

**U.S. Fish and Wildlife Service**

# **Seal Beach National Wildlife Refuge**

*Draft Comprehensive Conservation Plan/  
Environmental Assessment  
Summary, March 2011*



Comprehensive Conservation Plans provide long-term guidance for management decisions and set forth goals, objectives, and strategies needed to accomplish refuge purposes and identify the Service's best estimate of future needs. These plans detail program planning levels that are sometimes substantially above current budget allocations and, as such, are primarily for Service strategic planning and program prioritization purposes. The plans do not constitute a commitment for staffing increases, operational and maintenance increases, or funding for future land acquisition.

# **Seal Beach National Wildlife Refuge**

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## **Vision Statement**

Tidal channels meandering through a sea of cordgrass deliver moisture and nourishment to support a healthy marsh ecosystem. As the quiet calm of the morning is interrupted by the clacking of a light-footed clapper rail, school children and other visitors, standing on the elevated observation deck, point with excitement in the direction of the call hoping for a glimpse of the rare bird. Shorebirds dart from one foraging area to another feasting on what appears to be an endless supply of food hidden within the tidal flats. California least terns fly above the tidal channels searching for small fish to carry back to their nests on NASA Island. A diverse array of marine organisms, from tube worms and sea stars to rays and sharks, and even an occasional green sea turtle, thrive within the tidal channels and open water areas of the Refuge's diverse marsh complex, while Nelson's sharp-tailed sparrows and other upland birds find food and shelter within the native upland vegetation that borders the marsh.

*U. S. Fish and Wildlife Service  
Pacific Southwest Region  
2800 Cottage Way, Room W-1832  
Sacramento, CA 95825-1846*

*March 2011*

**Seal Beach National Wildlife Refuge**  
**Draft Comprehensive Conservation Plan/Environmental Assessment**  
**Orange County, California**

Type of Action: Administrative

Lead Agency: U.S. Department of the Interior, Fish and Wildlife Service

Responsible Official: Ren Lohofener, Regional Director, Pacific Southwest Region

For Further Information: Victoria Touchstone, Refuge Planner  
San Diego NWR Complex  
6010 Hidden Valley Road, Suite 101  
Carlsbad, CA 92011  
(760) 431-9440 extension 349

**Abstract:** This Draft Comprehensive Conservation Plan/Environmental Assessment (CCP/EA) describes and evaluates various alternatives for managing the Seal Beach National Wildlife Refuge (NWR). Three alternatives, including a No Action Alternative (Alternative A) as required by the National Environmental Policy Act (NEPA) regulations, are described, compared, and assessed for the Seal Beach NWR. The three alternatives are summarized below:

**Alternative A – No Action:** This alternative assumes no change from past management programs and serves as the baseline to which all other action alternatives are compared. There would be no major changes in habitat management or the current public use program under this alternative.

**Alternative B – Maximize Salt Marsh Restoration, Continue Current Public Uses:** Under this alternative, current wildlife and habitat management activities would be expanded to include evaluation of current baseline data for fish, wildlife, and plants on the Refuge, identification of data gaps, implementation of species surveys to address data gaps as staff time and funding allows, and support for new research projects that would benefit Refuge resources and Refuge management. Also proposed is the restoration of approximately 22 acres of intertidal habitat (salt marsh and intertidal mudflat) and 15 acres of wetland/upland transition habitat. Pest control would be implemented in accordance with an Integrated Pest Management (IPM) program and mosquito monitoring and control would be guided by a Mosquito Management Plan. No changes to the current public use program are proposed.

**Alternative C (Proposed Action) – Optimize Upland/Wetland Restoration, Improve Opportunities for Wildlife Observation:** The majority of the management activities, including the IPM program and Mosquito Management Plan, proposed in Alternative B would also be implemented under this Alternative. The primary difference between Alternatives B and C is that under Alternative C a larger portion of the areas to be restored would consist of upland and wetland/upland transition habitat. Approximately 12 acres of currently disturbed upland would be restored to native upland habitat, about 10 acres would be restored to wetland/upland transition habitat, and approximately 15 acres would be restored to intertidal habitat. In addition, Alternative C includes limited expansion of the current public use program, including expanded opportunities for wildlife observation.

The issues addressed in this Draft CCP/EA include the potential effects of the various alternatives on the physical environment, biological and cultural resources, and the social/economic environment. The adverse and beneficial effects of implementing the alternatives are generally described in the following action categories: habitat and wildlife management, pest management, and public use.

**Providing Comments:** Your comments on the Draft CCP/EA should be mailed, faxed, or emailed to the San Diego NWR Complex no later than **May 11, 2011**. Comments should be mailed to:

Victoria Touchstone  
U.S. Fish and Wildlife Service  
San Diego NWR Complex  
6010 Hidden Valley Road, Suite 101  
Carlsbad, CA 92011

Faxed comments should be directed to Victoria Touchstone at (760) 930-0256 and emailed comments should be directed to [Victoria\\_Touchstone@fws.gov](mailto:Victoria_Touchstone@fws.gov) (please include "Seal Beach CCP" in the subject line).

Comments should be provided to the Service during the public review period of this Draft CCP/EA. This will enable us to analyze and respond to the comments at one time and to use this input in the preparation of the Final CCP. Comments should be specific and should address the document's adequacy and the merits of the alternatives described. Environmental objections that could have been raised at the draft stage may be waived if not raised until after the completion of the Finding of No Significant Impact (FONSI).

