I. Emphasize and encourage sustainable integration with natural resources to attract fishermen, boaters, birders, scientists, and environmental organizations and groups from surrounding areas.

II. Attract tourists by collaborating with tourist organizations and bureaus to provide awareness to this commonly overlooked area of San Diego. Commercial enterprises (e.g., hotels and service companies) and the convention center can provide outreach materials such as videos and brochures.

III. Invite elected officials and government directors from other jurisdictions (e.g., engineering, development, and planning directors) to the area to inspire and support local projects.

IV. Create connections and collaborations both within the community and regionally.

Diverse Learning Strategies

The environmental education program will include educational signage, regular seminars and interpretive walks on the natural history and resources of the area, and regular stewardship events for volunteers (i.e., shoreline and beach cleanups, exotic plant removal, etc.) (Settlement Agreement 4.10.3; CCDP 9.2).

V. Consider diverse learning styles, various levels of interaction, from passive to active. Conduct varied activities to cater to special interests and allow flexibility for short day and multi-day experiences (Knudson et al. 2003). Use signage that is multi-lingual and appeals to all ages.

   A. Areas within the CVBMP footprint shall comply with the Americans with Disabilities Act (1990).

VI. Consider learning strategies that provide for physical, emotional, and intellectual involvement, such as interactive signs and sculptures, community events, and interpretive walks (Regnier et al. 1992).

"One of the goals of education is to raise the level of awareness and consciousness in the visitor and...the larger society... Ecopsychologists have suggested that mindful awareness of our interdependence with nature may not only help us regain our lost, ecologically embedded identity (Roszak 2001) but may also help us behave more sustainably, closing the documented gap between pro-environmental attitudes and behaviors." -Mike McCoy, Southwest Wetlands Interpretive Association

VII. Consider conveying and providing for opportunities to express natural resources values through the best storytelling and art, both at outdoor and indoor venues. Offer arts and creative writing programs as opportunities to interpret and respond to nature.

VIII. Ensure adequate orientation information is provided within the built environment (e.g., hotels and convention center) within the CVBMP site (e.g., maps, pamphlets, signage, Quick Response [QR] codes).

IX. Provide outreach to nearby schools and accommodate field trips and curricular program needs. Have information available for administrators, teachers, students, and parents. Support and complement ongoing programs at the Living Coast Discovery Center, targeting schools.

X. Hold stewardship events and seminars when possible, allowing local groups to share experiences and learn from others. Distribute, create, or provide access to guidebooks with environmental themes such as living sustainably, and how to plant a pollinator garden. Invite volunteers to conduct trash clean-up and hold restoration events.

XI. Collaborate with volunteer programs to provide opportunities for classroom presentations, docent training and scheduling, habitat augmentation, weed removal, sign creation, and wildlife monitoring. Consistent with other efforts towards "citizen science," engage the bayfront community in the active maintenance and preservation of the adjacent natural resources.

"The community will benefit from an increased sense of "ownership" and stewardship if they are actively engaged in helping to maintain and protect the wildlife habitat along the Chula Vista Bayfront." -Sandy Vissman, USFWS

The environmental education program will include adequate annual funding for personnel or contractor/consultant and overhead to ensure implementation of the following functions and activities in collaboration with the Living Coast Discovery Center or USFWS (Settlement Agreement 4.10.4 through 4.10.9; CCDP 9.3; MMRP 4.8-7):

- Coordination of volunteer programs and events;
- Coordination of interpretive and educational programs;
- Coordination of tenant, resident and visitor educational programs;
- Docent education; and
- Enhancements and restoration events.

The requirements as noted above shall be implemented in compliance with the MMRP.

XII. Souvenirs related to location-specific themes of the area could be sold as "memory enhancements" (e.g., identified rocks, seeds, artifact replicas) (Knudson et al 2003).

XIII. Where feasible, measure success of the outreach program through surveys and media (e.g., number of Quick Response [QR] codes on signs and brochures that were accessed).

Technology as a Learning Strategy

Pros and cons of using technology as a learning strategy. Adapted from Beck and Cable (2002).

PROS	CONS
▪ Interactive ▪ Expands options for what can be communicated ▪ Caters to different learning styles ▪ Ability to "individualize" information based on age/interests	▪ Expensive ▪ Impersonal ▪ Complex ▪ Needs to be dependable and require little maintenance

XIV. Consider creating a bilingual computer or phone application for educational quizzes and games. Consider inviting schools to participate in application and game development, such as through a contest.

XV. Consider placement of QR codes on interpretive signs for additional learning, in limited numbers so as not to take away from the nature experience.

XVI. Consider creating an active website, updated with animal sightings, upcoming events, and maps.

Objective 6.3-2

Employee Education. CVBMP project employees are ambassadors for the area and its natural resources. They attend regular education programs to learn about the resources and services present, and obtain information on future activities and programs.

I. Consider providing incentives for employees to involve family and friends.

II. Make surveys available after the programs for feedback on how to improve them.

Objective 6.3-3

Promoting Stewardship. Resident and visitor programs promote a sense of reverence and stewardship for the diversity of fish and wildlife that live in the area. They encourage residents and visitors to cultivate an appreciation for the global importance of the resources present.

I. By helping residents and visitors to learn, understand, and support what is occurring in their area, educational programs and resources foster a personal connection to create a culture of stewardship.

II. Coordinate with the USFWS to communicate the conservation message of the NWR, adjacent to the CVBMP footprint, by informing visitors of the refuge's public tours and resources.

III. Coordinate activities with hotels and the on-site conference center that includes establishing displays and making materials available (brochures, maps, concierge, etc. and incorporate use of produced Bayfront video) to educate guests about the Chula Vista Bayfront and wildlife areas.

IV. Incorporate learning opportunities within the CVBMP area to help local communities understand and connect to what they have in their own "backyard," such as regional bird and fish migratory pathways, the bay's fish nursery, and other life cycle functions of local habitats.

V. Consider the use of an "Adopt-a-" program (e.g., for the Ridgway's rail, formerly known as the clapper rail) and other opportunities for community support. Consider using volunteers and students to conduct monitoring surveys, restoration, or trash removal.

VI. Communicate to visitors the ecosystem services that are provided by the open space and protected habitat (See also Section 5.0: Maximum Ecosystem Services in the Built Environment and Open Space).

VII. Post a visible community bird, wildlife, and butterfly list to show what has been observed. Have a place where people can post what they have seen lately, such as an interpretive center, on a bulletin board, or online. Highlight existing migration routes and consider creating animal way stations (e.g., for butterflies).

VIII. Post a visible community board for fishermen that includes date, species, length, weight, and location of daily catch and method (bait, lure, fly, etc.). Create an application that allows reporting to the appropriate wildlife agency.

Objective 6.3-4

Low Impact Use through Education and Design. Environmental education programs attract residents, visitors, employees and their families to use open space trails for recreation and education, while fostering low crime rate, low trash and maintenance, and high compliance with rules.

Evaluate the following as part of the implementation of the environmental education program and park design:

I. Consider establishing trail themes (e.g., ethnobotany, ecology, ecosystem services) to encourage use.

II. Ensure the coexistence between nature and the built environment by encouraging a balance between conservation and appropriate development, when necessary. Maintain the tranquility needed for environmental and ecosystem preservation alongside a carefully planned development that considers long-term sustainability of the area.

III. Allow shorefront access for wildlife viewing only when it can be done with minimal impact to the environment.

IV. Visitors should be allowed to get close to nature without impacting it through means such as bird blinds and transition areas. The experience may be supplemented with "touchable habitat" areas, interpretive sculptures, interactive displays, and textured signs that encourage touching and interaction (See also Section 4.0: A Wildlife Friendly Urban-Wildland Interface).

   A. Consider use of eco or cultural murals, such as the Surfing Madonna in Encinitas or the murals created by Wyland.

V. Bring wetlands and upland transition habitat into Signature Park as part of a demonstration or eco-park to increase their interface with the public, if feasible. Maximize the visitor-nature experience, ecological functions/wildlife benefit, and use educational opportunities (See also Section 5.0: Maximum Ecosystem Services in the Built Environment and Open Space).

VI. Use design rather than signage or enforcement personnel to ensure compliance with rules, and promote involvement of young people in stewardship of the area when feasible. Discourage illicit activity through wildlife-friendly lighting and enforcement of closing hours.

VII. Provide outreach to boaters and fishermen to aid in understanding their role in water quality and habitat protection.

6.4 Cultural and Ecological Sense of Place

Goal

Cultural and Ecological Sense of Place. *Residents, visitors and employees learn about the cultural, ecological and conservation history of Chula Vista, so that they gain sense of personal connection to this landscape.*

Objective 6.4-1

Ecological and Cultural Evolution of the Landscape. Inform residents, visitors, and employees of the evolution of the landscapes of Chula Vista. Engage with the community and visitors on the historical and cultural connection of native tribes with the natural resources.

I. Collaborate with the Kumeyaay Nation tribal representatives to provide educational resources, such as cultural demonstrations.

II. Consider re-creating a hands-on interactive setting that would depict the Kumeyaay use of natural resources.

III. Describe what has brought people to the Chula Vista area historically and currently.

IV. Share with residents, visitors, and employees the personal stories and experiences that have inspired the area's hard-fought preservation.

   A. Provide information on the historical transformation of the area, and inspire a sense of pride when communicating the effort that went into the creation and conservation of the area.

V. Provide context to show how the Chula Vista Bayfront system fits within larger systems, including southern California and on an international scale (i.e., Pacific Flyway).

   A. Seek opportunities to integrate programs with other nearby areas, reserve networks and multiple regional programs, and ecotourism.

   B. Foster connections with surrounding visitor's centers and bureaus.

6.5 Local, Regional and Global Connections

Goal

Connections. *Residents, visitors and employees are attracted to and inspired by the CVBMP model of sustainable living, and connection to bay, watershed, region, and global ecosystems.*

I. Educational resources can depict the interconnectedness of the area.

   A. Consider social and economic connections with the U.S.-Mexico border region.

   B. Review ecological connections, such as bird migration pathways and the local network of wetlands.

"We must reincorporate ourselves as a part of ecological systems rather than apart from them. We have an opportunity to present this as a priority through this model project. We don't live unto ourselves as individuals or as a species. We live in an interdependent system with all species. We need to change our life styles and priorities to reincorporate and support ecological integrity." -Mike McCoy, Southwest Wetlands Interpretive Association

II. Educational programs shall promote opportunities to learn about how the CVBMP footprint, adjacent areas and regional habitats will change due to climate change and sea level rise issues.

