

FINAL

INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN

Naval Base San Diego, California

June 2014



FINAL

**INTEGRATED NATURAL RESOURCES
MANAGEMENT PLAN**

NAVAL BASE SAN DIEGO, CALIFORNIA

JUNE 2014

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INRMP ACCEPTANCE PAGE

This Integrated Natural Resources Management Plan (INRMP), June 2014, has been prepared in cooperation with the U.S. Fish and Wildlife Service, the California Department of Fish and Wildlife, and the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service, in accordance with regulations, standards, and procedures of the Department of Defense (DoD), specifically DoD Instruction 4715.03 *Natural Resources Conservation Program*, the U.S. Navy, specifically Chief of Naval Operations Instruction (OPNAVINST) 5090.1D *Environmental Readiness Program Manual*, and the Sikes Act, as amended (16 United States Code [U.S.C.] §670a). This INRMP provides for management and stewardship of all natural resources present on the installation.

To the extent that resources permit, the U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, NOAA National Marine Fisheries Service, and the U.S. Navy by signature of their agency representative do hereby agree to enter a cooperative program for the conservation, protection, and management of natural resources present on Naval Base San Diego (NBSD). The intention of this agreement is to develop functioning, sustainable ecological communities on NBSD that integrate the interests and missions of the agencies charged with conservation, protection, and management of natural heritage in the public interest. This agreement may be modified and amended by mutual agreement of the authorized representatives of the signing agencies. This agreement will become effective upon the date of the last signatory and shall continue in full force until terminated by written notice to the other parties, in whole or in part, by any of the parties signing this agreement.

By their signatures below, or an enclosed letter of concurrence, all parties grant their concurrence with an acceptance of the following document.

Approving Officials:

CAPT Winton Smith

Installation Commanding Officer
Naval Base San Diego
San Diego, California

Date

Mr. Andrew Wastell

Installation Natural Resources Manager
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Date

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Regional Natural Resources Program Manager EV51
San Diego, California

Date

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Concurring agency:

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Mr. Mendel Stewart

Field Supervisor

Carlsbad Fish and Wildlife Office

U.S. Fish and Wildlife Service, Region 8

Date

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Concurring agency:

California Department of Fish and Wildlife

Mr. Edmund Pert
Regional Manager
California Department of Fish and Wildlife

Date

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Concurring agency:

National Oceanic and Atmospheric Administration National Marine Fisheries Service

Mr. William W. Stelle, Jr

West Coast Region

National Oceanic and Atmospheric Administration

National Marine Fisheries Service

Date

Executive Summary

An Integrated Natural Resources Management Plan (INRMP) is a long term planning document to guide the installation Commanding Officer in the management of natural resources to support the military mission, while protecting and enhancing installation resources for multiple use, sustainable yield, and biological integrity. The primary purpose of the INRMP is to ensure that natural resources conservation measures and military operations on the installation are integrated and consistent with stewardship and legal requirements on Naval Base San Diego (NBSD), which includes Naval Base San Diego Main Site, Broadway Complex, Mission Gorge Recreational Facility, and 17 Naval housing areas (see **Figure 2-1**), with the exception of Naval Medical Center San Diego and Public Private Venture (PPV) lease areas. The mission of NBSD is to deliver the highest standard of support and quality of life services to the fleet, fighter, and family.

This INRMP was prepared in accordance with the Sikes Act as amended through 2012, Department of Defense (DoD) Instruction 4715.03 *Natural Resources Conservation Program*, Chief of Naval Operations Instruction (OPNAVINST) 5090.1D *Environmental Readiness Program Manual*, and the most recent series of DoD, and Department of Navy (DoN) guidance on the Sikes Act and INRMPs. The U.S. Fish and Wildlife Service (USFWS), National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service, and the California Department of Fish and Wildlife (CDFW) have had the opportunity to review this INRMP in accordance with the Sikes Act, DoD Instruction 4715.03, and the 2006 Memorandum of Understanding between the DoD, USFWS, and the International Association of Fish and Wildlife Agencies for a *Cooperative Integrated Natural Resource Management Program on Military Installations*.

This INRMP is organized according to the guidelines provided by the Office of the Under Secretary of Defense in August 2006, guidelines provided by DoN in April 2006, and OPNAVINST 5090.1D, and strives to fully integrate and coordinate the natural resources program with other NBSD plans and activities. This INRMP provides a description of NBSD facilities (e.g., location, history, and mission), information about the surrounding physical and biotic environment, and an assessment of the impacts on natural resources as a result of mission activities. Furthermore, the INRMP recommends various management practices, in compliance with Federal, state and local standards, designed to mitigate impacts of the mission on local ecosystems.

The NBSD INRMP goal is to provide an adaptive ecosystem based conservation program that will support the NBSD mission and provide for the sustainability of natural resources.

The recommended management strategies in habitat areas could benefit federally listed, proposed, or candidate species so that such habitat could be considered for exemption under a future, proposed designation of critical habitat. Adequate special management or protection is provided by a legally operative INRMP that addresses the maintenance and improvement of the primary constituent elements important to the species and manages the long-term conservation of the species. Three USFWS criteria are used to determine if such special management and protection are provided: (1) there is a conservation benefit, (2) there are assurances that the management plans will be implemented, and (3) there are assurances that the conservation efforts will be effective. These three criteria will be met through the strategies presented in this INRMP and are addressed for each species in **Appendix E** (Benefits for Endangered Species).

This INRMP is a guide for the management and stewardship of all natural resources present on NBSD, while ensuring the successful accomplishment of the military mission. A multiple-use approach is used to allow for the presence of mission-oriented activities while efficiently managing the natural resources to

conserve biodiversity and environmental quality. The INRMP presents practicable alternatives and recommendations that can ensure minimal impact on the military mission of NBSD while providing for the management and stewardship of natural resources and the conservation and enhancement of existing ecosystems. Consequently, in some cases, the implementation of certain recommendations might balance the improvement of installation natural resources in deference to the safety and efficiency of the mission.

It is the intent of this INRMP to preclude designation of critical habitat, when appropriate, by demonstrating special management of listed species. Special management or protection is a term that originates in the definition of occupied critical habitat in Section 3 of the Endangered Species Act (ESA). The ESA does not require additional special management/critical habitat designation if adequate management and protection is already in place. Federally listed species known to occur on NBSD are listed in **Table ES-1**. Adequate special management or protection is provided by a legally operative INRMP that addresses the maintenance and improvement of the primary constituent elements important to the species and manages the long-term conservation of the species.

Table ES-1: Federally Listed Species Observed on Naval Base San Diego

Common Name	Scientific Name	Federal Status	State Status	NBSD Presence
Plants				
San Diego button celery	<i>Eryngium aristulatum</i> var. <i>parishii</i>	FE	SE, CNPS Rank 1B,1	Chollas Heights
San Diego mesa mint	<i>Pogogyne abramsii</i>	FE	SE, CNPS Rank 1B	Murphy Canyon
Birds				
Coastal California Gnatcatcher	<i>Poliophtila californica californica</i>	FT	SSC	Mission Gorge Recreational Facility, Chollas Heights, Eucalyptus Ridge, Howard Gilmore, Murphy Canyon
Least Bell's Vireo	<i>Vireo bellii pusillus</i>	FE	SE	Mission Gorge Recreational Facility, Chollas Heights
Invertebrates				
San Diego fairy shrimp	<i>Branchinecta sandiegonensis</i>	FE	--	Chollas Heights Murphy Canyon

Source: U.S. Navy 2010b, CDFG 2011a

Key: Federal Status: FE = Federal Endangered, FT = Federal Threatened, FC = Federal Candidate, BCC = Birds of Conservation Concern SE = State Endangered, ST = State Threatened, SSC = State Species of Special Concern, CNPS = California Native Plant Society, List 1B = Rare, threatened, or endangered in California and elsewhere. 0.1: Seriously threatened in California.

Throughout the development of this INRMP, management constraints and opportunities were identified in a number of natural resources subject areas. Some of these natural resources constraints could have an adverse impact on the NBSD mission or future planning operations. Concerns involving natural resources constraints to planning and mission operations are discussed in detail in **Chapters 4, 5, 6 and 7** of this INRMP. **Appendix D** provides a list of projects to be implemented based on the concerns discussed in those chapters.

Natural resources constraints and opportunities on NBSD are presented in **Figures ES-1 through ES-9**. Constraints, as defined in **Section 1.8**, include known locations of federally listed and other special status species, areas preferentially managed for special status species, and areas with a regulatory driver.