All comments received from the public will be placed in the Service's record for this action. As part of the record, comments will be made available for inspection by the general public, and copies may be provided to the public. For persons who do not wish to have their names and other identifying information made available, anonymous comments will be accepted.

# Summary

## Introduction

Seal Beach National Wildlife Refuge (NWR or Refuge) encompasses approximately 965 acres of coastal wetlands and uplands in northwestern Orange County, California (Figure 1). The Refuge, which is managed by the U.S. Fish and Wildlife Service (Service) as part of the National Wildlife Refuge System (NWRS), is located entirely within the boundaries of Naval Weapons Station Seal Beach (NWSSB) (Figure 2). The tidally influenced wetland habitat protected within the Refuge supports thousands of migratory birds that travel along the Pacific Flyway and provides habitat for several federally listed species including the endangered California least tern (*Sternula antillarum browni*) and endangered light-footed clapper rail (*Rallus longirostris levipes*), both of which nest on the Refuge.

This Comprehensive Conservation Plan (CCP) has been prepared to describe the desired future conditions of the Seal Beach NWR. It is also intended to provide long-range guidance and management direction to achieve the purposes for which the Refuge was established; to help fulfill the mission of the National Wildlife Refuge System; to maintain and, where appropriate, restore the ecological integrity of the Refuge and the Refuge System; and to meet other mandates.

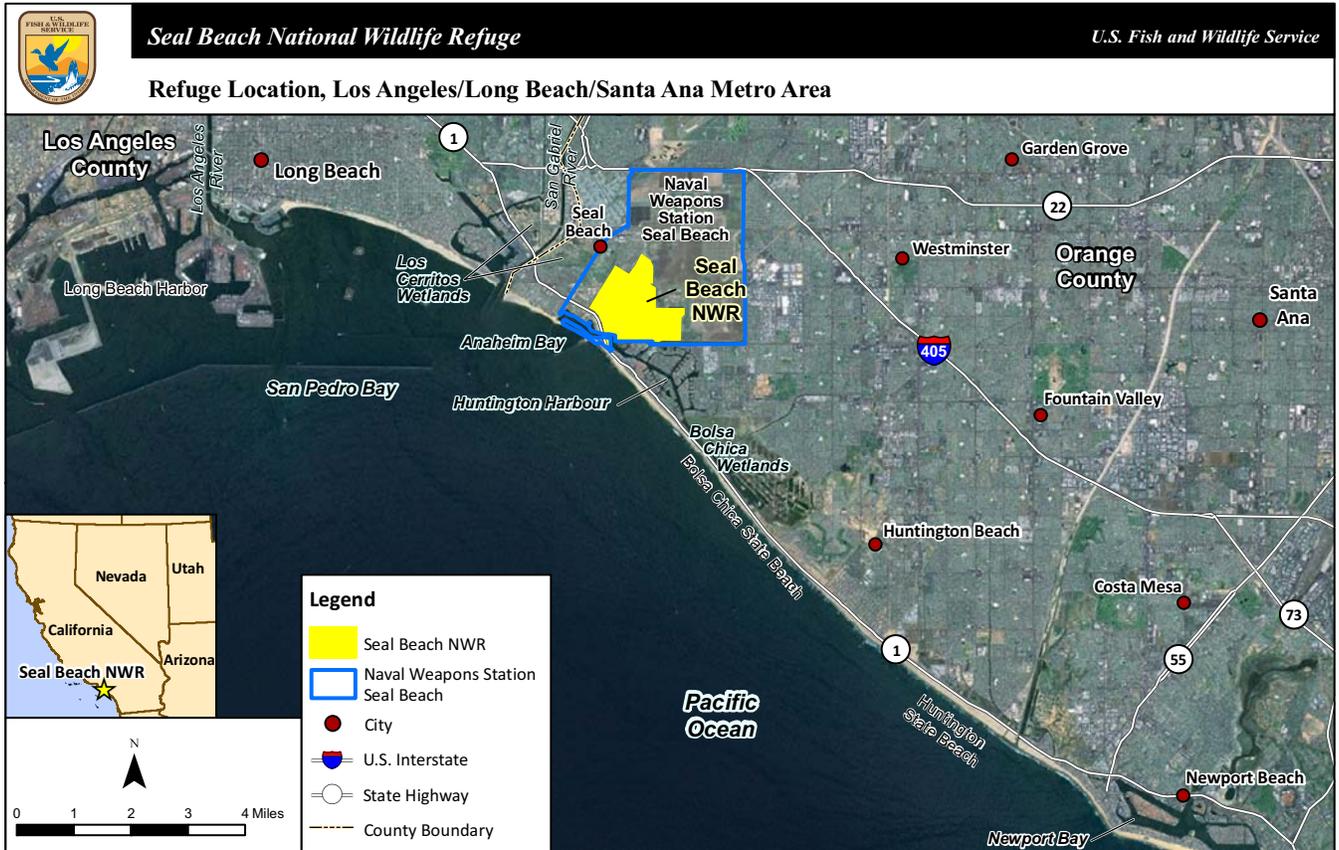
## Comprehensive Conservation Plan Process

The Seal Beach NWR CCP will guide the management of the Seal Beach NWR over the next 15 years. The CCP and associated environmental assessment (EA) have been prepared to meet the dual compliance requirements of the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997 (the Improvement Act) (Public Law 105-57) and the National Environmental Policy Act (NEPA). Development of the CCP is also guided by Refuge Planning Policy as outlined in Part 602, FW 1, 3, and 4 of the Fish and Wildlife Service Manual. Service planning policy, the Improvement Act, and NEPA provide specific guidance for the planning process, such as seeking public involvement throughout the planning process and analyzing a “reasonable” range of management alternatives, including a “no action” alternative, that reflect current conditions and management strategies.