   A. Highlight transition zones in the CVBMP footprint and adjacent WHAs that are designed to accommodate sea level rise.

   B. Communicate that we are part of an interdependent natural system and that our future and the future of other species depends on our actions.

   C. Provide education on how sustainable practices and lifestyle changes can help reduce our carbon footprint. Examples could include things to do at home, products to buy or avoid, as well as area-specific actions, such as taking the local bus or using the bike paths.

III. Reach out to journalistic media and tourism outlets to share the Chula Vista story, encompassing the collaborative work and model of CVBMP's plan to create long-term, sustainable lifestyles in the area.

   A. Encourage them to highlight information made available by the Port and City public relations teams regarding the natural values and activities at the Bayfront.

IV. Consider creating an interpretive video or story of the CVBMP planning process, including how a collaborative effort brought together diverse interests to plan and develop the Bayfront in a manner where the Harbor, Otay, and Sweetwater Districts coexist for long-term sustainability of local and regional wildlife.

   A. Develop signage that describes the sustainable design of the site.

   B. Wherever possible, encourage action from the local community through public involvement, programs, and activities. Reach stakeholder groups (fishermen, conservation and environmental organizations) and policy makers to expand the concept of transboundary connections.

   C. Emphasize how good planning principles can help achieve multiple perceived competing goals. Provide a model of sustainability, conservation, and development for others to follow.

7.0 Moving Forward: Implementation of the NRMP, Monitoring for Adaptive Management, Addressing SLR, and Future Funding

Compliance requirements (CCDP, MMRP, and Settlement Agreement), implementation actions, and beyond-compliance recommendations are set forth within this NRMP. For the mandatory actions, required implementation has been already identified in the CVBMP controlling documents. An implementation table presented in this chapter captures relevant actions. Some beyond-compliance ideas are expanded upon in Appendix E: Potential Concepts for "Beyond Compliance" Conservation. This chapter also provides guidelines for monitoring the NRMP's effectiveness, building detail into monitoring requirements drawn from the controlling documents, to improve decisions about natural resource conservation over time.

7.1 Key Messages

- This Chapter reflects this NRMP's Vision and Goals.
- Investment in natural resources conservation requires a balance between short-term protection needs and achieving long-term ecosystem resilience. This should be done against a backdrop of ecological threats and vulnerabilities that are changing as a result of local and global change.

- Organizational constraints and limited budgets require that a great deal of creativity and legwork be employed to implement this NRMP, which is beyond the authority of any one institution or jurisdiction, and will be subject to future discretionary decisions that will naturally take into account budgetary and other considerations.
- For core requirements of the CCDP, MMRP, and Settlement Agreement, funding sources are designated. Recommendations contained in the NRMP may require a long-term financial strategy possibly including a blend of public and private sources, such as operations budgets, grants, private mitigation offset funds, and even volunteerism.
- A collaborative approach has been the hallmark of the CVBMP planning process. It is the intent of this NRMP to continue the visionary and collaborative approach to protect natural resources.
- Partnership in conservation of natural resources, crossing administrative boundaries, particularly with regard to the WHAs, may be necessary to achieve the goals and objectives of the NRMP.
- Funding for NRMP Implementation will come from revenues generated by CVBMP development (direct or indirect funds) (Settlement Agreement 3.4 and 4.1.1).

7.2 Implementation Challenges

NRMP implementation approaches will need to undertake short-term compliance and protection responsibilities. The long-term planning horizon includes budgetary considerations; challenges for sustainable human living; changing climate and its potential impact on water regime, heat, and crucial coastal resources; and layers of uncertainty about future habitat and species relationships. It is not an overstatement to say that implementing this NRMP will take more creativity, flexibility, and legwork than coming up with its management approach. On the other hand, the precious and irreplaceable natural resources in and around the CV Bayfront merit the effort and continued commitment required.

7.3 Monitoring to Assess and Maintain NRMP Effectiveness

Monitoring is a basic component of adaptive ecosystem-based management that is question-driven: it sets up the feedback to decision-makers and the public on whether progress towards the plan's Vision, Goals and Objectives is achieved. Conceptually, the benefit of monitoring is without doubt. However, it is important that the monitoring effort be efficient and continually adapted to provide information that is timely, adequate in depth, extent, and quality to guide decisions, but not cost more than is needed. Monitoring will facilitate adaptive management, help achieve beneficial change, and focus investment. It asks both the big question--"Are we making a difference for the natural resources we value?"--and accountability questions for sponsors of the work--"Did we do what we said we would?" It should have many facets that are not necessarily data-driven, such as the use of comparative case studies that educate and inspire improvement.

Because the CVBMP vicinity is extraordinarily connected in all dimensions with wide-ranging species as well as resident species, the monitoring effort needs to consider the results of other programs, such as the Regional Harbor Monitoring Plan, in

order to assist in interpreting what is going on locally. Through standardization of methods with regional programs, a small local effort will increase its power to interpret trends and also contribute to its cost-efficiency. This will assist to separate local from regional status and trends. Such a program does not have to be costly, and can be assisted and complemented by educational institutions, as well as citizens, local high schools, and other programs. Existing programs are already affording a better understanding of the dynamics of the bay, estuarine/marine system and is a backdrop for understanding the CVBMP footprint and WHAs.

The Monitoring Indicators in this NRMP are intended to supply information on either best practices and their implementation (see Table 7-3 at the end of this section), or the health/integrity of the resources that are the focus of NRMP goals (see Table 7-4 at the end of this section).

In addition to the best practice and health/integrity monitoring, conservation planning species (or species groups) are to be used for considering conditions such as the habitat value of the sea level rise buffer as waters migrate landward, habitat enhancement, or other opportunities as they arise (examples are in Section 2). Conservation planning species are not intended to be separately monitored in themselves, but they represent and are a proxy for some of the Chula Vista bayfront's core natural resource values (Section 1.3, Appendix C.2.1). The conditions they require and their presence would reflect the historic range of fish and wildlife uses of south San Diego Bay. They include fish and wildlife that benefit from the adjacency of estuarine intertidal, subtidal, and adjacent habitats both landward and bayward for different life cycle needs. Conservation planning species and groups are non-regulatory since the state- and federally-listed species already have legal protection.

Objective 7.3-1

Adaptive and Accountable NRMP Implementation. Ensure that NRMP implementation is adaptable and accountable by providing feedback to managers and decision-makers.

I. Periodic review of the NRMP will address monitoring the efficacy of water quality improvement projects (if applicable) and management actions (part of Settlement Agreement 3.3; CCDP 1.5).

Summary of Required WAG meetings and NRMP Reviews (Settlement Agreement 10.4-10.5, CCDP 17.2):

Meetings
- **Every 6 months 1st 10 years**
- **Every year, after 10 years**

Scheduled NRMP Reviews
- **Each year for 5 years**
- **Every other year or as needed, years 6-10.**
- **Thereafter once every 5 years**

II. Every 6 months. The WAG will meet as needed, but at a minimum of every six (6) months for the first ten (10) years and annually thereafter (Settlement Agreement 10.4). The WAG will review the NRMP to: (i) determine the effectiveness of the NRMP in achieving the Management Objectives; (ii) identify any changes or adjustments to the NRMP required to better achieve the Management Objectives; (iii) identify any changes or adjustments to the NRMP required to respond to changes in the man-made and natural environments that are affecting or, with the passage of time may affect, the effectiveness of the NRMP in achieving the Management Objectives; and (iv) review priorities relative to available funding. At its meetings, the WAG may also consider and make recommendations regarding (x) implementation of the NRMP as needed, (y) Adaptive Management Review, and (z) NRMP Amendments. (Settlement Agreement 10.4, 10.5 & CCDP 17.2)

III. CREATION, PERIODIC REVIEW AND AMENDMENT OF THE NRMP. The NRMP will be a natural resources adaptive management and monitoring plan, initially prepared in consultation with the WAG, defined in Section 10.1, and reviewed and amended in further consultation with the WAG one year following adoption of the NRMP, and annually thereafter, for the first five years after adoption, after which it will be reviewed and amended as necessary every other year for the next six (6) years, then once every five (5) years thereafter, each in accordance with Section 10.5. If the Resort Conference Center (RCC) is not pursued in the first five (5) years after certification of the Final EIR, this schedule will be amended to ensure that the NRMP is evaluated every year for five years after the development of the RCC. The periodic review of the NRMP, described in the preceding sentences, is hereinafter called "Periodic Review." A material revision of the NRMP is hereinafter called an "NRMP Amendment." Nothing in the foregoing schedule requirements will be interpreted to preclude a speedy response or revision to the NRMP if necessary to abate an emergency condition or to accommodate relevant new information consistent with the Management Objectives. Any permanent changes to the NRMP will be subject to Section 10.5. Preparing of the NRMP will begin within six months of the filing of the Notice of Determination for the Final EIR by District and will be completed prior to the earlier of: (a) Development Commencement; (b) issuance of a Certificate of Occupancy for the Pacifica project; or (c) three years. Periodic Review will address, among other things, monitoring of impacts of development as it occurs and monitoring the efficacy of water quality improvement projects (if applicable) and management and restoration actions needed for resource protection, resource threats, management (i.e., sea level rise, trash, window bird strikes, lighting impacts, bird flushing, water quality, fireworks, human-wildlife interface, education and interpretation programs, public access, involvement and use plan, management of the human-wildlife interface, wildlife issues related to facilities, trails, roads, overlooks, planning, and watershed coordination) and other issues affecting achievement of Management Objectives and related to Adaptive Management Review (Settlement Agreement 3.3 & CCDP 1.5).

IV. Other than with respect to matters specifically addressed in this Agreement, the Final EIR, and as components of the Proposed Project approval, Coalition member organizations shall have the right to fully participate in environmental review and project-approval processes for components of the Bayfront development that require project-level review subsequent to Final EIR certification and Proposed Project approval (Settlement Agreement 17.4).