Constraints figures were not created for those areas lacking natural resources or natural resources constraints. Conversely, opportunities are areas on an installation where there is little to no restriction on training. Opportunities may include situations related to natural resources in which the Navy might be able to increase efficiency, reduce costs, increase the quality of projects, or otherwise enhance military mission sustainability through coordination with outside entities, internal coordination among departments on specific projects, or achieve the solution to multiple challenges through one unified approach.

The installation is achieving a no net loss in the ability to provide logistical support for the operating forces of the U.S. Navy through the implementation of the NBSD INRMP. NEPA documentation and Consultation under Section 7 of the Endangered Species Act have been completed to allow for continued support of Navy Operations. Due to the number and distribution of protected species on NBSD, natural resources management strategies will continue to be needed to support current and future logistical support and facilities projects.

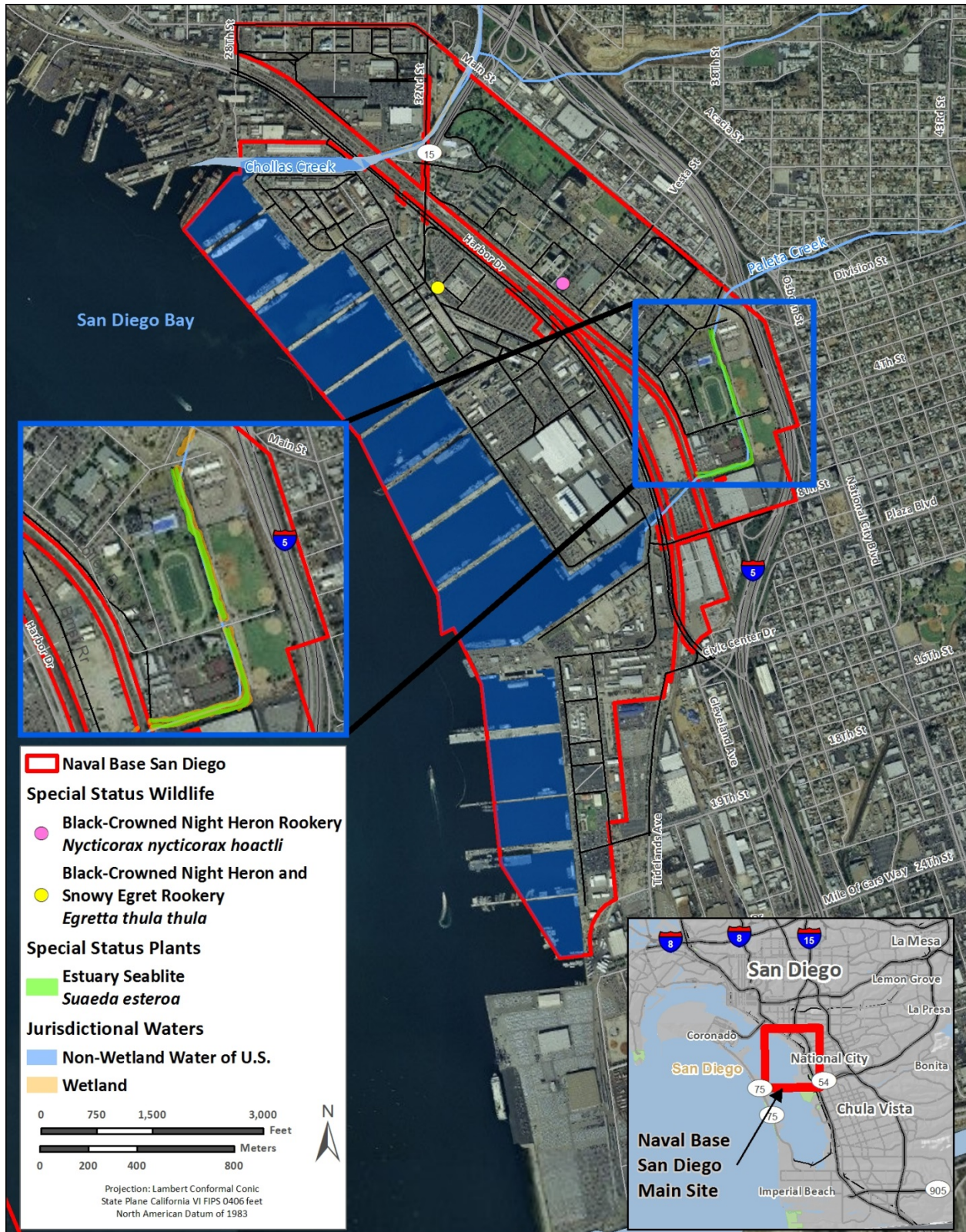
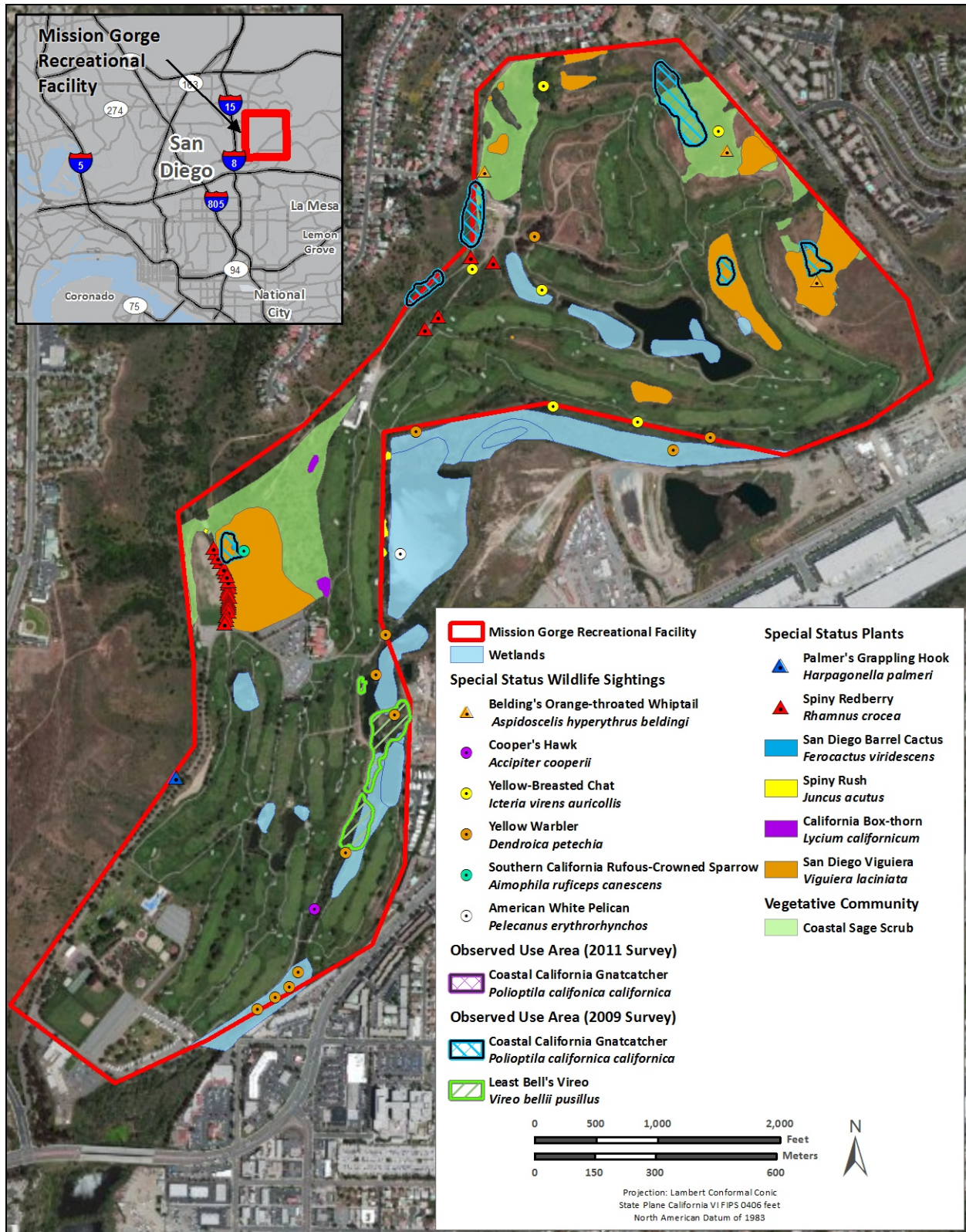
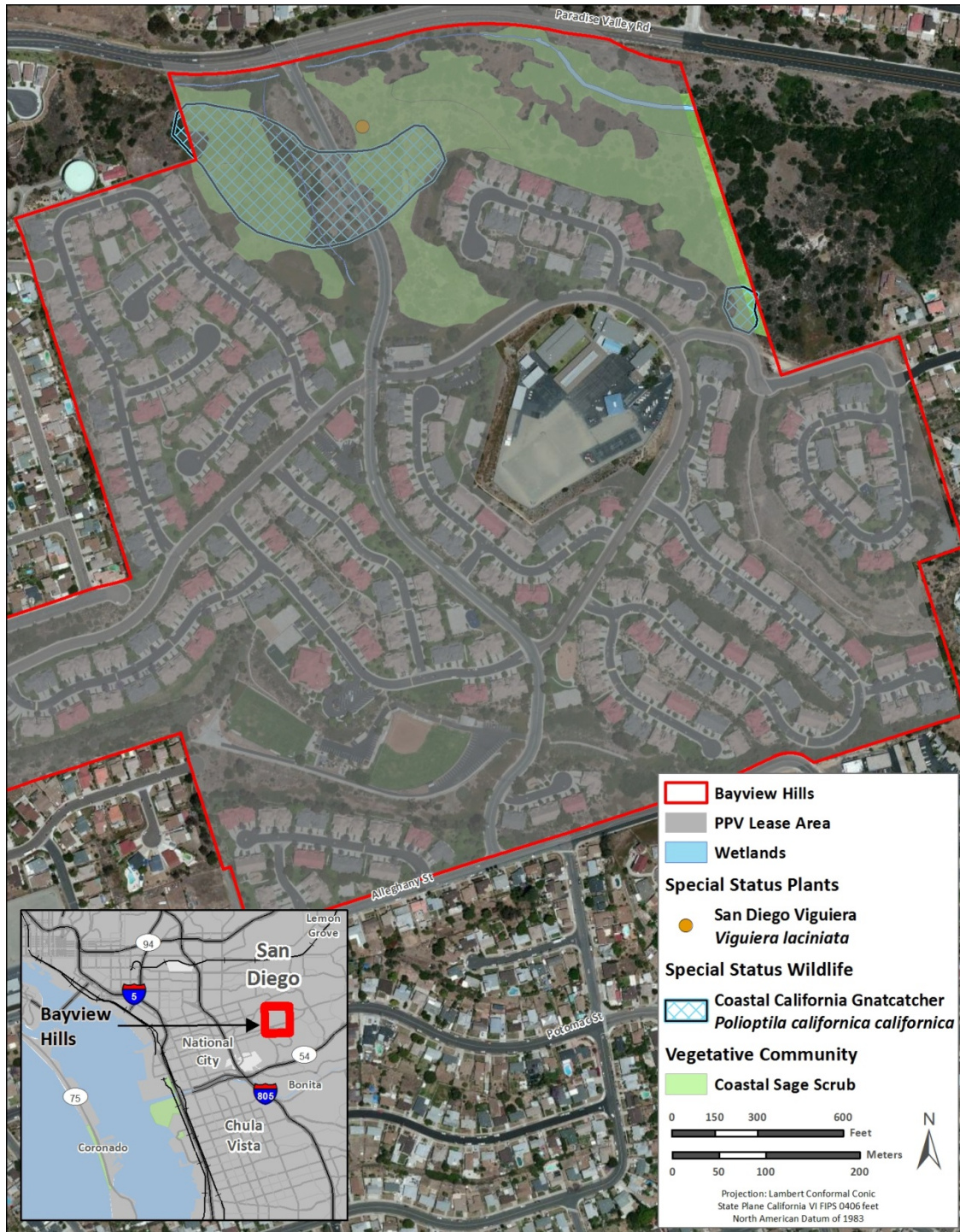