## Availability of the Draft CCP/EA

The Draft CCP/EA is available for review on-line at: <http://sandiegorefuges.fws.gov> (click on “Seal Beach NWR CCP” in the Refuge Planning box located in the upper left hand corner of the webpage). A compact disc (CD) or hard copy of the document can be obtained by contacting Victoria Touchstone, Refuge Planner - by mail at San Diego National Wildlife Refuge Complex, 6010 Hidden Valley Road, Suite 101, Carlsbad, CA 92011; via email at [Victoria\\_Touchstone@fws.gov](mailto:Victoria_Touchstone@fws.gov) (please include “Seal Beach CCP” in the subject line); via fax at 760-930-0256; or via telephone at 760-431-9440 extension 349.

The Draft CCP/EA is also available for review at the following locations: San Diego NWR Complex (6010 Hidden Valley Road, Suite 101, Carlsbad, CA 92011) from 8:30 am to 4:30 pm, Monday through Friday, and the Seal Beach Mary Wilson Library (707 Electric Avenue, Seal Beach, CA 90740), please call (562) 431-3584 for hours of operation.





# Seal Beach National Wildlife Refuge

U.S. Fish and Wildlife Service

## Refuge Site Map

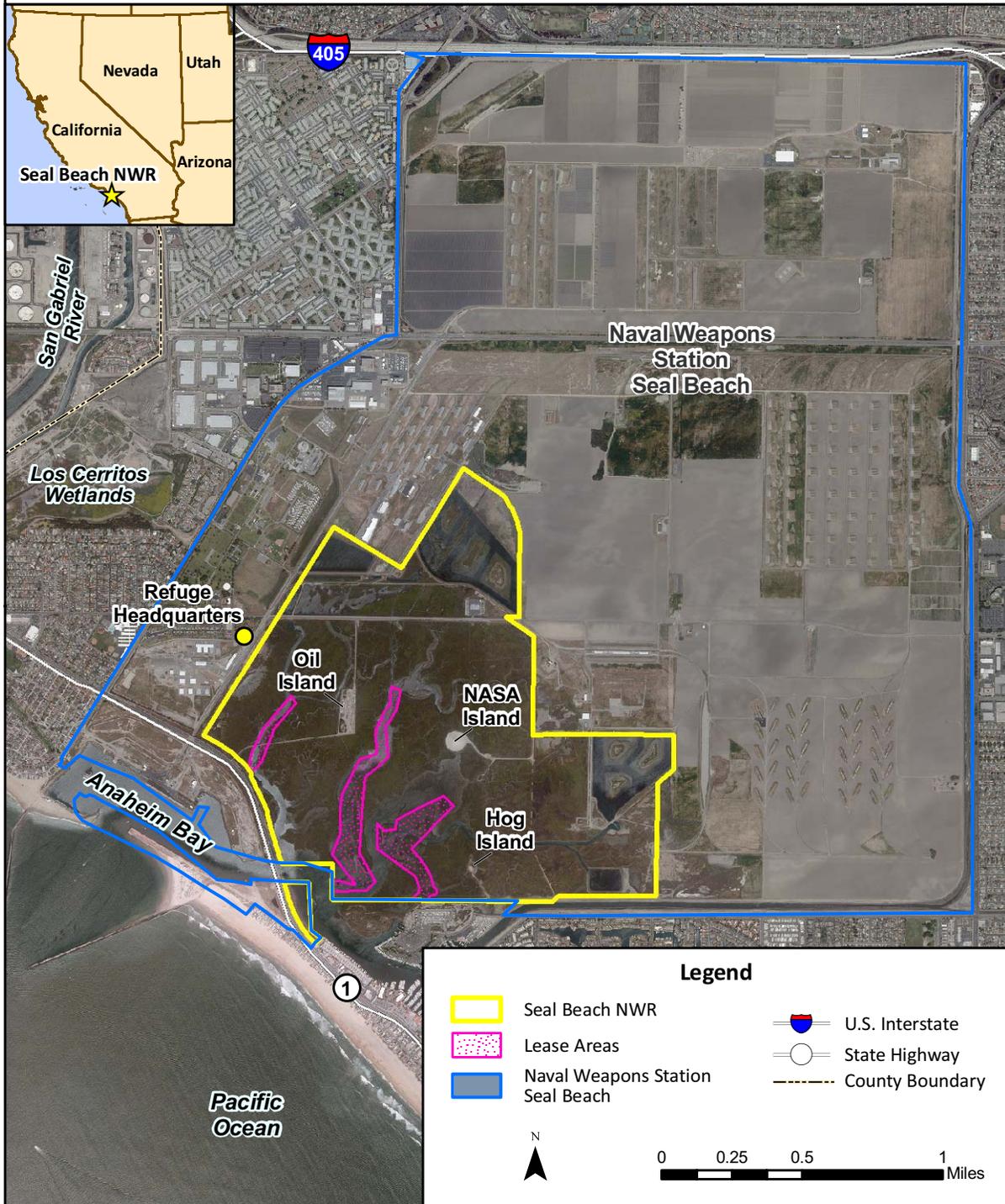


Figure 2. Location Map - Seal Beach National Wildlife Refuge

Comments on the Draft CCP/EA should be mailed, faxed, or emailed to Victoria Touchstone, Refuge Planner (see contact information presented above) no later than **May 11, 2011**. Providing your comments to the Service during the public review period will enable us to analyze and respond to the comments at one time and to use this input in the preparation of the Final CCP. Comments should be specific and should address the document's adequacy and the merits of the alternatives described. Environmental objections that could have been raised at the draft stage may be waived if not raised until after the completion of the Finding of No Significant Impact (FONSI).