V. The WAG will meet as needed, but at a minimum of every six (6) months for the first ten (10) years and annually thereafter (Settlement Agreement 10.4).

The requirements as noted in paragraphs I-V above shall be implemented in compliance with the Settlement Agreement and CCDP.

A. For monitoring the NRMP as a whole and at the project level, the guidelines that follow may be implemented. See Map 7-1, Map 7-2, Map 7-3, Map 7-4, Table 7-1, and Table 7-2 for a summary of baseline acreages of previously mapped habitats. Map 7-1 includes an overlay of upland transition areas and acreages that were not mapped as such but are estimated based on tidal elevations (LIDAR elevations from SanGIS, 2005).

- Establish a point of reference or baseline consistent with this NRMP. Baseline means the present status of the indicator plus whatever its threats/pressures are. The baseline includes the following: structure

and acreage of marine and terrestrial communities, and socioeconomic attributes that are part of the ecosystem services approach (includes public trust and access).

- Protocols for establishing baseline conditions should use standardized methods that are accepted by regulatory agencies and are consistent through time.
- Quantitative methods should be established for wetlands, including salt marsh, riparian, or streams (CRAM).
- Quantitative methods should be established for characterizing and mapping terrestrial vegetation (Vegetation Classification Manual for Western San Diego County [San Diego Association of Governments 2011], which builds upon the Manual of California Vegetation, 2nd edition [Sawyer et al. 2009]).
- Baselines for highly disturbed terrestrial sites should follow the same vegetation rapid assessment method as used for terrestrial vegetation surveys and mapping, identifying all invasive plants present and their quantitative characteristics.
- Establish quantitative milestones and benchmarks where appropriate (see the Objective for Long-term Conservation in Section 2.2: Mitigation Compliance and Improving Habitat Quality in the CVBMP Footprint and WHAs on page 2-11, CCDP 1.4, and Settlement Agreement 4.4.6.5).
- Use data from existing ongoing efforts of the Port and Navy for monitoring birds, aquatic sea life and aquatic vegetation and others.
- Ongoing monitoring efforts should use the same protocols as used to establish baseline conditions to provide for scientifically defensible analysis of trends over time.

VI. Monitor the effectiveness of NRMP practices in achieving healthy populations of estuarine- and eelgrass-dependent marine life, and adapt as needed.

A. Integrate a quality control process to ensure that monitoring results are accurate and interpreted for the management questions they are designed to answer, and understandable for decision-makers.

VII. Periodic review will address, among other things (Settlement Agreement 3.3; CCDP 1.5):

A. Monitoring of impacts of development as it occurs;

B. Monitoring the efficacy of water quality improvement projects (if applicable);

C. Management (i.e., sea-level rise, water quality, fireworks, education and interpretation programs, public access, involvement, and use plan, and watershed coordination).

VIII. A key component of the NRMP is that it utilizes an adaptive approach to management of resources. As such, the long-term monitoring that guides management actions must be targeted to identify impacts, if any, that are a result of the development and must also be adaptive in structure. Therefore, the long-term monitoring program should be focused on identifying and monitoring metrics associated with linkages between the development and the adjacent natural resources within buffers, restored habitat, and WHAs. Adaptive management would then utilize monitoring results to promote beneficial linkages and to minimize or eliminate negative linkages. Therefore, a monitoring plan shall be developed that focuses on encroachment of invasive species; human activity in buffers and WHAs; nuisance animals; and the effectiveness of human use of the bayfront, trash collection, building construction, landscaping, and stormwater treatment facilities.

A. Sixty (60) days following the signing of an option to lease or similar document for development in the Sweetwater (including Signature Park) or Otay Districts or the development on H-3, H-23, H-13, or H-14, whichever is first, the Port/City will contract with a qualified contractor or use other comparable resources to develop a draft monitoring plan (including baseline conditions for the entire bayfront), identify data gaps, and implementation schedule based on the information in Table 7-3 and monitoring of the status of the natural resources and natural resource indicators included in Table 7-4. The plan will be adopted (including a monitoring framework for the entire bayfront) and will be implemented at the onset of site alteration of the project triggering the development of the plan.

Objective 7.3-2

Effective and Adaptive Practice. Monitor the effectiveness of NRMP practices in achieving healthy populations of dependent estuarine and upland transition life, and adapt as needed.

I. Review existing monitoring and research studies conducted throughout San Diego Bay to evaluate the health of marine and terrestrial life, such as water quality trends, periodic fish and avian surveys, and listed species monitoring, including for the green sea turtle and success of the California least tern.

II. Define NRMP research priorities via a collaborative process of defining management questions for researchers to take on, if needed. Interpret regional studies, or species studies on entire migratory paths, for application locally.

   A. What of the CVBMP practices are most cost-effective for benefiting conservation planning species?

   B. Consider supporting research on cost-effective green infrastructure for local benefit.

Map 7 -1 Baseline Conditions Within the Chula Vista WHA

Miles
0 0.25 0.5 0.75 1
Kilometers
0 0.25 0.5 0.75 1 1.25 1.5

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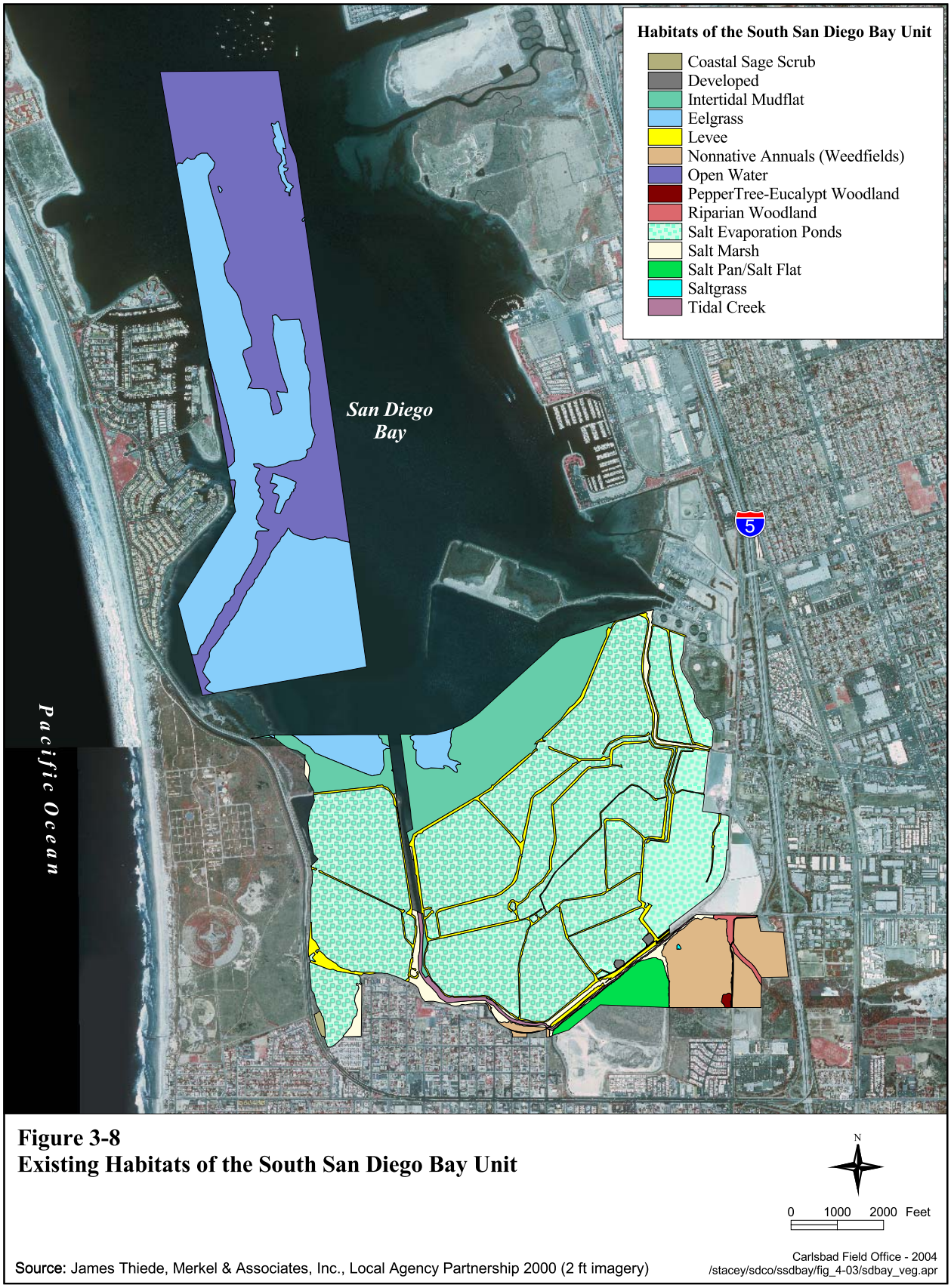
Figure 3-7
Habitats of Sweetwater Marsh Unit

Map 7-2. Habitats of the San Diego Bay National Wildlife Refuge Sweetwater Marsh Unit (taken from USFWS 2006).



Map 7-3. Habitats of the San Diego Bay National Wildlife Refuge South San Diego Bay Unit (taken from USFWS 2006).

Map 7-4. Habitats within the western salt ponds (Ponds 10, 10A, and 11) of south San Diego Bay (USFWS 2009).

Table 7-1. Summary of the Habitat Types Occurring on the Sweetwater Marsh Unit (from USFWS 2006).

Habitat Type	Approximate Acres
Artificial Tidal Creek	0.5
Brackish Marsh	1.5
Coastal Sage Scrub	1.0
Coastal Sage Scrub (disturbed)	31.5
Developed/Fill	11.5
Exotic Shrubland	2.0
Fill w/ dune and scrub vegetation	56.5
Maritime Succulent Scrub	3.5
Mudflat	3.5
Nonnative Annuals	3.0
Open Water	1.5
Salt Marsh	184.0
Salt Pan/Salt Flat	7.0
Tidal Creek	9.0

Table 7-2. Summary of the Habitat Types Occurring on the South San Diego Bay Unit (from USFWS 2006).