Figure ES-1: Natural Resources Constraints/Opportunities on Naval Base San Diego Main Site



Source: Microsoft Bing Maps 200; U.S. Navy 2010b, In-House Survey Data 2011
Disclaimer: Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure ES-2: Natural Resources Constraints/Opportunities on Mission Gorge Recreational Facility



Imagery source: Microsoft Bing Maps 2009; U.S. Navy 2011
 Disclaimer: Maps do not represent legal boundaries. Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure ES-3: Natural Resources Constraints/Opportunities on Bayview Hills Housing Area*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.

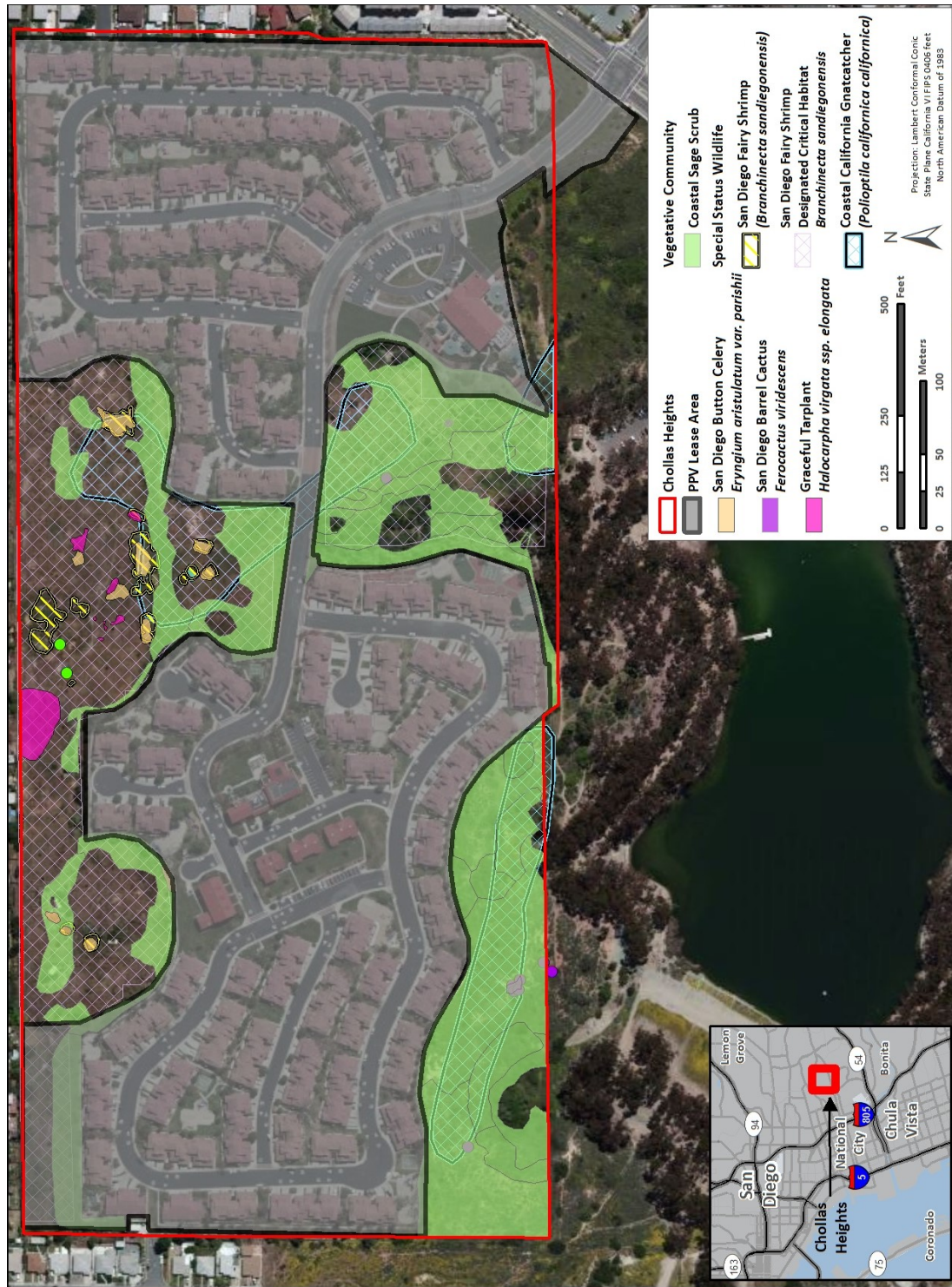


Figure ES-4: Natural Resources Constraints/Opportunities on Chollas Heights Housing Area*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.