All comments received from the public will be placed in the Service's record for this action. As part of the record, comments will be made available for inspection by the general public, and copies may be provided to the public. For persons who do not wish to have their names and other identifying information made available, anonymous comments will be accepted.

## **Purpose and Need**

The purpose and need for the Seal Beach NWR CCP is to provide guidance to the Refuge Manager and others for how this Refuge should be managed to best achieve the purposes for which the Refuge was established and to contribute to the mission of the NWRS. The CCP when completed is intended to provide a 15-year management plan for addressing the conservation of fish, wildlife, and plant resources and their related habitats, while also presenting the opportunities on the Refuge for compatible wildlife-dependent recreational uses. It is through the CCP process that the overarching wildlife, public use, and/or management needs for the Refuge, as well as any issues affecting the management of Refuge resources and public use programs, are identified; and various strategies for meeting Refuge needs and/or resolving issues that may be impeding the achievement of Refuge purposes are evaluated and ultimately presented for implementation.

Currently, the plans available to direct management on the Seal Beach NWR are limited to: the *General Plan for Use of U.S. Navy Lands and Waters for Wildlife Conservation and Management*, approved in 1973; *Management Plan for the Seal Beach NWR*, approved in 1974; and the *Endangered Species Management and Protection Plan*, approved in 1991. Although general direction is provided in these plans, there is no overarching refuge management plan in place that describes the future strategies that should be implemented to address current and future conditions on the Refuge or for achieving Refuge purposes. The CCP will provide the first comprehensive management plan for the Refuge.

## **The National Wildlife Refuge System**

The NWRS is the largest system of lands and waters in the world specifically dedicated to the conservation of fish and wildlife. Operated and managed by the Service, the NWRS currently includes more than 150 million acres, consisting of 553 national wildlife refuges and other units of the Refuge System and 37 wetland management districts. The majority of refuge lands (over 77 million acres) are in Alaska. The remaining acreage is scattered across the other 49 states and several island territories. Unlike other Federal lands that are managed under a multiple-use mandate (e.g., lands administered by the U.S. Bureau of Land Management and the U.S. Forest Service), the Refuge System is managed for the benefit of fish, wildlife, plant resources and their habitats.

The mission of the Refuge System is *"To administer a national network of lands and waters for the conservation, management and, where appropriate, restoration of fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans"* (16 USC 668dd et seq.).

## Vision Statement for the Seal Beach National Wildlife Refuge

*Tidal channels meandering through a sea of cordgrass deliver moisture and nourishment to support a healthy marsh ecosystem. As the quiet calm of the morning is interrupted by the clacking of a light-footed clapper rail, school children and other visitors, standing on the elevated observation deck, point with excitement in the direction of the call hoping for a glimpse of the rare bird. Shorebirds dart from one foraging area to another feasting on what appears to be an endless supply of food hidden within the tidal flats. California least terns fly above the tidal channels searching for small fish to carry back to their nests on NASA Island. A diverse array of marine organisms, from tube worms and sea stars to rays and sharks, and even an occasional green sea turtle, thrive within the tidal channels and open water areas of the Refuge's diverse marsh complex, while Nelson's sharp-tailed sparrows and other upland birds find food and shelter within the native upland vegetation that borders the marsh.*

## Refuge Goals

Goals and objectives established for the Refuge are the unifying elements of Refuge management, intended to identify and focus management priorities and to provide a link between management actions, Refuge purposes, and NWRs mission and goals. The following goals will help guide Refuge management on the Seal Beach NWR:

- Goal 1: Support recovery and protection efforts for the federally and state listed threatened and endangered species and species of concern that occur within the Seal Beach NWR.
- Goal 2: Protect, manage, enhance, and restore coastal wetland and upland habitats to benefit migratory birds, as well as other native fish, wildlife, and plant species.
- Goal 3: Enhance public appreciation, understanding, and enjoyment of the Refuge's biological and cultural resources through outreach opportunities and quality wildlife-dependent recreation, including wildlife observation, environmental education, and interpretation.
- Goal 4: Further strengthen the management partnerships between the Seal Beach National Wildlife Refuge and Naval Weapons Station Seal Beach, while preserving our respective missions.

The objectives and strategies developed to achieve these goals are found in Chapter 6 (Implementation) of the Draft CCP/EA.

## Background

Actions by the public seeking the establishment of a refuge around Anaheim Bay began in the early 1950s, but it was not until 1972 that President Nixon signed into law a bill authorizing the establishment of a Refuge on NWSSB. The Refuge was officially established on July 11, 1974 when the Notice of Establishment, which included the specific boundaries of the Refuge, was published in the *Federal Register* (39 FR 25522). Describing the Refuge and its boundaries involved the approval of the *General Plan for Use of U.S. Navy Lands and Waters for Wildlife Conservation and Management (General Plan)* by the Secretary of the Interior and the Secretary of the Navy in 1973 and the approval of the *Management Plan for the Seal Beach*

NWR by the Commanding Officer of NWSSB and Service's Regional Director in May 1974. The boundaries of the Refuge were expanded in 1981, when the California State Lands Commission and the Service entered into a 49-year lease for approximately 60 acres of state tidelands in Anaheim Bay, and again in 1992, when an amendment to the General Plan was approved to add an eight-acre parcel located adjacent to Pacific Coast Highway at the south end of NWSSB to the Refuge.