Habitat Type	Approximate Acres
Coastal Sage Scrub	2.0
Developed	2.0
Eel Grass	440.0
Intertidal Mudflat	220.0
Levee	85.0
Nonnative Annuals	98.0
Open Water	410.0
Pepper Tree/Eucalyptus Woodland	1.0
Riparian Woodland	5.0
Road	2.0
Salt Ponds	964.0
Salt Marsh	30.0
Salt Pan/Salt Flat	30.0
Tidal Creek	11.0

Objective 7.3-3 *Adopt Bay-estuarine and Biodiversity Conservation Planning Species for planning NRMP success.*

I. Consider using conservation planning species to inform NRMP success for beyond-compliance work provided funding is available. These species are endemic or dependent on the south bay and can add an important level of detail to a program of successful implementation of work such as habitat enhancement. They help relate physical, chemical, and structural features to specific, local life history needs of fish or wildlife. The role of particular habitats or environmental factors may go undetected if at least some species are not examined rather than habitats alone. Conservation planning species are also meant to provide a practical monitoring and management focus, under the assumption that

managing for certain, carefully selected species of concern will take care of many others with overlapping habitat, food web, and other ecological needs. See Section 2.0: Sustainable and Improved Native Habitats and Communities for identification of conservation planning species.

II. As habitat complexity is often related to the success of species, monitor variety within habitats as part of a baseline description of resources, when feasible such as through use of CRAM and other methods as applied by USACE. Wetland size, complexity, and connectivity is related to value for wildlife. Methods are established for qualitative ranking assessments for estuarine communities. The presence of vegetation, macro and micro algae, mudflat benthic assemblage zones, tidal creeks and microchannels, invertebrate burrows used by gobies, nearshore shallow water, uninterrupted tidal change, saline pools and access to brackish and freshwater habitats in Telegraph Creek, nearshore and open water, and the benthic environment are all assessment criteria. It is a goal that habitat values are maintained in quality at or above their baseline, over time, in the CVBMP footprint and WHAs. Using indicators, or proxies for healthy natural resource systems, is an effective way to provide insight into the status of those desired conditions. A suite of indicators is presented below, according to the management goal for which each indicator provides insight, along with conservation planning species for that habitat (which are not to be monitored in and of themselves, but represent a healthy functioning condition for the habitat of interest). Information on a number of these indicators and conservation planning species is already available through ongoing monitoring, established programs, or through partners (see Table 7-3 and Table 7-4). For some, grant money may be available to fund initiatives for measurement or monitoring. The indicators presented here can be cost-effectively measured or monitored, particularly if done through a multi-party approach. The information below describes ways to evaluate, when possible, the success of NRMP implementation in achieving habitat quality goals.

Table 7-3. Best Practice effectiveness in avoiding and minimizing harm to resources. Monitoring is occasional to ensure design is maintained to standard and is working, and conducted as an ancillary duty of routine maintenance or other activity. The design itself is the main approach to impact avoidance. Since the best practice is intended to protect a specific resource of concern, a measure of the health of that resource is suggested.

Recommended Practice	Purpose	Adopted & Installed to Design Standard? (Y/N)	Maintained to Design Standard?	Standard or Measure. Monitoring Approach
Wildlife Friendly Urban Interface				
Infrastructure designed for low number of perch opportunities for large birds	Avoid unnatural level of predators of native birds in adjacent habitat areas.			Deter perching by large birds, such as presence of large horizontal surfaces and tall vertical structures with cross members. Monitor for problem structures and retrofit as needed.
Low impact lighting type and color	Avoid bird disorientation (exterior lighting) or strike (interior lighting visible to outside)			Bird Friendly Building Standards. Incidental observations by maintenance staff or volunteer early morning transect walks, lit areas.
Building Bird Strikes	Avoid migratory bird kill due to disorientation			Bird Friendly Building Standards. Incidental observations by maintenance staff or early morning occasional searches near large areas of glass or lit structures during spring and fall migration
Trash, built environment and upland habitats - retrofits	Avoid unnatural levels of predators and pest wildlife. Visual aesthetics.			Level of effort reported by groundskeeping staff. Predator control report.
Wildlife-friendly pet practice, residences	Avoid unnatural levels of mammalian predators			Enforcement by HOA. Predator control report.
Sea Level Rise Buffer	Allow room for flood tides with sea level rise			Total acreage. Acreage of estuarine habitats, values. Trend in vegetation condition and configuration. Presence of upland transition plant assemblages (salt tolerant). Invasive species condition. Abundance of non-native, pest wildlife.
WHA Buffers	Protect wildlife use and natural behavior patterns	Policies in place	Speed limits and development restrictions, routine enforcement.	Avian abundance and diversity, local compared to all bay trends based on regular all-bay surveys. Predator levels, terrestrial invasive species, unwanted ecotype conversion
Minimizing Harm to Aquatic Resources				
Stormwater, non point source urban runoff control	Avoid water pollution			Routine Municipal Permit measures Terrestrial weed establishment from runoff detected during weed mapping, CRAM surveys. Streambed scour, decreased base flow, hydromodification. Shoreline erosion. Periodic review of LIDAR/aerial photo imagery. Citizen reporting.
Invasive species detection and control	Prevent food chain and other harm to native aquatic life through early detection and control of invasive species	Policies in place	Routine enforcement of prevention measures. *Caulerpa* surveys	Local new introductions compared to all-bay, regional, and statewide. RHMP, Bight reports on invertebrate composition.
Exemplary treatment wetlands	Stormwater treatment, clean runoff to bay			Routine Municipal Permit measures, RHMP and Bight. Citizen reporting program.
Permeable surfaces	Extent in area			Ratio permeable/non-permeable. Routine Municipal Permit measures
Trash retrofits associated with stormwater. Intertidal and subtidal trash	Avoid pollution, ingestion or entanglement by aquatic species			Local Abundance/All Bay trend RHMP including Debris Special Studies, Bight program

Table 7-3. Best Practice effectiveness in avoiding and minimizing harm to resources. Monitoring is occasional to ensure design is maintained to standard and is working, and conducted as an ancillary duty of routine maintenance or other activity. The design itself is the main approach to impact avoidance. Since the best practice is intended to protect a specific resource of concern, a measure of the health of that resource is suggested.

Recommended Practice	Purpose	Adopted & Installed to Design Standard? (Y/N)	Maintained to Design Standard?	Standard or Measure. Monitoring Approach
Watershed coordination	More effective management of diffuse causes of impacts to bay	Partnerships in place	Participation and joint project implementation	Local Abundance/All Bay trend RHMP including Special Studies, Bight program Routine Municipal Permit measures
Ecosystem Services in the Built Environment				
Low carbon footprint	Reduce greenhouse gases			LEED certification
Low water footprint	Water conservation	Measures in place	Voluntary compliance	Level of use
Connectedness to adjacent communities	Extended community well-being			Use by nearby communities through pedestrian, public transit, bicycle access
Human Experience of Nature				
Public trails and other access	Access for people to experience nature while minimizing disturbance to wildlife			Human use level and trend.
Ecotourism visitors	Exemplary demonstration of wildlife-friendly urban practice	Educational media		Organized visitor-days. Economic health.
Sustainability visitors	Exemplary demonstrations to promote sustainable living	Educational outreach media		Organized visitor-days. Educational opportunities (signage, etc.)
Aesthetics, sense of place	Community well-being tied to nature's benefits	Opportunity for discovery and interactive experience with nature	Participation in opportunities	Occupancy trends, use of trails and amenities, organized volunteerism, local public engagement. Economic health. Low need for enforcement.

Table 7-4. Indicators of Natural Habitat and Community Health and Integrity.

	Measure	Baseline/Reference Condition	Trend Assessment	Data Source
Habitat Extent & Continuity				
Eelgrass extent	▪ Extent in acres (see map)	▪ Maximum extent 1999-2014	▪ Extent compared to maximum extent, local compared to bay as a whole	▪ Ongoing, periodic, baywide eelgrass surveys
Intertidal Mudflat	▪ Extent in acres (see map), fragmentation	▪ INRMP ▪ Initial CRAM or use 50% CRAM as approximate reference condition	▪ Improvement or decline relative to baseline	▪ Periodic CRAM assessment
Intertidal Salt Marsh	▪ Extent in acres (see map), fragmentation ▪ Habitat value	▪ Aerial image ▪ Initial CRAM or use 50% CRAM as approximate reference condition	▪ Improvement or decline relative to baseline	▪ Periodic CRAM assessment ▪ Aerial imagery every 5 years
Upland Transition	▪ Acreage (see map)	▪ LIDAR elevations ▪ Initial vegetation survey	▪ Floristic, semi-quantitative vegetation mapping (e.g. CDFW's VegCamp)	▪ Vegetation condition and map every 5 years or so
Shoreline structures	▪ Proportion containing beneficial estuarine design elements	▪ CVBMP build out	▪ Use by estuarine versus ocean species ▪ Use by natives versus non-native species ▪ Shoreline length	▪ Periodic baywide fish and bird surveys ▪ Terrestrial wildlife report by predator managers ▪ RHMP and Bight invertebrate and zooplankton reports
Resilient Habitats and Communities				
Zooplankton and benthic invertebrates as food for fish and birds	▪ Abundance, proportion estuarine versus ocean, native versus non-native	▪ Earliest RHMP and Bight surveys with plankton tows and benthic sampling	▪ South bay harbor areas compared to baywide trend	▪ RHMP and Bight programs
Fish	▪ Productivity of fish for wildlife food/forage ▪ Indices reported in baywide fish survey	▪ Earliest baywide survey ▪ Diversity: historic records	▪ Fish indices stable or Increasing ▪ Toward historic	▪ Periodic baywide fish surveys
Birds	▪ Large shorebird abundance ▪ Small/medium shorebird abundance ▪ Winter waterfowl abundance	▪ Earliest baywide survey 2006 ▪ Diversity: historic records	▪ Abundance of shorebirds, migratory waterfowl, seabirds stable or increasing in south bay relative to baywide. ▪ Toward historic	▪ Periodic baywide avian surveys
Upland transition values	▪ Acreage of upland transition habitat ▪ Representative saline-tolerant transition species, including pollinators	▪ LIDAR elevation between 4.9 and 9.2 ft above MSL.	▪ Stable or improving representation of upland transition species ▪ Ratio native/non-native ▪ Pollinator plants - continued presence	▪ LIDAR surveys ▪ Vegetation map every 5 years or so ▪ Citizen monitoring
Riparian and brackish	▪ Habitat value	▪ Riparian CRAM method, EIR vegetation map	▪ No degradation relative to initial CRAM assessment. No channel widening	▪ Vegetation map every 5 years or so
Intertidal mudflat values	▪ Physical/biological integrity	▪ 75% CRAM or earliest assessment ▪ Connectivity, width	▪ Stable or improving	▪ CRAM survey
Salt marsh values	▪ Physical/biological integrity	▪ 75% CRAM or earliest assessment ▪ Improved connection of **marsh fragments**	▪ Stable or improving	▪ CRAM survey