Source: Microsoft Bing Maps 2009; U.S. Navy 2011
Disclaimer: Maps do not represent legal boundaries. Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure ES-5: Natural Resources Constraints/Opportunities on Eucalyptus Ridge Housing Area*

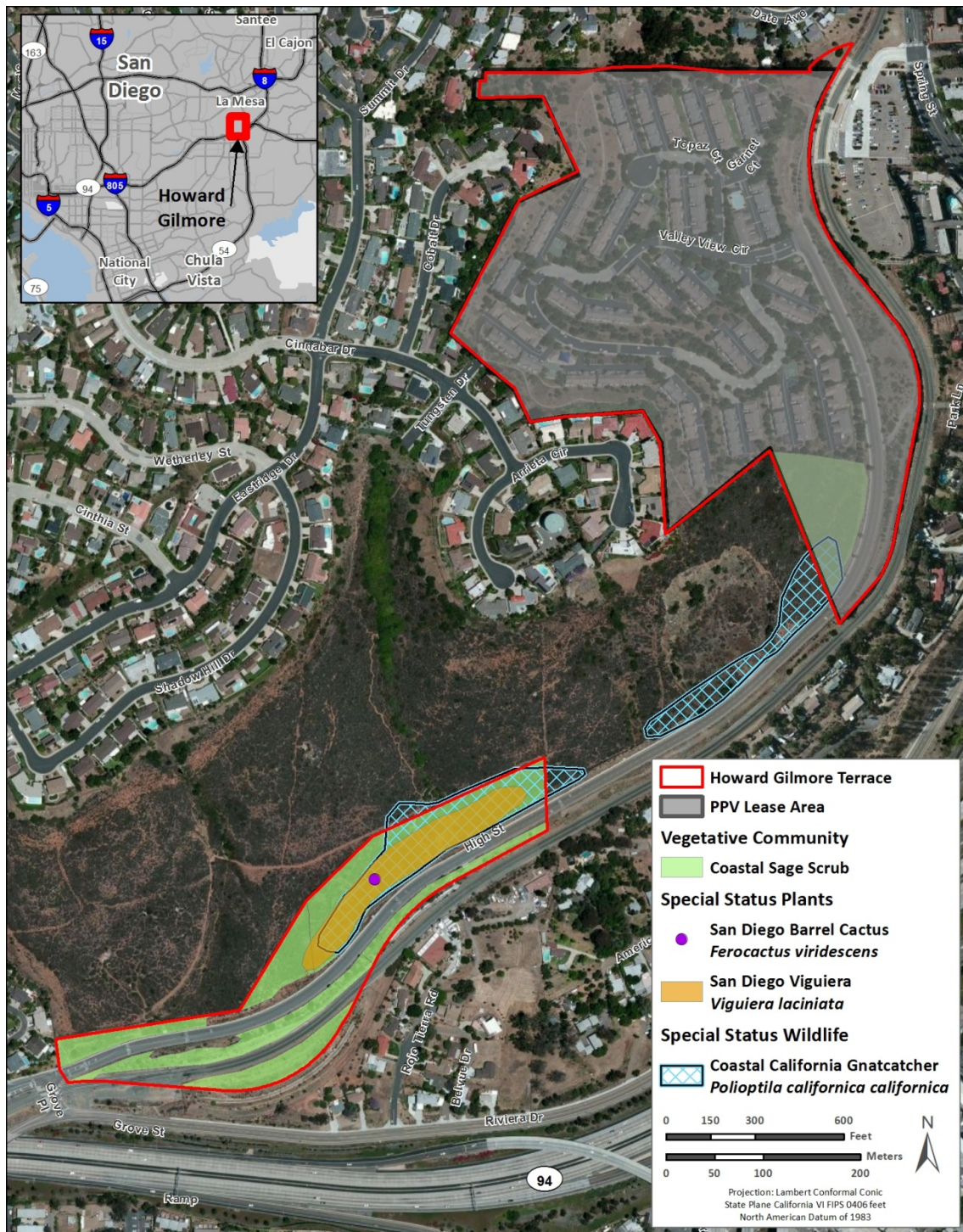
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Source: Microsoft Bing Maps 2009; U.S. Navy 2011
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Figure ES-6: Natural Resources Constraints/Opportunities on Home Terrace Housing Area*

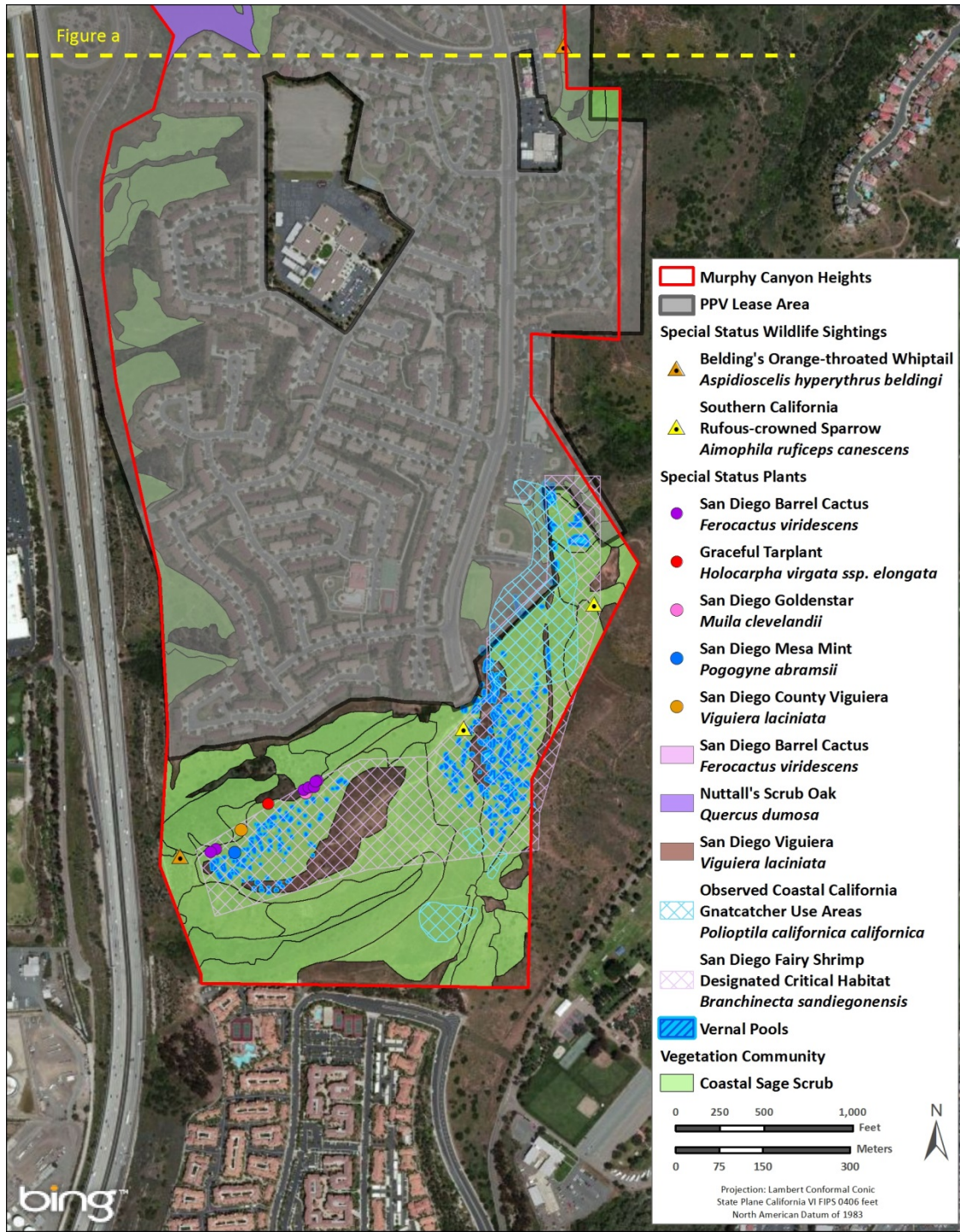
*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.



Source: Microsoft Bing Maps 2009; U.S. Navy 2011
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Figure ES-7: Natural Resources Constraints/Opportunities on Howard Gilmore Housing Area

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Source: (c) 2009 Microsoft Corporation and its data suppliers, U.S. Navy 2011
Disclaimer: Maps do not represent legal boundaries. Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure ES-8: Natural Resources Constraints/Opportunities on Murphy Canyon Heights Housing Area*

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Source: Microsoft Bing Maps 2009
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Figure ES-9: Natural Resources Constraints/Opportunities on Terrace View Villas Housing Area*

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**FINAL INTEGRATED NATURAL RESOURCES MANAGEMENT
NAVAL BASE SAN DIEGO, CALIFORNIA**

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1. Overview

An Integrated Natural Resources Management Plan (INRMP) is a long-term planning document designed to guide a Department of Defense (DoD) natural resources manager in the management of natural resources to support an installation's mission while protecting and enhancing installation resources for multiple use, sustainable yield, and biological integrity.