The establishment legislation (86 Stat. 633) for this Refuge states that lands to be included in the Seal Beach NWR are to be administered in accordance with the National Wildlife Refuge System Administration Act of 1966, as amended, and pursuant to plans which are mutually acceptable to the Secretary of the Interior and the Secretary of the Navy. Additional direction related to refuge purposes is provided in the *Management Plan for Seal Beach National Wildlife Refuge*, prepared in 1974 per the requirements of the establishment legislation. The Management Plan includes two principal objectives of the Refuge: 1) preservation and management of habitat necessary for the perpetuation of two endangered species, the light-footed clapper rail and California least tern; and 2) preservation of habitat used by migratory waterfowl, shorebirds, and other waterbirds.

## Issues

The planning team identified issues, concerns, and opportunities internally and through discussions with other federal, state, and local agency representatives, wildlife and habitat professionals, and other key contacts. In addition, a variety of issues, concerns, and recommendations were identified through the public scoping process. Topics identified as a result of all of these interactions included: habitat enhancement and restoration; listed species management; potential expansion of opportunities for wildlife-dependent recreational use; research to benefit future refuge management; possible expansion of the Refuge boundary; mammalian and avian predation of listed species; expansion of upland refugia for marsh birds and shorebirds during periods of high tide; control of invasive plant species; subsidence; and public access.

The planning team, with input from other partners, also identified several challenges, threats, and/or opportunities that will likely affect Refuge management over the next 15 years and beyond. These concerns include a number of factors (e.g., climate change, sea level rise, subsidence, and the inadvertent release of non-native terrestrial and marine species into the Refuge environment) that cannot be altered by actions undertaken by Refuge staff; instead Refuge management actions must be evaluated from time to time to adapt to these changing conditions. All of these issues and challenges were considered during the development of the alternatives presented and analyzed in the Draft CCP/EA.

## Refuge Setting

Seal Beach NWR, which encompasses approximately 965 acres, is located in the northwest corner of Orange County between the City of Seal Beach to the northwest and the City of Huntington Beach to the southeast. The Refuge is buffered from the surrounding urban development on the north, east, and west by NWSSB, while the boating and residential development associated with Sunset Harbour Marina and the community of Huntington Harbour border the Refuge to the south.

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## Habitats, Fish and Wildlife

This Refuge protects all of what remains of Anaheim Bay's historical intertidal salt marsh complex (approximately 750 acres). These coastal wetlands are characterized by long tidal channels that transport ocean waters deep into the salt marsh habitat; tidal flats that are exposed during low tides; and large expanses of cordgrass-dominated salt marsh habitat. Another 116 acres of the Refuge support restored subtidal and intertidal ponds constructed in the early 1990s as part of a Port of Long Beach mitigation project. Restoration involved the creation of four tidal basins: Forrestal Pond, Case Road Pond, 7<sup>th</sup> Street Pond, and Perimeter Pond, as well as the construction of feeder channels, dikes, and culverts needed to facilitate tidal flow in and out of the basins. Forrestal and Perimeter Ponds consist primarily of subtidal habitat to support marine fish, while Case Road and 7<sup>th</sup> Street Ponds include some small islands surrounded by a mix of subtidal and intertidal habitat to support both fish and bird species. The remaining acreage on the Refuge includes: NASA Island, a three-acre least tern nesting site; Hog Island, supporting upland habitat; muted salt marsh habitat in the Bolsa Cell, located north of Bolsa Avenue; disturbed upland to the north of the Case Road Pond and to the south and west of the 7<sup>th</sup> Street Pond; and some 40 acres of developed land consisting of roads, railroad tracks, and miscellaneous structures.

The extensive subtidal, intertidal mudflat, and salt marsh habitat on the Refuge supports a diverse array of species. The fish, benthic invertebrates, and other marine organisms supported on the Refuge provide important food sources for migratory birds and various marine organisms, including fish species important to commercial and recreational interests. Also important to many fish, birds, and marine organisms are the eelgrass beds present in the subtidal channels and large mitigation ponds.

The Seal Beach NWR is an important stopover and wintering location within the Pacific Flyway, providing relatively undisturbed habitat for thousands of migratory birds including shorebirds, waterfowl, and raptors. This Refuge and several nearby coastal wetland areas have collectively been recognized by the National Audubon Society as the Orange Coast Wetlands Important Bird Area. Approximately 190 bird species have been documented on the Refuge, and of these, approximately 32 species are known to breed on the Refuge.

## Federally and State Listed Species and Other Species of Concern

The Federally listed endangered California least tern occurs on the Refuge in the summer months when it can be found nesting on NASA Island. Both the Federally listed endangered light-footed clapper rail and state listed endangered Belding's savannah sparrow (*Passerculus sandwichensis beldingi*) reside year-round on the Refuge. The Federally listed endangered eastern Pacific green turtle (*Chelonia mydas*) has been observed on the Refuge in recent years, and the Federally listed threatened western snowy plover (*Charadrius alexandrinus nivosus*) can occasionally be seen foraging on the Refuge. The Federally listed endangered plant, salt marsh bird's-beak (*Cordylanthus maritimus* spp. *maritimus*), once occurred in the salt marsh habitat of Anaheim Bay, but no longer exists in this area.