Indicators of Healthy Habitats

- Subtidal.[1] Status and trend of total nursery fish populations as a group as interpreted in the current program of baywide surveys funded by the Port and U.S. Navy (numbers are most recent surveys by Vantuna Research Group [2012], representing the baywide catch and the catch in south bay, respectively): California halibut (79 and 12), yellow-fin croaker (19 and 12), barred sand bass (41 and 15), bonefish, shortfin corvina (0), deepbody anchovy (17 and 14), slough anchovy (1566 and 750), arrow goby (2438 and 500), California killifish (8 and 5), bay blenny (3 and 0), cheekspot goby (16 and 6), and shadow goby (9 and 8), as well as NOAA trust resources , such as spotted sand bass (332 and 89), yellowfin croaker (19 and 12), and California scorpionfish (8 and 0).
  - Production of fish for avian foraging: certain schooling fishes form an important forage base for rare seabirds; the most abundant in the south bay are slough anchovy, topsmelt, and shiner surfperch.
  - Maintenance of acreage of shallow subtidal eelgrass.
  - Presence of green sea turtles.
  - Presence of migratory waterfowl (black brant, lesser scaup).
- Intertidal Mudflat.
  - The mudflats are sufficiently broad or gently-sloped to maintain or improve tidal exposure to accommodate the various feeding strategies of conservation planning fish and shorebirds. Scores that rate the quality of estuarine habitats using the CRAM method are improved.
  - Intertidal mudflats in the south bay are a major component of the food web for shorebirds because of the availability of small fish and invertebrates for birds to feed on between the tides. Preservation and restoration of mudflats are essential to shorebird populations. The metric for a success indicator is maintaining and building upon the area of exposed mudflats as a food source for birds.
  - The following endemic fishes continue to be present: gobies (arrow, shadow), deepbody anchovy, and slough anchovy.
  - The following conservation planning invertebrates, which are indicators of healthy ecosystem function, continue to be abundant: ghost shrimp/California horned snail burrows, crab burrows, pollinator and predatory insects.
- Salt Marsh. Where feasible, salt marsh is maintained in quality in its current condition or above the pre-CVBMP development functional condition, as evaluated by the CRAM or similar aquatic assessment method.
  - Presence of conservation planning species: curlews and wandering skipper.
- Upland Transition. Distribution and diversity of upland transition species is maintained, where feasible, at or above pre-CVBMP development levels within the CVBMP footprint and WHAs.
  - Presence of upland transition flora includes estuary suaeda, woolly seablite, California boxthorn, Palmer's frankenia (these planning species currently occur at similar elevations around San Diego Bay).
  - Presence of upland transition conservation planning fauna: large-billed savannah sparrow, black-tailed jackrabbit, San Diego horned lizard, burrowing owl, native butterflies, bees, moths, and other pollinators (beetles, birds, bats).
  - Invasive species abundance decreases.

1. Subtidal obligations in the MMRP have to do with in-water work regarding reconfiguring marinas and the H St. Pier.

Indicators of Healthy Habitat Connections and Linkages

- Recovery of salt marsh connections to intertidal mudflat, and connection of marsh fragments.
- Habitat connections are available for fish: striped mullet (stream mouths), California halibut.
- Presence of host/food plants for migratory pollinators.
- Presence of migratory "stepping stone" shorebirds (short-billed dowitcher, western sandpiper, red-necked phalarope, long-billed curlew, red knot).
- Enhanced connections from bay habitats to brackish marsh and stream habitat to benefit a broad range of species.
- Avian habitat connections exist to upland areas for sandpipers, dunlin, and godwit.
- Algal cover by dominant type (visual estimate) decreases.

Indicators of Restoration Effectiveness

- Acres restored at or above pre-existing functional quality, based on CRAM, hydrogeomorphic assessment, or other scientific method.
- For WHAs and surrounding areas, consider the recovery of habitat in the order of most lost: 1) tidal flats, for which loss has been greater than that for tidal marsh in southern California and San Diego Bay (Macdonald et al. 1990; Port and U.S. Navy 2013); 2) salt marsh; 3) eelgrass. Losses of wetland/upland transition habitats from pre-development conditions are extremely high, though the exact area is not known.
- Presence and abundance of conservation planning species of wildlife, and plants.
- Presence of functional groups of upland transition-dependent wildlife and plants.
- The CVBMP footprint and WHAs (see Map 1-1, Map 1-2, and others in Section 1.0: Introduction) contain the full variety of physical attributes that support the unique biodiversity and productivity of this location. These attributes include warm, shallow, quiet water with adequate tidal exchange; clean water and sediment; broad and connected intertidal shorelines with gentle slopes; eelgrass; emergent vegetation; secondary microchannels; a range of estuarine salinity conditions; fine sediments; and upland refugia during tidal surges.
- Connectivity between fragments of mudflat, marsh, upland transition, and riparian habitats are improved, as are conditions for conservation planning species that benefit from this connectivity.
- Connectivity includes some brackish water and riparian habitat.
- Topographic and vegetation complexity in habitats is maintained or improved for conservation planning species.
- Artificial habitats in the intertidal zone of areas in the vicinity of the CVBMP footprint are designed with consideration to provide maximum ecosystem services including discouraging invasive species.

Indicators of Minimizing Harm to Aquatic Resources

- Pervious surfaces and structures significantly reduce stormwater runoff to bay.
- Trash retrofits effective including those for trash generated within the Bayfront and those that intercept trash in tributaries that flow through the Bayfront.
- Regulatory compliance for constituents defined by the RWQCB and the San Diego Basin Plan is improving.
- Upstream partnerships are meeting and working cooperatively to benefit the Bayfront habitats.

- Monitoring data can be integrated with baywide and regional programs.

Indicators of an Urban-Wildland Interface Conducive to Use by Native Wildlife

- The Chula Vista Bayfront provides public access that attracts visitors from outside the region as well as local residents to use the marine related recreational facilities and public areas. It also provides a peaceful sanctuary for those viewing native wildlife.
- Design of the CVBMP and a sense of ownership by the local community and visitors leads to compliance with guidelines pertaining to pets, trash, lighting, noise, habitat boundaries, etc.
- Trash receptacle success is evident by the absence of trash improperly disposed of, both within the footprint and WHAs and by absence of pest species (e.g. corvids, possums, rats) in the vicinity of human use areas (e.g., Signature Park).
- Raptor or other predator impacts on native species are not above natural levels in the habitat areas.
- Mammal predators within WHAs are not above natural levels, or levels ecologically sustainable for avian productivity in the NWR.
- Pets and feral animals do not get into habitat areas.
- Native pollinators are present, including long-distance migratory species.

Indicators of Built Environment Ecosystem Services

- The bayfront and Chula Vista's urban core are increasingly connected with neighborhoods to the east as shown through visits via public transit, pedestrians, bicycles.
- Cooling zones, provided by shade-producing vegetation and cooling structures, accommodate people during intensifying heat waves.

Indicators of Education that Inspires and Promotes the Human Experience of Nature

- People of all abilities and social groups are recreating, learning, thriving as they experience natural resources.
- Signature Park engages and inspires the public about coastal and bay-estuarine natural resources.
- Volunteer and other public engagement is occurring. People want to volunteer as docents, monitors, weed pullers, trash collectors.
- Children are connecting with nature.
- Nature conservation groups are visiting.
- Awareness and attitude surveys of employees, residents, business owners show positive understanding of sustainable living with natural resources.
- Organized visits occur by those interested in urban sustainability.
- Organized ecotours take place.
- Quiet, peaceful communion with nature and family is commonplace.
- Interpretive signage and brochures significantly add to the visitors' knowledge and appreciation of the natural resources of the Bayfront.

- There are demonstration sites for education about stormwater capture and urban runoff quality (Settlement Agreement 4.6), and other techniques that mimic watershed processes for clean water. Other demonstration sites could show examples of sustainable design within the CVBMP footprint, such as minimizing the ecological footprint of water consumption, carbon, and habitat adjacency (such as appropriate lighting and management of bird strikes).

Indicators of Effective NRMP Integration and Implementation

- Seamless management across jurisdictions.
- Management is consistent with tidelands trust requirements and restrictions.
- Management approach provides a clear process for adapting to climate change as future development plans come forward.
- The NRMP serves as a model plan for other coastal management efforts in California and the United States.
- A sustainable and prioritized comprehensive funding program is identified, developed, and maintained.
- Funds are efficiently used to achieve project goals.
- An adaptive management and monitoring strategy provides for best available science and real-world capacity to continuously implement the best strategies.
- Enhancement opportunities are aligned to optimize benefits to people and native fish and wildlife communities as measured by ecosystem services.
- Partnerships allow cost-efficient implementation of longer-term goals and objectives:
  - Restoration projects are improved through financial partnerships, such as through grants or market-based opportunities.
  - Environmental organizations whose own objectives can be achieved by participating in the implementation of the NRMP.
- Grant funding is attracted to area.
- Awareness of the key findings of supporting research projects by decision-makers and the public.
- Mitigation projects are effective at contributing to NRMP goals and objectives.