This INRMP complies with the Sikes Act as amended through 2012 (16 United States Code [U.S.C.] 670a et seq.), which requires the preparation, implementation, update, and review of an INRMP for each military installation in the United States and its territories with significant natural resources. This plan is prepared in cooperation with the U.S. Fish and Wildlife Service (USFWS), the California Department of Fish and Wildlife (CDFW) formally the California Department of Fish and Game (CDFG), and the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (Fisheries).

This INRMP provides for the conservation and rehabilitation of natural resources and the sustainable multipurpose use of resources subject to safety requirements and military security. It provides for no net loss in the capability of installation lands to support the military mission and other activities as considered appropriate to the military. At the same time, this document provides for management of wildlife and land, wildlife enhancement and modification, establishment of natural resources management objectives and time frames, sustained use by the public of natural resources to the extent that such use is not inconsistent with other needs, and public access where appropriate, as well as the enforcement of natural resource laws and regulations.

This INRMP is designed to support the military mission, manage natural resources, and to ensure compliance with related environmental laws and regulations. The plan ensures the maintenance of quality training land, thereby supporting DoD in accomplishing its critical military mission.

All tables and figures in this INRMP were compiled based on surveys and inventories conducted for the U.S. Navy, using data believed to be accurate at the time of publication. Data relating to species presence was cross-referenced with the California Natural Diversity Database for quality assurance purposes. However, a degree of error is inherent in all tables and figures. The tables and figures are distributed "AS-IS," without warranties of any kind, expressed or implied, including, but not limited to, warranties of suitability to a particular purpose or use. No attempt has been made in either the design or production of the tables and figures to define the limits or jurisdiction of any Federal or local government. The figures are intended for use only at the published scale. Detailed on-the-ground surveys and historical analyses of sites might differ from the figures.

1.1 Purpose and Scope of Plan

The purpose of this INRMP revision is to chart a course for natural resources management on Naval Base San Diego (NBSD), including Naval Base San Diego, Main Site (formerly known as the Naval Station San Diego or 32nd Street), Broadway Complex, Mission Gorge Recreational Facility (MGRF), and 17 Naval housing areas. The Naval Medical Center San Diego (NMCS) is now included within NBSD; however, NMCS has a separate INRMP.

This INRMP is consistent with the Sikes Act as amended, guidance and regulations provided in the Department of Defense (DoD) Instruction 4715.03 (*Natural Resources Conservation Program*), Chief of Naval Operational Instruction (OPNAVINST) 5090.1D (*Environmental Readiness Program Manual*), and other Department of Navy (DoN), DoD, and INRMP guidance. These guidance documents

collectively require a plan and management approach that integrates mission support, ecosystem or landscape-level management, and environmental compliance and stewardship. This INRMP was developed based on a thorough review of the existing 2002 NBSD INRMP, review of new data pertaining to all NBSD properties, including the Naval housing areas now under the jurisdiction of Navy Region Southwest, and detailed discussions with NAVFAC SW natural resources staff and various INRMP stakeholders. The plan strives to integrate INRMP activities with other installation plans and activities, and provides explicit objectives to which natural resources strategies or projects will contribute. The projects contained in this plan include a combination of ongoing natural resources management activities from previous years and new projects and activities identified as priorities during the review process.

This INRMP provides a revision of the existing INRMP (U.S. Navy 2002a), includes a discussion of the natural resources on NBSD, and reviews natural resources activities undertaken at NBSD, based on data collected and reports prepared since the completion of the August 2002 INRMP. This INRMP is organized according to the guidelines provided by the Office of the Under Secretary of Defense in August 2006, DoD Instruction 4715.03 (DoD 2011), DoN guidance pertaining to development and implementation of INRMPs (U.S. Navy 2006a), and Naval Facilities Engineering Command Southwest (NAVFAC SW), and strives to fully integrate and coordinate the natural resources program with other NBSD plans and activities. This INRMP provides a description of the installation (e.g., location, history, and mission), information about the surrounding physical and biotic environment, and an assessment of the impacts on natural resources as a result of mission activities. Furthermore, the INRMP recommends various management practices, in compliance with Federal, state, and local standards, designed to avoid and minimize negative impacts and to enhance the positive effects of the installation's mission on local ecosystems.

As stated above, this INRMP addresses NBSD, which includes all properties addressed in the August 2002 INRMP, per guidance contained within Commander Navy Region Southwest Notice 11000 (2008) (see **Figure 2-1**). NBSD supports a population of approximately 40,000 military and civilian personnel and hosts 180 tenant commands (U.S. Navy 2012a). The installation consists of lands owned by the Commander Naval Installation Command (CNIC) and is occupied by major areas that include Naval Base San Diego, Main Site (NBSD Main Site); the Broadway Complex, MGRF; and 17 Naval housing areas. None of these housing areas were addressed in the August 2002 INRMP because they were not under NBSD jurisdiction.

The terrestrial footprint of this INRMP is approximately 2,632.3 acres (944.7 hectares) as shown in **Table 1-1**. In addition, the acreage of NBSD Main Site includes 298 acres (120.6 hectares) of water seaward (beyond the mean lower low water line) extending to the U.S. Pier head line in San Diego Bay. All in-water areas adjacent to NBSD are addressed in the San Diego Bay INRMP (U.S. Navy et al. 2011a).

The installation is achieving a no net loss in the ability to provide logistical support for the operating forces of the U.S. Navy through the implementation of the NBSD INRMP. NEPA documentation and Consultation under Section 7 of the Endangered Species Act have been completed to allow for continued support of Navy Operations. Due to the number and distribution of protected species on NBSD, natural resources management strategies will continue to be needed to support current and future logistical support and facilities projects.

All facilities within NBSD lie within San Diego County, California (see **Figure 2-1**).

Table 1-1: NBSD Facilities

NBSD Facility	NBSD Facility Sizes (acres)
Naval Base San Diego, Main Site	1,036.5
Broadway Complex	15.1
Mission Gorge Recreation Facility	448
Bayview Hills Housing Area	168.5
Bonita Bluffs Housing Area	4.3
Chollas Heights Housing Area	73.0
Eucalyptus Ridge Housing Area	40.9
Hilleary Park Housing Area	3.3
Home Terrace Housing Area	10.1
Howard Gilmore Terrace Housing Area	50.4
La Mesa Park Townhouses Housing Area	2.6
Murphy Canyon Housing Area	683.6
Paradise Gardens Housing Area	3.4
Pomerado Terrace Housing Area	48.3
Prospect View Housing Area	7.7
Ramona Vista Apartments Housing Area	4.2
Riverplace Housing Area	6.5
Terrace View Villas Housing Area	18.3
Woodlake Housing Area	3.4
Naval Base San Diego Housing Area	4.2
Total	2,632.3

Source: U.S. Navy 2010b and U.S. Navy 2011

1.2 Authority

The Sikes Act is one of the primary drivers behind the NBSD natural resources management program and INRMP. According to the Sikes Act, the purposes of a military conservation program are conservation and rehabilitation of natural resources, sustainable multipurpose use of those resources, and public access to military lands, subject to safety requirements and military security. Moreover, the conservation program must be consistent with the mission essential use of the installation and its lands. The Sikes Act requires the preparation of an INRMP to facilitate the conservation program.

The 2006 Memorandum of Understanding between the DoD, USFWS, and the International Association of Fish and Wildlife Agencies for a *Cooperative Integrated Natural Resource Management Program on Military Installations* (DoD et al. 2006) requires that the INRMP be cooperatively developed with the USFWS and the state fish and wildlife agency, which for NBSD is the CDFW. The resulting plan reflects the mutual agreement of all three parties concerning conservation, protection, and management of natural resources on the installation.

The Sikes Act states that “the Secretary of each military department shall prepare and implement an integrated natural resources management plan for each military installation in the United States under the jurisdiction of the Secretary, unless the Secretary determines that the absence of significant natural

resources on a particular installation makes preparation of such a plan inappropriate.” DoD Instruction 4715.03 prescribes procedures for integrated management of natural resources, including preparing an INRMP as required by the Sikes Act. DoD Instruction 4715.03 also states that “INRMPs shall be prepared, maintained, and implemented for all lands and waters under DoD control that have suitable habitat for conserving and managing natural resources.”

The 2006 Chief of Naval Operations (CNO) guidance, (U.S. Navy 2006a) further establishes the that “INRMPs must address natural resources management on those lands and near-shore areas owned by the U.S. and administered by the Navy; used by the Navy via license, permit, or lease for which the Navy has been assigned management responsibility; or withdrawn from the public domain for use by the Navy for which the Navy has been assigned management responsibility” (U.S. Navy 2006a). OPNAVINST 5090.1D requires the preparation of INRMPs and prescribes Navy policies, procedures, and standards to “restore, improve, conserve, and properly use natural resources on Navy-administered lands.” The NBSD INRMP revision is consistent with and was developed according to this guidance documents.