The habitats on the Refuge also support more than 25 species of birds identified by the Service as Birds of Conservation Concern. An additional 22 species of birds, mammals, reptiles, invertebrates, and plants identified by the State of California as Special Status Species are also known or expected to occur on the Refuge.

## Current Public Use

The Seal Beach NWR is located entirely within the boundaries of a military weapons station which necessarily limits the types of activities that can be conducted on the Refuge. Currently, the Refuge provides opportunities for wildlife observation, interpretation, and environmental education. The majority of these opportunities are provided as part of the monthly public tours conducted on the Refuge or during special tours that are periodically conducted for various organized groups.

The Refuge office and a native plant garden are located on approximately four acres at the southwest corner of Kitts Highway and Bolsa Avenue, outside of the Refuge boundary. A six to eight-foot-wide pedestrian pathway, consisting of compacted decomposed granite, provides access from the Refuge office east along Bolsa Avenue to an existing observation deck, located about a half of a mile east of the intersection of Bolsa Avenue and Kitts Highway.

Special tours of the Refuge are occasionally conducted for school groups of all ages and an additional Refuge-related off-site environmental education program, implemented by the Friends of Seal Beach NWR, serves about 500 students annually.

## Management Alternatives

An important step in the CCP process is the development and analysis of alternatives. Alternatives are developed to explore and evaluate different ways to achieve Refuge purposes, contribute to the mission of the Refuge System, meet Refuge goals, and resolve issues identified during scoping and throughout the CCP process. Three management alternatives, including a no action alternative and two action alternatives, were developed for evaluation in the Draft CCP/EA. The three alternatives differ in the extent and focus of wildlife and habitat management actions to be implemented on the Refuge and in the types and levels of public use opportunities to be provided. Management Alternative “C” represents the proposed action. Following consideration of the comments received during public review of the Draft CCP/EA, this alternative may be altered to include one or more of the actions addressed in another alternative, or some elements of the alternative may be modified or deleted. The three alternatives are summarized below and graphic depictions of each alternative are provided as Attachment A (Figures A-1 through A-3).

**Alternative A - No Action (Figure A-1).** Under this alternative, past and present management activities would remain unchanged. Current conservation and management actions and opportunities for wildlife observation, interpretation, and environmental education would continue at current levels per available funding. This alternative represents the baseline from which other “action” alternatives will be evaluated.

**Alternative B – Maximize Salt Marsh Restoration, Continue Current Public Uses (Figure A-2).** Under this alternative, current wildlife and habitat management activities would be expanded to include evaluation of current baseline data for fish, wildlife, and plants on the Refuge, identification of data gaps, implementation of species surveys to address data gaps as staff time and funding allows, and support for new research projects that would benefit Refuge resources and Refuge management. Also proposed is the restoration of approximately 22 acres of intertidal habitat (salt marsh and intertidal mudflat) and 15 acres of wetland/upland transition habitat. Pest control would be implemented in accordance with an Integrated Pest Management program and mosquito monitoring and control would be guided by a Mosquito Management Plan. No changes to the current public use program are proposed.

**Alternative C (Proposed Action) - Optimize Upland/Wetland Restoration; Improve Opportunities for Wildlife Observation (Figure A-3).** The majority of the management activities proposed in Alternative B would also be implemented under this Alternative. The primary difference between Alternatives B and C is that under Alternative C a larger portion of the areas to be restored would consist of upland and wetland/upland transition habitat. Under this alternative, approximately 12 acres would be restored to upland habitat, approximately 10 acres would be restored to wetland/upland transition habitat, and approximately 15 acres would be restored to intertidal habitat. In addition, Alternative C includes limited expansion of the current public use program, including expanded opportunities for wildlife observation.

### Environmental Consequences

The Service has analyzed the environmental consequences of implementing the various alternatives described above. This impact evaluation has considered all aspects of the affected environment, including physical, biological, cultural, and socio-economic resources. A summary of the potential effects from implementing the three alternatives is presented in Table 1.

<b>Table 1</b> <b>Summary of Potential Effects of Implementing Alternatives A, B, or C</b> <b>for the Seal Beach National Wildlife Refuge Comprehensive Conservation Plan</b>			
Resource	Alternative A	Alternative B	Alternative C
<b>Physical Environment</b>			
Topography	No changes to the existing topography on the Refuge occur as a result of implementing ongoing Refuge activities	Proposed restoration efforts would change the topography and elevations on approximately 36 acres of the Refuge; these changes would not result in any adverse effects to the existing topographic character on the Refuge	Same as Alternative B
Visual Quality	No adverse effects to the existing visual quality of the Refuge lands occur as a result of implementing ongoing Refuge activities	Temporary, minor adverse effects to visual quality would occur during site preparation for habitat restoration; the long-term effect of the restoration process would be improved visual quality within the restoration sites	Same as Alternative B; the installation of an elevated observation platform would alter the visual character of the area near the intersection of Kitts Highway and Bolsa Avenue, however, this change in visual character would not represent a significant impact on the environment