7.4 Implementation Responsibilities for Compliance-driven Actions

7.4.1 Roles, Responsibilities, and Funding Mechanisms from Existing NRMP Controlling Documents

Some implementation roles are identified in the CCDP, the MMRP, and the CVBMP Settlement Agreement. Direct quotes from NRMP controlling documents are presented in blue boxes below. Advisory recommendations of this NRMP on how to accomplish some of the NRMP's articulated goals are not in blue boxes. Please see the Appendix C: Setting for tables on the CVBMP parcels, regulatory drivers, and a map of jurisdictional waters and wetlands as described at the time of the CVBMP EIR.

Funding for the implementation of the NRMP will be provided by the District, City and RDA. To meet these obligations, the District, City and RDA will commit revenues or otherwise provide funding to a JPA formed pursuant to the California Marks-Roos Act, Articles 1, 2, 3 and 4 of Chapter 5 of Division 7 of Title 1 of the California Government Code. District, City, and RDA will ensure the JPA is specifically charged to treat the financial requirements of this agreement as priority expenditures that must be assured as project-related revenues are identified and impacts initiated. The District, City and RDA expressly acknowledge the funding commitments contemplated herein will include, but not be limited to funding for personnel and overhead or contractor(s)/consultant(s) to implement and ensure the following functions and activities (Settlement Agreement 3.4):

- On-site management and enforcement for parks and Wildlife Habitat Areas as necessary to enforce restrictions on human and Predator access regarding Wildlife Habitat Areas (Settlement Agreement 3.4.1);
- Enforcement of mitigation measures including, but not limited to, trash collection, noise restrictions, removal of invasive plants, habitat restoration, and park use restrictions (Settlement Agreement 3.4.2);
- Coordination, development, implementation and evaluation of effectiveness of education and mitigation programs, including implementation of the NRMP (Settlement Agreement 3.4.3);
- Evaluation of effectiveness of bird strike mitigation and design measures (Settlement Agreement 3.4.4);
- Water quality protections (Settlement Agreement 3.4.5); and
- Coordination of injured animal rehabilitation activities (Settlement Agreement 3.4.6).

Ensure the Port, City and RDA are not required to expend funds for NRMP implementation until project-level revenues are identified in accordance with Section 3.4 [of the Settlement Agreement] and impacts initiated (Settlement Agreement 4.1.1)

The NRMP Implementation Table summarizes the strategies presented in the NRMP and some implementation roles. Among other descriptive information for each strategy, the Implementation Table also identifies the event that triggers the strategy, the current status of implementation and the entity responsible for funding. This table will be used to guide and track NRMP implementation.

Some roles and responsibilities are defined through mitigation requirements. The following tables in Sections 7.4 through 7.4.1.3 are developed from the MMRP of the CVBMP EIR. They show the mitigation acreage and responsible party as it was assigned, by land cover or wetland type. However, the footprint of the CVBMP area has changed since publication of the EIR because the switchyard has been removed from the footprint.Therefore, as portions of the CVBMP project are designed and undergo further environmental review, impacts will be calculated and addressed.

I. RESERVATION OF DISCRETION. The contents of this Agreement notwithstanding, District and City reserve their discretion to approve or disapprove all actions which require by law the exercise of discretion and which District and City cannot lawfully be committed to by contract. Such reservation of discretion will apply to all contemplated legislative and quasi-judicial actions include, without limitation, approval of land use entitlements, CEQA compliance, the exercise of eminent domain, code enforcement and the making of findings and determinations required by law (Settlement Agreement 22).

II. THE DISTRICT'S AND CITY'S UNDERTAKINGS. The undertakings of the District and City set forth in Settlement Agreement Sections 3 through 10 and 13 through 16 of this Agreement provide additional mitigation measures that will be incorporated into the Final EIR and the MMRP, and will be implemented by the District and City and may be enforced by the Coalition or any member organization as mitigation measures. The Parties further agree that the Coalition or any member organization have standing to enforce mitigation measures pursuant to Code of Civil Procedure section 1085 and Public Resources Code section 21081.6(b) (Settlement Agreement 21).

III. Notwithstanding the preceding provisions of this Section 17, in the event the Proposed Project is approved, the Coalition reserves the right to object to any material failure to implement the Proposed Project in compliance with this Agreement, the MMRP and all applicable laws, regulations or permit requirements (Settlement Agreement 17.7).

7.4.1.1 Port of San Diego

Table 7-5, Table 7-6, and Table 7-7 summarize mitigation estimates and ratios in the CVBMP EIR, which is the controlling document for these mitigation ratios.

Table 7-5. Project Level Mitigation Required for Significant Impacts to Vegetation Communities and Land Cover Types — Port Lands. The Project Level categories refer to work that is defined sufficiently that is tied to a specific development project.

Vegetation Community/ Land Cover Type	Mitigation Ratio for Permanent Impacts	Mitigation Ratio for Temporary Impacts	Project Level Permanent Impacts (acres)	Project Level Temporary Impacts (acres)	Total Impact Acreages	Mitigation Requirement Total (acres)
Disturbed Diegan coastal sage scrub	3:1[a]	1:1	0.79	0	0.79	1.19
Southern coastal salt marsh	4:1	1:1	0.03	0	0.03	0.12
Mulefat scrub	3:1	1:1	0.07	0	0.07	0.21
Disturbed seasonal pond	1:1	1:1	0	0	0	0
Non-native grassland	0.5:1	0.5:1	2.14	0	2.14	1.07
TOTAL			3.03	0	3.03	2.59

a. The 3:1 ratio for mitigating permanent impacts to disturbed Diegan coastal sage scrub is a requirement from the CCDP.

Table 7-6. Program Level Mitigation Required for Significant Impacts to Vegetation Communities and Land Cover Types — Port Lands. The Program Level categories refer to work that may need further environmental review when specific project work is proposed.

Vegetation Community/ Land Cover Type	Mitigation Ratio for Permanent Impacts	Mitigation Ratio for Temporary Impacts	Program Level Permanent Impacts (acres)	Program Level Temporary Impacts (acres)	Total Impact Acreages	Mitigation Requirement Total (acres)
Disturbed Diegan coastal sage scrub	1.5:1	1:1	6.86	0.27	7.13	10.56
Southern coastal salt marsh	4:1	1:1	1.56	0.62	2.18	6.86
Mulefat scrub	3:1	1:1	0	0	0	0
Disturbed seasonal pond	1:1	1:1	9.12	0	9.12	9.12
Non-native grassland	0.5:1	0.5:1	42.46	4.27	46.73	23.36
TOTAL			60.0	5.16	65.16	49.91

Table 7-7. Mitigation Requirements for Proposed Impacts to Jurisdictional Wetland Resources — Port Lands. The Project Level versus Program Level categories refer to work that is defined sufficiently that is tied to a specific development project, versus work that may need further environmental review when specific project work is proposed.

	Project Level Impacts (acres)	Program Level Impacts (acres)	Impact Total (acres)	Mitigation Ratio	Mitigation (acres)	Temporary Impact Mitigation (1:1 ratio)	Mitigation Requirement Total (acres)
USACE Jurisdictional Waters							
USACE Waters of the U.S.	0	1.17	1.17	1:1	1.17	0.87	2.04
USACE Waters of the U.S. — Bay/Marina	0.30	61.66	61.96	not in EIR	not in EIR	0	*
USACE Wetlands (southern coastal salt marsh	0.25	0.42	0.67	4:1	2.68	0	2.68
USACE TOTAL	0.55	63.55	64.10			0.87	4.72
CDFW							
CDFW Streambed	0.00	0.90	0.90	2:1	1.80	0.23	2.03
CDFW TOTAL	0.00	0.90	0.90	–	1.80	0.23	2.03
CCC Jurisdictional Resources							
CCC wetlands	0.08	0.93	1.01	2:1	2.02	0.05	2.07
Potential CCC**	0.00	0.74	0.74	2:1	1.48	0.04	1.52
Former Industrial Areas–areas of questionable jurisdiction**	0.00	2.50	2.50	2:1	5.00	1.50	6.50
CCC TOTAL	0.14	4.17	4.25		8.50	1.59	10.09

7.4.1.2 Project Proponent / Port of San Diego, As Appropriate

The expected impacts of the development to be mitigated are identified in Table 7-8 and Table 7-9, as described in the CVBMP EIR.

Table 7-8. Impacted terrestrial resource areas and mitigation ratios.

Type of Habitat Impacted	Project Location and Phase	EIR Source	Area Impacted (P/T/*)	Mitigation Ratio
Surface water foraging habitat and intertidal mudflat	South Bay Boatyard Marina and with the harbor reconfiguration, Phase IV	Mitigation Measure 4.8-9	1.61 acres (P)	Project Specific
CCC wetlands	Circulation road construction/improvements and the riprap removal and bulkhead replacement	Mitigation Measure 4.8-15	0.51 acre (P)	2:1
CCC wetlands	Parcel OP-2B, re-channelization of the Telegraph Canyon Channel	Mitigation Measure 4.8-15	0.16 acre (P)	1:1
CCC wetlands	Restoration of the ecological buffer within Parcel OP-2A during program-level phases	Mitigation Measure 4.8-16	0.05 acre (T)	1:1
Potential CCC wetlands		Mitigation Measure 4.8-16	0.04 acre (T)	1:1
Former industrial areas		Mitigation Measure 4.8-16	1.5 acres (T)	1:1
Potential CCC wetlands	Circulation roadway construction in the Otay District during program-level phases	Mitigation Measure 4.8-17	0.58 acre (P)	2:1
CCC wetlands	Parcels HP-13B and HP-7 during program-level phases	Mitigation Measure 4.8-18	0.16 acre (*)	2:1
Potential CCC wetlands	Parcel OP-1B during program-level phases	Mitigation Measure 4.8-19	0.16 acre (*)	2:1
CCC wetlands	Parcel O-4 during program-level phase development	Mitigation Measure 4.8-20	0.1 acre (*)	2:1
P = Permanent impacts, T = Temporary Impacts, *= impact not specified as permanent or temporary in the CVBMP EIR				

Table 7-9. Impacted marine resource areas and mitigation ratios.