1.3 INRMP Vision, Goal, and Objectives

According to the Sikes Act as amended, the vision of an installation INRMP is to ensure the sustainability of all ecosystems within the installation, and to ensure a no net loss of the capability of the installations to support the military mission (U.S. Navy 2006a). To meet the intent of the Sikes Act as amended, the DoD adopted ecosystem management as the basis for future management of DoD lands and waters through applying the principles of adaptive management and through collaborating with parties both inside and outside the fence (DoD 2011). In addition, the DoN developed guidance for developing and implementing INRMPs at Navy installations based on lessons learned from the first round of INRMPs developed by the Navy, which included the following (U.S. Navy 2006a):

1. Increasing the ties between natural resources management and military readiness.
2. Establishing a consistent funding policy and project review process.
3. Improving the efficiency of INRMP review and coordination.
4. Increasing the effective implementation of INRMPs.
5. Expanding opportunities for involvement with all INRMP stakeholders.

The 2006 guidance also stressed the need for clear INRMP goals and objectives to guide natural resources management on an installation while ensuring a no net loss to the mission. The guidance defines goals as “broad guiding principles for the [installation natural resources] program” and objectives as “measurable targets for achieving the goals” (U.S. Navy 2006a). In addition, the guidance states that the INRMP will provide parameters to determine “the effectiveness of the natural resources program outlined in the INRMP through ensuring that the plan includes quantifiable, scientifically valid parameters that will demonstrate achievement of objectives,” or INRMP projects (U.S. Navy 2006a).

The NBSD INRMP goal is to provide an adaptive ecosystem based conservation program that will support the NBSD mission and provide for the sustainability of natural resources.

Figure 1-1 illustrates how this document is organized into management objectives and strategies that work to achieve the overall INRMP goal. Objectives and strategies are identified in **Chapter 4** for NBSD Main Site, **Chapter 5** for the Broadway Complex, **Chapter 6** for Mission Gorge Recreational Facility, and **Chapter 7** for the 17 Naval housing areas.

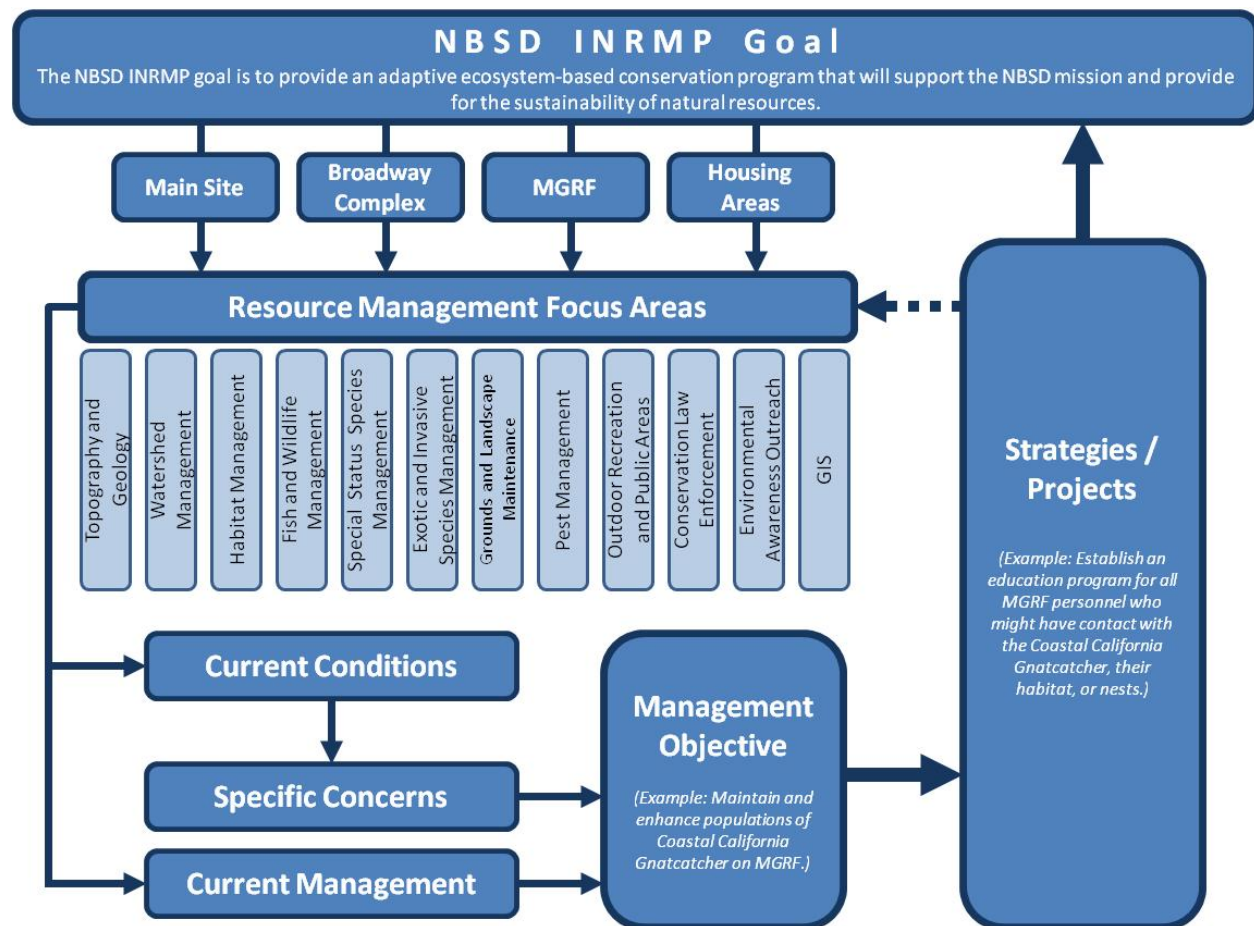


Figure 1-1: INRMP Goal, Management Objective, and Strategies

1.4 Stewardship and Compliance

For this INRMP, the terms compliance and stewardship have specific meanings as criteria for implementing project lists. Project rankings are assigned based on whether an activity is mandatory to comply with a legal requirement, such as the Endangered Species Act (ESA), Clean Water Act (CWA), or Migratory Bird Treaty Act (MBTA). Alternatively, a project may be considered good land stewardship but is not considered an obligation for NBSD to be found in compliance with environmental laws. Projects considered necessary to comply with the law are generally funded within budget constraints, whereas stewardship projects are ranked lower for funding consideration when projects compete among multiple installations.

The budget programming hierarchy for this INRMP is based on both DoD and Navy funding level classifications. The DoD programming and budgeting priorities for conservation programs are detailed in DoD Instruction 4715.03. The Instruction divides programming and budget requirements into two categories: Recurring and Non-recurring. Recurring requirements include day-to-day costs associated with managing the program to meet applicable compliance requirements. Non-recurring requirements include Current Compliance, Maintenance, and Enhancement Beyond Compliance. Additional information on programming categories is included in **Section 9.2**.

The Navy programming hierarchy is based on DoD funding level classifications. The projects recommended in this INRMP have been prioritized based on the Navy programming hierarchy of Environmental Readiness Levels (ERLs) (U.S. Navy 2006a). ERL 3 and 4 projects are compliance driven (DoD Class 0, I, II) and ERL 1 and 2 projects are under the stewardship category. **Section 9.2** describes ERLs and DoD Classes in more detail. Funding is routinely programmed 3 years in advance of project implementation.

1.5 Revisions and Annual Reviews

The Sikes Act requires that INRMPs must be reviewed for operation and effect no less than once every 5 years by the installation, the USFWS, and the state fish and wildlife agency (in this case, the CDFW). In addition, coordination with the NOAA Fisheries is recommended for management of marine resources. The DoD and DoN have provided specific guidance on the joint review and coordination process and timeframe (DUSD[I&E] 2002, OPNAVINST 5090.1C CH-1 2011).

According to the 2006 CNO guidance, (U.S. Navy 2006a), INRMPs must also be reviewed by installations at least once per year to verify the following:

- Current information on INRMP conservation metrics, as described in the Navy Conservation Website
- All ERL 4 “must fund” projects and activities have been budgeted for and implementation is on schedule
- All required trained natural resources positions are filled or are in the process of being filled
- Projects and activities for the upcoming year have been identified and included in the INRMP - an updated project list does not necessitate INRMP revision
- All required coordination has occurred
- All significant changes to the installation’s mission requirements or its natural resources have been identified.