<p align="center"><b>Table 1</b>  <b>Summary of Potential Effects of Implementing Alternatives A, B, or C</b>  <b>for the Seal Beach National Wildlife Refuge Comprehensive Conservation Plan</b></p>			
<b>Resource</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>
<b>Physical Environment</b>			
Geology/Soils	No adverse effects related to geology and soils occur on the Refuge as a result of implementing ongoing Refuge activities, including annual preparation of the least tern nesting site on NASA Island	Habitat restoration would remove artificial fill to achieve elevations supportive of type of habitat proposed for each site. BMPs to minimize erosion would be implemented, reducing potential impacts to below a level of significance	Same as Alternative B
Agricultural Resources	No agricultural resources are present on the Refuge; current Refuge operations have no effect on adjacent agricultural fields	Same as Alternative A	Same as Alternative A
Hydrology	Ongoing Refuge activities such as culvert replacement, as needed, result in improvements in tidal circulation within the marsh; no activities are implemented that adversely affect tidal circulation within the Refuge	Installation of a water control structure to control tidal flows entering and exiting the Bolsa Cell to benefit tidal circulation within the Bolsa Cell; not expected to impact tidal circulation elsewhere on the Refuge; other culvert or water control structures could be replaced if needed to improve Refuge tidal circulation	Same as Alternative B
Water Quality	Periodic application of EPA and Service-approved herbicides as part of chemical control of invasive plants is not anticipated to adversely impact water quality	Water quality monitoring and agency coordination proposed to improve water quality entering the marsh from upstream; BMPs to protect water quality would be implemented during restoration and enhancement projects and as part of IPM Plan and Mosquito Management Plan implementation	Same as Alternative B

**Table 1  
Summary of Potential Effects of Implementing Alternatives A, B, or C  
for the Seal Beach National Wildlife Refuge Comprehensive Conservation Plan**

<b>Resource</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>
<b>Physical Environment</b>			
Air Quality	No change in existing air quality conditions and no adverse effects	Temporary, localized adverse impacts to air quality from construction equipment used to implement proposed habitat restoration would not be significant; BMPs would be implemented as part of IPM and Mosquito Management Plans to avoid air quality impacts	Same as Alternative B
<b>Biological Resources</b>			
Native Habitat	No adverse impacts to existing native habitats would result; habitat maintenance and management would benefit these habitats	The overall acreage of native habitats would increase as a result of proposed restoration; invasive plant removal and replacement with native upland species would also provide minor benefits	Same as Alternative B
Waterfowl, Seabirds, Shorebirds and Other Waterbirds	Not likely to result in any changes to the current diversity and abundance	Habitat restoration and enhancement activities would provide minor benefits to these bird	Same as Alternative B
Landbirds	Not likely to result in any changes to the current diversity and abundance of these birds on the Refuge	Would likely result in a minor, indirect adverse effect to landbirds due to conversion of existing disturbed upland habitat to salt marsh and wetland/upland transitional habitat	Less likely to result in a minor, indirect adverse effect to landbirds as existing disturbed upland habitat would be converted primarily to native upland and wetland/upland transitional habitat
Fish	Ongoing Refuge maintenance projects, such as culvert replacement, indirectly benefits fish by improving water circulation in the marsh	Would likely result in some indirect beneficial effects to fish populations due to the implementation of various habitat restoration and enhancement projects	Same as Alternative B

<p align="center"><b>Table 1</b>  <b>Summary of Potential Effects of Implementing Alternatives A, B, or C</b>  <b>for the Seal Beach National Wildlife Refuge Comprehensive Conservation Plan</b></p>			
<b>Resource</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>
<b>Biological Resources</b>			
Invertebrates, Amphibians, and Reptiles	Presence/ distribution of invertebrates, amphibians, and reptiles would be unlikely to change	Minor, indirect adverse effects to these species could result from the conversion of disturbed upland habitat to wetlands and wetland/upland transitional habitat; marine invertebrates are expected to benefit indirectly from habitat restoration/enhancement	Same as Alternative B, plus under Alternative C a tiger beetle management plan would be implemented to protect and maintain current tiger beetle species abundance and diversity
Mammals	Presence, distribution, and abundance of mammals would be unlikely to change; some mammals would be subject to control under the predator management plan should they pose a threat to listed species	No adverse effects to mammals are anticipated	Same as Alternative B
<b>Endangered and Threatened Species</b>			
California Least Tern	Management actions would continue to benefit nesting terns on NASA Island	Same as Alternative A, plus habitat restoration/ enhancement to improve habitat for fish species consumed by terns and removal of avian predator perches to benefit tern chicks/eggs; limit activities near the tern nesting site to the non-nesting season to reduce disturbance	Same as Alternative B, plus the removal of the drop tower would further reduce the ability of potential avian predators to perch in the vicinity of NASA Island
Western Snowy Plover	Management actions are not implemented specifically to benefit the plover	No adverse effects to this species would occur under this alternative	Same as Alternative B

**Table 1**  
**Summary of Potential Effects of Implementing Alternatives A, B, or C**  
**for the Seal Beach National Wildlife Refuge Comprehensive Conservation Plan**

<b>Resource</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>
<b>Endangered and Threatened Species</b>			
Light-footed Clapper Rail	Management actions, including monitoring, predator control, and nesting platform maintenance would continue to benefit this species	Same as Alternative A, plus additional management actions to improve conditions for nesting rails; removal where possible of perching sites for avian predators; restoration/enhancement proposals to improve and expand potential habitat for rails; restrict construction activity near rail habitat to outside the nesting season	Same as Alternative B, plus the removal of the drop tower would further reduce perching sites for potential avian predators, upland and wetland/upland transitional habitat restoration areas would provide cover for rails during periods of high tide, proposals to improve cordgrass vigor would also benefit rails
Salt Marsh Bird's Beak	Not currently present on the Refuge; therefore no adverse or beneficial effects to this species are realized	Same as Alternative A	Reintroduction, if successful, would represent a benefit to the species and its possible future recovery
Eastern Pacific Green Turtle	No management actions are implemented specifically to benefit this species	Restoration and enhancement projects could impact this species; design and construction specifications incorporated into the scope of these projects would minimize the potential for impacts	Same as Alternative B
Belding's Savannah Sparrow	No management actions are implemented specifically to benefit this species	Restoration/enhancement of salt marsh habitat could benefit this species; construction and public use activities would be planned to avoid impacts during the nesting season	Potential benefits would be less than under Alternative B, as this alternative emphasizes restoration of upland and wetland/upland transitional habitat
<b>Cultural Resources</b>			
Cultural, historical, and archaeological resources	Adherence to existing regulations/policies would minimize the potential for impacts	Same as Alternative A	Same as Alternative A