Type of Habitat Impacted	Project Location and Phase	EIR Source	Area Impacted (P/T/*)	Mitigation Ratio
Eelgrass habitat	South, H Street Pier construction and shading during Phases II and IV	Mitigation Measure 4.9-1	0.8 acre (*)	1.2:1
Eelgrass habitat	Parcel HW-4	Mitigation Measure 4.9-1	0.02 acre (*)	1.2:1
Eelgrass and shallow water habitat	Channel realignment during Phase IV	Mitigation Measure 4.9-2	45.9 acres (*)	1.2:1
Intertidal mudflat pickleweed	bulkhead placement in the marina during Phase IV, Parcel HW-3	Mitigation Measure 4.9-3	0.03 acre (P) 0.001 acre (P)	1:2 1:4
P = Permanent impacts, T = Temporary Impacts, *= impact not specified as permanent or temporary in the CVBMP EIR				

7.4.1.3 City of Chula Vista

The mitigation requirements for the development on City lands are identified in Table 7-10 and Table 7-11.

Table 7-10. Mitigation Required for Significant Impacts to Vegetation Communities and Land Cover Types — City Lands. The Project Level versus Program Level categories refer to work that is defined sufficiently that is tied to a specific development project, versus work that may need further environmental review when specific project work is proposed.

Vegetation Community/ Land Cover Type	Mitigation Ratio for Permanent Impacts	Mitigation Ratio for Temporary Impacts	Project Level Permanent Impacts (acres)	Project Level Temporary Impacts (acres)	Program Level Permanent Impacts (acres)	Program Level Temporary Impacts (acres)	Mitigation Requirement Total (acres)
Disturbed Diegan coastal sage scrub	1.5:1	1:1	0	0	0.25	0	0.25
Southern coastal salt marsh	4:1	1:1	1.07	0.01	0	0	1.08
Mulefat scrub	3:1	1:1	0	0	0.03	0	0.03
Disturbed seasonal pond	1:1	1:1	0	0	0		
Non-native grassland	0.5:1	0.5:1	19.13	0.03	0	0	19.16
TOTAL			20.2	0.04	0.28	0	20.52

Table 7-11. Mitigation Requirements for Proposed Impacts to Jurisdictional Wetland Resources — City Lands. The Project Level versus Program Level categories refer to work that is defined sufficiently that is tied to a specific development project, versus work that may need further environmental review when specific project work is proposed.

	Permanent Impact Project Level (acres)	Permanent Impact Program Level (acres)	Permanent Impact Total (acres)	Mitigation Ratio	Permanent Impact Mitigation (acres)	Temporary Impact Mitigation (1:1 ratio)	Mitigation Requirement Total (acres)
USACE Jurisdictional Waters							
USACE Waters of the U.S.	0	0	0	1:1	0	0	0
USACE Wetlands (southern coastal salt marsh	0.02	0	0.02	4:1	0.08	0.01	0.09
USACE TOTAL	0.02	0	0.02		0.08	0.01	0.09
CCC Jurisdictional Resources							
CCC Wetlands	0.06	0	0.06	2:1	0.12	0	0.12
CCC TOTAL	0.06	0	0.06		0.12	0	0.12

7.4.1.4 Port of San Diego and/or City of Chula Vista

I. Funding for the implementation of the NRMP and for the enforcement and implementation measures shall be provided by the District and City. To meet these obligations, the District and City will commit revenues, or otherwise provide funding to the JPA, formed pursuant to the California Marks-Roos Act, Articles 1, 2, 3 and 4 of Chapter 5 of Division 7 of Title 1 of the California Government Code. District and City will ensure the JPA is specifically charged to treat the financial requirements described this policy as priority expenditures that must be assured as project-related revenues are identified and impacts initiated. The District and City expressly acknowledge the funding commitments contemplated herein will include, but not be limited to, funding for personnel and overhead or contractor(s)/consultant(s) to implement and ensure the following functions and activities (Settlement Agreement 3.4; CCDP 22.1):

   A. On-site management and enforcement for parks and WHAs as necessary to enforce restrictions on human and predator access (Settlement Agreement 3.4.1; CCDP 22.1(a));

   B. Enforcement of mitigation measures including, but not limited to, trash collection, noise restrictions, removal of invasive plants, habitat restoration, and park use restrictions (Settlement Agreement 3.4.2; CCDP 22.1(b));

   C. Coordination, development, implementation and evaluation of effectiveness of education and mitigation programs, including implementation of NRMP (Settlement Agreement 3.4.3; CCDP 22.1(c));

   D. Evaluation of effectiveness of bird strike mitigation and design measures (Settlement Agreement 3.4.4; CCDP 22.1(d));

   E. Water quality protections (Settlement Agreement 3.4.5; CCDP 22.1(e)); and

   F. Coordination of injured animal rehabilitation activities (Settlement Agreement 3.4.6; CCDP 22.1(f)).

The requirements as noted above shall be implemented in compliance with the CCDP and Settlement Agreement.

II. The Port/City shall assign personnel resources to implement the NRMP, at a minimum equivalent to one full time (average 40 hours per week) employee whose duties will include, among others, Program coordination and management, designated to track and coordinate implementation of the NRMP.

III. The Ranger/Docent responsibilities proposed for CVBMP education, outreach will be initiated as project-related revenues are identified in accordance with Section 3.4 of the Settlement Agreement.

IV. Predator management, including management of natural and domestic predator control and trash management to avoid attracting predators, will be implemented as is currently done by the Port with a qualified entity and/or agency.

V. The Port/City will dedicate staff resources as needed to apply for and secure grant funding for NRMP and restoration projects to meet the obligations in the Controlling Documents and to support qualifying projects

Objective 7.4-1 *Effective Measures.* Ensure mitigation and restoration measures are effectively implemented.

I. Conduct studies as necessary to establish sensitive habitat values to support restoration and mitigation planning.

7.4.1.5 Community Benefits Fund

II. The WAG will advise the JPA on expenditure of the Community Benefits Fund consistent with this Plan subject to applicable law (Settlement Agreement 10.6; CCDP 17.3). Written recommendations from the WAG will be forwarded to the District and City for consideration on key decisions as the build-out of the Chula Vista Bayfront project occurs (Settlement Agreement 10.7; CCDP 17.3).

III. PACIFICA INITIAL SALE UNIT CONTRIBUTION. Pacifica Initial Sale Unit Contribution Funds shall be directed to the JPA and placed into a Community Benefits Fund that will be non-wasting, with interest revenues committed to the specific broad categories of: Natural Resources; Affordable Housing; Sustainability/Livability; and Community Impacts and Culture. The Community Benefits Fund revenues shall be spent within the Project Area and Western Chula Vista as further described in Section 10.6, subject to applicable law (Settlement Agreement 3.5).

The requirements as noted above shall be implemented in compliance with the CCDP and Settlement Agreement.

A. The Chula Vista Bayfront Foundation has been established at the San Diego Foundation for the receipt and management of the Pacifica re-sale commitments outlined in an associated document.

7.5 Strategy for Implementing Beyond Compliance Recommendations Including Adaptation to Climate Change

The General Principles outlined in Chapter 1.0 of this NRMP all pertain to the strategic implementation of this NRMP. For example, ecosystem-based management and the use of ecosystem services both provide a framework to evaluate the pros and cons of management from a planning perspective rather than a regulatory driver. They are tools for making more transparent the risks and consequences of choices made. The use of ecosystem services as a framework may resonate with funding agencies since it is emerging federal policy. But no one tool will suffice. Many of the climate change adaptation strategies are contained here because the scale of that problem crosses all scales, jurisdictions, and natural resources concerns of this NRMP.

The WAG will continue to play a key role in advising the District and City in the implementation of this NRMP. As stated in the CCDP, the WAG will advise on cooperative management agreements, Adaptive Management Review and any related wildlife management and restoration plans or prioritizations. The WAG will engage in partnering, education, and volunteerism to support the development of the Chula Vista Bayfront in a manner that effectively protects and enhances the fish, wildlife, and habitats of the area and educates and engages the public (Settlement Agreement 10.1; CCDP 1.1, 17.1).

The WAG will: (i) determine the effectiveness of the NRMP in achieving the Management Objectives; (ii) identify any changes or adjustments to the NRMP required to better achieve the Management Objectives; (iii) identify any changes or adjustments to the NRMP required to respond to changes in the man-made and natural environments that are affecting or, with the passage of time may affect, the effectiveness of the NRMP in achieving the Management Objectives; and (iv) review priorities relative to available funding. At its periodic meetings, the WAG may also consider and make recommendations regarding (a) implementation of the NRMP as needed, (b) Adaptive Management Review and (c) NRMP Amendments (Settlement Agreement 10.5; CCDP 17.2).

I. IDENTIFICATION OF GRANTS. Coalition will use reasonable best efforts to identify, and at each member organization's sole discretion to support, grants and other funding options to assist the District and City meet their obligations under this Agreement (Settlement Agreement 19).

> *The requirements as noted above shall be implemented in compliance with the CCDP and Settlement Agreement.*

7.5.1 Climate Change Adaptation Integration Into the CVBMP Area

Goal

Excellence in Implementing Climate Change Adaptation. Achieve excellence in coastal natural resource management and adaptation for climate change through NRMP implementation.

Objective 7.5-1 *Develop a model adaptation process.* Make clear the process and requirements for incorporating sea level rise considerations into proposed projects, so that the CVBMP area is a model for climate change adaptation locally and elsewhere.

I. Stay informed of sea level rise projections, risks, and anticipated impacts and management strategies.

   A. Participate in annual events with scientists and stakeholders (including other jurisdictions) to understand, incorporate and disseminate information regarding sea level rise and its impacts in the south bay.

II. Optimize the use of mitigation opportunities to adapt to sea level rise. Use mitigation (outside of the MMRP and Appendix 4.8-8 of the EIR) and grant funding opportunities as pathways to climate change resilience (see Settlement Agreement Section 5).

III. Ensure coordination with the District and City Climate Mitigation and Adaptation Plans (CCDP 3.2).

   A. *Sea Level Rise Best Science and Coordination with Climate Mitigation and Adaptation Plans.* Development shall consider the potential changes in functionality of WHA due to rising sea levels and coordinate management with the District and City Climate Mitigation and Adaptation Plans. Siting and design of new shoreline development shall take into account predicted future changes in sea level. In particular, an acceleration of the historic rate of sea level rise shall be considered and based upon up-to-date scientific papers and studies, agency guidance (such as the 2010 Sea Level Guidance from the California Ocean Protection Council), and reports by national and international groups such as the National Research Council and the Intergovernmental Panel on Climate Change (CCDP 3.2).