For additional information on Navy Natural Resources Metrics, refer to **Appendix J**. If an INRMP review for operation and effect results in significant differences from the previous plan and additional NEPA analysis, NBSD must solicit public review and comments (U.S. Navy 2006a). The NEPA process may be used to meet public review requirements if the public is provided a meaningful opportunity to comment on the Draft revised INRMP. After soliciting public comments, NBSD must afford the USFWS, NOAA, and the CDFW the opportunity to review all public comments. If an existing INRMP requires only limited revisions that are not expected to result in significant environmental effects other than those anticipated for the existing INRMP, then neither NEPA analysis or public review are necessary (U.S. Navy 2006a).

A series of DoD memoranda and tools provide additional guidance by defining INRMP coordination, reporting, implementation, and miscellaneous Sikes Act requirements. The Deputy Under Secretary of Defense (Installations and Environment) (DUSD[I&E]) has developed several memos that include: outlining INRMP coordination, reporting, and implementation requirements (*Implementation of the Sikes Act Improvement Act: Updated Guidance*, 2002); a memo providing policy on the scope of INRMP review, public comment and ESA consultation (*Memorandum providing policy on scope of INRMP review, public comment on INRMP review, and Endangered Species Act consultation on INRMPs*, 2004); a memo providing policy for the applicability of the Sikes Act on DoD lands leased to a non-DoD party (*Memorandum providing policy on the applicability of the Sikes Act INRMP requirement for DoD lands*

leased to a non-DoD party, 2005a); and a memo outlining best practices for INRMP implementation (*Best practices for Integrated Natural Resources Management [INRMP] Implementation*, 2005b). In addition, DoD developed a handbook to assist resource managers with developing and implementing INRMPs (*Conserving Biodiversity on Military Lands: A Guide for Natural Resources Managers*, 2008).

1.6 Roles and Responsibilities

Successfully implementing an INRMP requires the support of natural resources personnel, other installation staff, command personnel, and installation tenants. The following section discusses the responsibilities for INRMP implementation within the U.S. Navy.

1.6.1 Internal Navy Stakeholders

The following is a list of internal stakeholders and their role in supporting the installation and the development, revision, and implementation of this INRMP. Policy leadership and liaison with non-Navy partners is provided by the Commander, Navy Region Southwest, NAVFAC SW, and NBSD.

1.6.1.1 Chief of Naval Operations (CNO)

The CNO serves as the principal leader and overall Navy program manager for the development, revision, and implementation of this INRMP. The CNO provides policy, guidance and resources for the development, revision, and implementation of the INRMP and associated NEPA documentation. The CNO approves all INRMP projects prior to submittal to regulatory agencies for signature (U.S. Navy 2006a).

1.6.1.2 Commander of Navy Installations Command (CNIC)

The CNIC reviews the entire INRMP. Their role is to ensure that installations comply with DoD, Navy, and CNO policy on INRMPs and their associated NEPA documentation. They also ensure the programming of resources necessary to maintain and implement INRMPs, participate in the development and revision of INRMPs, and provide overall program management oversight for all natural resources program elements. CNIC reviews and endorses projects recommended for INRMP implementation prior to submittal for signature, and evaluates and validates EPRWeb project proposals (U.S. Navy 2006a).

1.6.1.3 Navy Region Southwest

Regional Commanders ensure that installations comply with DoD, Navy, and CNO policy on INRMPs and their associated NEPA documentation. They ensure that installations under their control undergo annual reviews and formal 5-year evaluations. They ensure the programming of resources necessary to maintain and implement INRMPs, which involves the evaluation and validation of EPRWeb based project proposals and the funding of installation natural resources management staff. Navy Region Southwest maintains close liaison with the INRMP signatory partners (USFWS, NOAA and CDFW) and other INRMP stakeholders. They provide endorsement of the INRMP through the Regional Commander signature (U.S. Navy 2006a). The mission of the Commander, Navy Region Southwest is to enhance our Nation's readiness through efficient and effective management of our shore installations while preserving the critical resources necessary to secure the future of our force.

1.6.1.4 Installation Commanding Officers

Installation Commanding Officers ensure the preparation, completion, and implementation of INRMPs and associated NEPA documentation. Their role is to: act as stewards of natural resources under their

jurisdiction and integrate natural resources requirements into the day-to-day decision making process; ensure natural resources management and INRMPs comply with all natural resources related Federal regulations, directives, instructions, and policies; involve appropriate tenant, operational, training, or testing commands in the INRMP review process to ensure no net loss of military mission; designate a Natural Resources Manager/Coordinator responsible for the management efforts related to the preparation, revision, implementation, and funding for INRMPs, as well as coordination with subordinate commands and installations; involve appropriate Navy Judge Advocate General or Office of the General Counsel legal counsel to provide advice and counsel with respect to legal matters related to natural resources management and INRMPs; and endorse INRMPs via Commanding Officer signature.

1.6.1.5 Public Affairs Office

The Public Affairs Office is involved in aspects of the environmental program at NBSD. This includes being informed of the public notice process required in various NEPA analysis processes.

1.6.1.6 Office of Counsel

The Office of the General Counsel, Commander Navy Region Southwest, provides legal services to NBSD on a variety of environmental matters. Particularly pertinent to natural resources management, is their review of NEPA documentation and legal interpretations involving compliance with natural resources laws as they pertain to installation operations.

1.6.1.7 Naval Facilities Engineering Command Southwest (NAVFAC SW)

Public Works Department

The Facilities Planning Office, Public Works Department (PWD), is responsible for the comprehensive oversight and planning of all land use issues relating to NBSD. Their role for this INRMP is to provide document review to confirm that this INRMP describes compatible land uses.

Environmental Division

The Environmental Division, as delegated by command directive, is responsible for the preparation and implementation of this INRMP. Acting through the Natural Resources Manager, the Environmental Division is responsible for the management of natural resources as part of the overall NBSD environmental program. NBSD natural resources staff provides technical support. This INRMP is the direct “vehicle” for accomplishment of many of the responsibilities of the Commanding Officer.

Business Line Team Leader (N45)

Natural resources business line team specialists (N45) provide technical support and contractual oversight in the development, revision and implementation of this INRMP. In addition, NAVFAC SW is responsible for providing support for natural resources management at NBSD when requested. NAVFAC SW personnel such as the NEPA and INRMP coordinators, have natural resources programming and/or technical support roles in developing this INRMP.

1.6.1.8 Other Installation and Tenant Organizations, and Partners

In addition to the directorates and offices mentioned above, INRMP implementation requires assistance from, or coordination with, a variety of other installation organizations, tenants, and contract personnel.

Other installation partners consulted for natural resources activities on NBSD include Lincoln Clark (responsible for developing and managing family housing under the Public-Private Venture [PPV]).

A full list of the NBSD tenants is included in **Section 2.3.1**.

1.6.2 External Stakeholders

1.6.2.1 U.S. Fish and Wildlife Service

In accordance with the Sikes Act, the USFWS is a signatory agency to installation INRMPs. The mission of the USFWS is “working with others, to conserve, protect and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people.” The USFWS provides technical assistance to the DoN regarding regulatory and biological issues. In addition, the DoD and DoN consult formally and informally with the USFWS on the impacts of Navy activities on federally listed species and designated critical habitat. The USFWS office with this responsibility is the Carlsbad Field Office, located in Carlsbad, California. The Carlsbad Fish and Wildlife Office lies within the Pacific Southwest Region (Region 8), with headquarters in Sacramento, California.



1.6.2.2 California Department of Fish and Wildlife

Also in accordance with the Sikes Act, the CDFW is a signatory agency to this INRMP. The mission of the department is to “manage California’s diverse fish, wildlife, and plant resources and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public” (CDFG 2010). The CDFW oversees the management and use of the state’s forests and parks, fisheries, and wildlife. It has statewide responsibilities for assessing and restoring water quality and habitat; managing and regulating recreational boating, fishing, and hunting; and managing wetlands, wildlife, and rare threatened and endangered species. Although NBSD is Federal property, CDFW still has cooperative management jurisdiction over the fish and wildlife within the State of California (DoD et al. 2006). To meet cooperative management, CDFW is encouraged to participate in the development, review and update, and implementation of this INRMP; collaborate on joint management projects to ensure ecosystem based management of lands managed by Federal and state agencies; to provide technical assistance to DoD in managing natural resources (e.g., interjurisdictional fisheries and coastal resources) within the scope of state responsibility and expertise; and to coordinate with DoD when revising the state wildlife conservation plan (DoD et al. 2006).