<b>Table 1</b> <b>Summary of Potential Effects of Implementing Alternatives A, B, or C</b> <b>for the Seal Beach National Wildlife Refuge Comprehensive Conservation Plan</b>			
<b>Resource</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>
<b>Social and Economic Environment</b>			
Land Use	No adverse effects to land use	Same as Alternative A	Same as Alternative A
Public Safety	Potential for adverse effects are minimized through current public access policies	Same as Alternative A	Same as Alternative A
Traffic Circulation	Trips generated as a result of Refuge activities would be too low to result in observable traffic impacts	Same as Alternative A	Same as Alternative A
Public Utilities/ Easements	No adverse effects on existing public utilities and easements	Same as Alternative A	Same as Alternative A
Vectors and Odors	Mosquitoes are known to occur on the Refuge, impacts are minimized through existing monitoring and control activities by OCVCD; odors are not an issue on the Refuge	Implementation of the Mosquito Management Plan would ensure the protection of wildlife while also addressing the need to protect public health and safety; no issues related to odor	Same as Alternative B
Economics/Employment	Effects to economics and employment both locally and regionally would be negligible	Same as Alternative A	Same as Alternative A
Environmental Justice	No adverse impacts; benefit is the proximity of the Refuge to urban populations, increasing opportunities for the public to connect with the resources protected within the NWRS	Same as Alternative A	Same as Alternative A

# ***Attachment A: Alternatives***

## **List of Figures**

Figure A-1 Alternative A, No Action

Figure A-2 Alternative B, Maximize Salt Marsh Restoration and Continue Current Public Uses

Figure A-3 Alternative C, Optimize Upland/Wetland Restoration and Improve Opportunities for  
Wildlife Observation



# Seal Beach National Wildlife Refuge

U.S. Fish and Wildlife Service

## Alternative A: No Action



- |  |   |
|--|---|
|  Refuge Headquarters and Other Facilities |  Least Tern Nesting Site |
|  Existing Wildlife Observation Platform   |  Invasive Plant Control  |
|  Interpretive Trail                       |  Native Plant Garden     |
|  Refuge Boundary                          |   |



0.3 Miles

Sources: US Fish & Wildlife Service,  
13 Imagery from ArcGIS Online © 2009 I-cubed.

Figure A-1. Alternative A, No Action



# Seal Beach National Wildlife Refuge

U.S. Fish and Wildlife Service

## Alternative B: Maximize Salt Marsh Restoration, Continue Current Public Uses



- |  |  |
|--|--|
| Refuge Headquarters and Other Facilities | Least Tern Nesting Site                              |
| Existing Wildlife Observation Platform   | Invasive Plant Control                               |
| Remove Concrete                          | Native Plant Garden                                  |
| Remove Drop Tower                        | Clapper Rail Natural Nesting Habitat (Protect/Study) |
| Interpretive Trail                       | Potential Marsh Enhancement Site                     |
| Potential Perching Sites                 | Salt Marsh Restoration                               |
| New Water Control Structure              | Wetland/Upland Transition Habitat Restoration        |
| Refuge Boundary                          |  |



0.3 Miles

Sources: US Fish & Wildlife Service, 13 Imagery from ArcGIS Online © 2009 I-cubed.

**Figure A-2. Alternative B, Salt Marsh Restoration and Continue Current Public Uses**



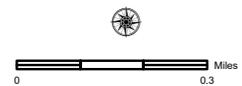
**Seal Beach National Wildlife Refuge**

U.S. Fish and Wildlife Service

**Alternative C: Optimize Upland/Wetland Restoration, Improve Opportunities for Wildlife Observation**



- |  |  |
|--|--|
| Refuge Headquarters and Other Facilities             | Least Tern Nesting Site                              |
| Existing Wildlife Observation Platform               | Invasive Plant Control                               |
| Proposed Wildlife Observation Platform               | Native Plant Garden                                  |
| Potential Salt Marsh Bird's-beak Reintroduction Site | Clapper Rail Natural Nesting Habitat (Protect/Study) |
| Remove Concrete                                      | Potential Marsh Enhancement Site                     |
| Remove Drop Tower                                    | Salt Marsh Restoration                               |
| Interpretive Trail                                   | Wetland/Upland Transition Habitat Restoration        |
| Potential Perching Sites                             | Potential Seabird Nesting Site                       |
| New Water Control Structure                          | Salt Panne Restoration                               |
| Refuge Boundary                                      | Upland Restoration                                   |



Sources: US Fish & Wildlife Service, 13 Imagery from ArcGIS Online © 2009 I-cubed.

**Figure A-3. Alternative C, Optimize Upland/Wetland Restoration and Improve Opportunities for Wildlife Observation**

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**California Relay Service  
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<http://www.fws.gov/cno/>**

**For Refuge Information  
1 800/344 WILD**



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Photo: USFWS/K. Gilligan**