The requirements as noted in paragraph III.A above shall be implemented in compliance with the CCDP.

   B. Seek to cooperate with other relevant jurisdictions (regional/watershed scale) on a coordinated approach to manage for sea level rise, based on updated information and guidance from information-sharing events, as well as efforts and results already achieved by others.

IV. Consider taking early actions to forestall sea level rise impacts if helpful, such as early soil removal and reconnecting the on-site seasonal marsh to F&G street marsh, consistent with Settlement Agreement 4.4.5 and CCDP 14.5.

V. Review and revise sea level rise management strategies for the Chula Vista Bayfront as new information develops to interpret change in habitat quantity or quality of the WHAs and their connections.

VI. Consider sediment placement options for sea level rise adaptation through a grant or other funding, to include a feasibility study that includes a cost-effectiveness assessment. As sea level rise continues over time, the water depth in the area undergoing sea level rise will increase. The reduction in sediment supply to San Diego Bay that has occurred historically, and is expected to continue in the future, will make it difficult for ground elevations to increase via sedimentation. Sediment could be added to the CVBMP area to counter the inundation effects of sea level rise.

VII. Consider means to accelerate design and implementation of softer shorelines for accommodating sea level rise, starting with the CVBMP Buffer Areas.

Objective 7.5-2 *Reduce Greenhouse Gas and Sequester Carbon.* Contribute to the reduction of regional climate change impacts by reducing GHG emissions and sequestering atmospheric carbon to the maximum extent practical.

Reduction of carbon emissions objective is supported by energy efficiency goals from the Settlement Agreement and also promotion of alternative transportation to/within the CVBMP, as provided in the Settlement Agreement, CCDP, and MMRP.

I. It is recommended that practices to reduce and/or sequester emission of carbon dioxide and other climate change gases be maximized in the CVBMP area through education, outreach, and demonstration projects.

II. Consider carbon sequestration value of habitats such as eelgrass and salt marsh when planning and funding habitat work (refer to Appendix D: Sea Level Rise, Climate Change, and Carbon Sequestration Assumptions). Carbon sequestration occurs at a relatively high level in salt marsh soils, and somewhat less in mudflats and in upland vegetation. This should be part of the equation when optimizing mitigation strategy as it is a potential source of funding for salt marsh improvement (refer to Appendix E: Potential Concepts for "Beyond Compliance" Conservation).

   A. Seek grant funding for a financial feasibility analysis for incorporating carbon offsets as a part of mitigation strategy that benefits habitat goals.

7.5.2 Beneficial Partnerships for Enhanced Implementation Opportunities through Grants, Market Solutions, and Innovation

Objective 7.5-3 *Analyze Financial Feasibility and Trade-Offs.* Apply cost-benefit analyses to choices for investment in natural resources protection, conservation, or restoration, considering public as well as market-based solutions, and emphasizing core south bay values.

I. Consider seeking cost-benefit and trade-off analyses that are ecosystem-service based, and based on the south bay's core values (refer to Section 1.3: The Bayfront Environ's Core Natural Resource Values) and NRMP indicators, so that the short and long-term implications of choices are clear and the benefit of natural resources are fully accounted for. Consider the trade-offs between restoration work that is constrained as to habitat type, scale and location, but may not capture the most benefit from a particular location.

II. Consider a unified conceptual plan for habitat within and adjacent to the CVBMP footprint in order to seek grant funding and to integrate mitigation opportunities.

III. If appropriate, routinely analyze the trade-off between soft and hard infrastructure, or of hybrid infrastructure solutions. Trade-offs include any predisposition to attract or harbor invasive species.

IV. Improve the capacity to meet habitat and sea level rise adaptation purposes of this NRMP through coordinated grant funding, opportunities for market-based solutions such as for carbon offsets, and capacity building for decision-makers and managers. Some of the capacity to meet the NRMP vision may necessarily be regional in approach.

Implementing and funding the NRMP may require partners to address impacts emanating from outside the project footprint, such as water quality concerns from upstream, aquatic invasive species from both marine and freshwater sources, or sea level rise. It may also require a coordinated approach to habitat work in the south bay, so that opportunities to provide for the south bay's core values and most vulnerable conservation planning species (see Section 1.3: The Bayfront Environ's Core Natural Resource Values) are not lost in a project-by-project approach. Also, so that scarce financial resources are invested well for a sustainable future.

A. Implementation of some NRMP recommendations might benefit from a bay-wide or regional approach. For example, restoring as much of the missing tidal flats, marsh, and upland transition habitats as possible, would benefit from a broader management framework, financial feasibility plan, and grant funding, as consistent with landowner mission, policy, and plans (see Appendix E: Potential Concepts for "Beyond Compliance" Conservation).

B. Seek a grant for capacity building for decision-makers, managers, and stakeholders as appropriate. The funds would help establish a framework of continuing education and networking with peer organizations.The intent is to improve decisions and the ability to interpret the goals of this NRMP as issues arise.

1. Consider participating in peer learning networks to support collaborative planning. A model could be the National Forest Foundation. Increase the capacity for a unified message and for advising decision-makers based on the core ecosystem values of south bay and indicators (Section 1.3: The Bayfront Environ's Core Natural Resource Values), and threats to vulnerable natural resources.
2. If resources allow, compile case studies of successful outcomes locally and from other locations for collaborative landscape restoration. These can be more powerful for collaborative learning and beneficial change than a formal monitoring program.
3. Maintain continuity of the "knowledge infrastructure" through personnel and membership transitions, to strengthen stakeholder capacity and ability to benefit the CVBMP project area.

Objective 7.5-4

Watershed-Level Coordination. Align programs and resources for efficiency gains through alliances and partnerships with others, to achieve the water quality standards in the watersheds feeding the CVBMP area.

I. The NRMP will promote, at a minimum, the maintenance and improvement of water quality where possible and coordination with other entities charged with watershed protection activities (CCDP 1.3).

II. Work with partners to correct problems with retrofitting, repair, and maintenance of existing stormwater and flood infrastructure; examples of such challenges include temporary species impacts or activities that encourage invasive species.

III. Where and when possible, recover the natural sediment condition of the CVBMP habitats, which was a combined function of the contributing watersheds and tidal regime, and which sustained wetland and marine habitats with fine sediment and other.

IV. Pursue improvements to prevent litter and pollutants from entering the stormwater collection system. In situations where this is not achieved, provide measures to remove them prior to discharge into the bayfront habitat areas.

7.6 Funding Summary

7.6.1 Funding Prioritization

Ensure the Port, City and RDA are not required to expend funds for NRMP implementation until project-level revenues are identified in accordance with Section 3.4 [of the Settlement Agreement] and impacts initiated (Settlement Agreement 4.1.1).

Funding for the mandatory strategies described in blue boxes and core strategies with green lines is included in financial planning for project implementation. Depending on the type of strategy, these will be funded as a part of construction project costs, operation and maintenance costs, or other identified funding including grants. The NRMP Implementation Table generally identifies the Project Proponent, which may be the Port, City, or a developer, as having Funding Responsibility for design and construction oriented strategies. Operation and maintenance strategies are generally the responsibility of the Port, City or JPA.

For the adaptive or future aspects of the project, the following five evaluation criteria align with this NRMP's guiding principles (Section 1.4: The NRMP's Core Guiding Principles), and could be used to evaluate proposals or emergent financing opportunities, whether work is required by the NRMP's controlling documents or is recommended to meet NRMP goals and objectives.

1. Which NRMP objectives are achieved by the proposed work?
2. Is the proposed work required by the Settlement Agreement, CCDP, or MMRP?
3. Identify which indicators and conservation planning species benefit from the proposed work (see Figure E-2). (These species are to help consider design criteria such as tidal range, sediment, size, or slope of habitat area.)
4. What primary (P) and secondary (S) ecosystem services are provided? Check off in Table 7-12 if, for example:
   - Water quality threat addressed;
   - Flood protection benefit delivered;
   - Species abundance threat reduced;
   - Species habitat improved;
   - Increased recreational opportunity;
   - Increased land value for property adjacent to new natural areas;
   - Improved proximity of nature to recreators;
   - Proximity to trails, roads, boat ramps;
   - Resident or visitor usage rates and people are within walkable, drivable distances of the resource.
5. Additional Ranking Criteria as appropriate:
   - Builds resilience against a known vulnerability identified in the NRMP (climate change, invasion, feral predators).
   - Reduces a threat through habitat improvement in quantity or quality (such as risk to conservation planning species by providing escape cover from predators).
   - Reduces user conflict.
   - Addresses multiple, cumulative impacts - e.g. environmental, subsistence fisheries, commercial fisheries, biodiversity, etc.

- Protects a restoration investment or a future restoration opportunity.
- Ecosystem-based. Gets to the underpinnings of ecosystem values (physical attributes that foster habitat quality).
- Increases ecosystem services: nature-people interface, carbon stocks.
- Restores "missing" habitat elements from historical mudflat, salt marsh, and/or upland transition.
- Ecosystem trade-offs are analyzed transparently.
- Project may be replicated, scaled up, or may catalyze other beneficial work.
- Strengthens other bay-related planning processes.
- Improves probability of successful implementation of CVBMP goals and objectives by making them more operational (provides a valuable management step).

Table 7-12. Fill in with P for primary ecosystem service, and S for secondary service.

X	Icon	Provisioning	X	Icon	Regulating	X	Icon	Habitat/Supporting	X	Icon	Cultural
		Food			Local Climate & Air Quality			Habitats for Species			Recreation, Mental & Physical Health
		Raw Materials			Carbon Sequestration, Storage			Maintenance of Genetic Diversity			Tourism
		Fresh Water			Moderation of Extreme Events						Aesthetic Appreciation, Inspiration for Culture, Art and Design
		Medicinal Resources			Waste-water Treatment						Spiritual Experience, Sense of Place
					Erosion Prevention, Soil Fertility						
					Pollination						
					Biological Control						