1.6.2.3 National Oceanic and Atmospheric Administration

Although not required in the Sikes Act, NOAA is a signatory agency to this INRMP. NOAA is dedicated to protecting and preserving the nation’s living marine resources through scientific research, fisheries management, enforcement and habitat conservation. NOAA’s National Marine Fisheries Service (NOAA Fisheries) is the lead Federal agency responsible for the stewardship of the nation’s offshore living marine resources and their habitat. The mission of NOAA Fisheries is to ensure healthy fisheries and habitat for the benefit of all Americans by managing, conserving, and protecting fish, whales, dolphins, sea turtles, and other living creatures in the ocean. NOAA Fisheries works within the Magnuson-Stevens Fishery Conservation and Management Act, the Marine Mammal Protection Act, and the ESA to fulfill its mission of promoting healthy ecosystems.



1.7 Integration of Other Plans and Programs with INRMP

The recognition of internal and external factors demands that natural resources management on NBSD be integrated with other disciplines, programs, and planning beyond the scope of traditional fish and wildlife management on Navy installations. Internal factors include meeting mission requirements and other environmental requirements (e.g., CWA); external factors include increasing population growth and development in the San Diego Metro area, and increased pressure on Federal and state lands to maintain green spaces and wildlife habitat in the face of increased development.

1.7.1 NBSD Plans and Programs

Table 1-2 lists other plans that have been integrated into this INRMP. These plans support this INRMP and are referenced where appropriate within the text. Yearly reviews should incorporate updated plans. Note that the INRMP is not intended to compile detailed information on each plan and its contents.

A detailed list of plans and reports completed at NBSD is included in **Appendix C**.

1.7.2 Regional Plans and Initiatives

1.7.2.1 California Wildlife Action Plan

In order to receive Federal funds through the State Wildlife Grants Program, Congress charged each state with developing a statewide comprehensive wildlife conservation plan by October 1, 2005 through the Consolidated Appropriations Act of 2005 (Public Law 108-447). The State Wildlife Grants Program provides Federal money to every state and territory for cost effective conservation aimed at preventing wildlife from becoming endangered (Public Law 108-447).

Congress also directed that the strategies must identify and be focused on the “species of greatest conservation need,” yet address the full array of wildlife and wildlife related issues (CDFG 2009b). The California Wildlife Action Plan was completed in 2007 and identified statewide and regional conservation issues based on regional landscape types, regional habitats, and ecosystem level species needs and requirements, rather than prescribing management actions using a species-by-species approach (CDFG 2007). NBSD falls within the south coast region and the plan identified five key stressors affecting wildlife and their habitats in this region including (CDFG 2007):

- Growth and development
- Water management conflicts and degradation of aquatic ecosystems
- Invasive species
- Altered fire regimes
- Recreational pressures.

Marine stressors identified in this region include:

- Overfishing
- Degradation of marine habitats
- Invasive species
- Pollution
- Human disturbance.

Table 1-2: Plans and Reports Incorporated into the NBSD INRMP

Title	Year
Environmental Management System	NA
Enhancement of the Murphy Canyon Vernal Pool Preserve: Year 3	1995
Historic and Archaeological Resources Protection Plan for Naval Station San Diego	1996
Murphy Canyon Vernal Pool Preserve Mitigation Plan , Vernal Pool Creation and Restoration, Mitigation at Murphy Canyon for Impacts at Chollas Heights Navy Family Housing	1996
Post-Monitoring Report for the Chollas Heights Navy Family Housing Project	1996
First Annual Monitoring Report, Chollas Heights Navy Family Housing Project	1997
Coastal Sage Scrub Restoration on Navy Housing Property at Murphy Canyon, San Diego, California	1997
Chollas Creek Preserve Restoration, Year Two (1997–1998) Monitoring Report	1999
Naval Base San Diego Integrated Natural Resources Management Plan	2002
Annual Report for Coastal California Gnatcatcher Population Surveys on Three Navy Family Housing Areas, San Diego County	2002
California Gnatcatcher Low-level Breeding Surveys, U.S. Navy Family Housing Areas 2001-2002	2002
Exotic Plant Removal, Naval Station San Diego, Mission Gorge Recreation Facility	2007
Naval Base San Diego Installation Appearance Plan (IAP)	2008
Vegetation Management Plan for Mission Gorge Recreational Facility, Naval Base San Diego	2008
Integrated Pest Management Plan (IPMP) Naval Base San Diego, Naval Base Point Loma, Naval Base Coronado, San Diego Metro Area Installations (SDMAI), San Diego, CA	2009
Wetland Study at Mission Gorge Recreational Facility, Naval Base San Diego	2009
Heron and Egret Surveys for Navy Bases in the San Diego Metropolitan Area	2009
Natural Resources Inventory Report for Naval Base San Diego	2010
Erosion Management Plan for Mission Gorge Recreational Facility	2010
Wildland Fire Management Plan, Mission Gorge Recreation Facility, Murphy Canyon Housing Area, and Chollas Heights Housing Area	2010
Natural Resources Baseline Inventory for the Navy San Diego Metro Housing Areas at Naval Base San Diego, Naval Base Coronado and Naval Base Point Loma, San Diego County, CA	2011
San Diego Bay Integrated Natural Resources Management Plan (Draft)	2011
San Diego Bay Eelgrass Inventory	2011
Mobility Master Plan, Naval Base San Diego, California	2012
Heron and Egret Management Plan for Installations of the Navy Metro Areas on the San Diego Bay, San Diego, CA	2012
Erosion Control for Mission Gorge Recreational Facility/Murphy Canyon Housing Complex at Naval Base San Diego, California (2010–2011)	2012
NBSD Maintenance Action Plan (updated annually)	2012
NBSD Installation Project List (IPL) (updated annually)	2012
Vision 2035 (updated annually)	2012
Encroachment Action Plan (EAP) (currently under development)	TBA

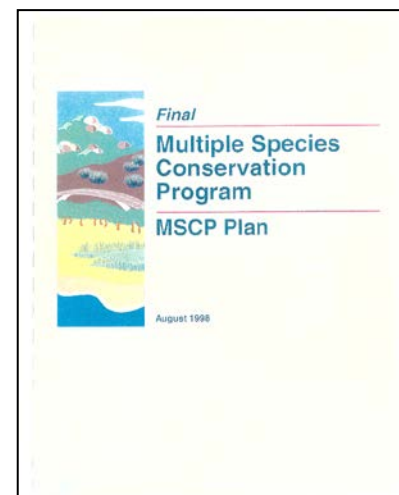
The conservation actions identified by the CDFW for the South Coast region were taken into consideration when preparing this document. The plan identified conservation actions to be undertaken to restore and protect wildlife and their habitats in this region. The following are actions that can be undertaken by NBSD to ensure that conservation goals within the plan are met (CDFG 2007):

1. Wildlife agencies and local governments should work to improve the development and implementation of regional Natural Community Conservation Plans (NCCPs), which is the primary process to conserve habitat and species in the region's rapidly urbanizing areas.
2. Safeguard and build upon Camp Pendleton's contribution to the regional network of conservation lands. Similarly, protect habitats on lands adjacent to the Marine Corps Air Station Miramar.
3. To address regional habitat fragmentation, Federal, state, and local agencies, along with nongovernmental conservation organizations, should support the protection of the priority wildlands linkages identified by the South Coast Missing Linkages project.
4. Federal, state, and local agencies, along with nongovernmental conservation organizations, should protect and restore the best remaining examples of coastal wetlands that provide important wildlife habitat.
5. Public agencies and nongovernmental conservation organizations should invest in efforts to protect and restore the best remaining regional examples of ecologically intact river systems.
6. Federal, state, and local agencies should provide greater resources and coordinate efforts to eradicate or control existing occurrences of invasive species and prevent new introductions.
7. Federal, state, and local public agencies should sufficiently protect sensitive species and important wildlife habitats on their lands and should be adequately funded and staffed to do so.
8. Federal and state agencies and nongovernmental partners should collaborate to institute appropriate fire management policies and practices to restore the ecological integrity of the region's ecosystems while minimizing loss of property and life.
9. State and Federal wildlife agencies, the U.S. Forest Service, state and county parks, Bureau of Land Management (BLM), and nongovernmental partners should collaborate to develop a comprehensive Southern California Outdoor Recreation Program to provide recreational opportunities and access that do not conflict with wildlife habitat needs.

In addition, the plan listed the Quino checkerspot butterfly (*Euphydryas editha quino*) and Light-footed Clapper Rail (*Rallus longirostris levipes*) as two species at risk in the south coast region (CDFG 2007). These two species have not been observed at NBSD.

1.7.2.2 Multiple Species Conservation Program

Section 10(a)(1)(B) of the ESA (16 U.S.C. 1531–1544) and the California Natural Community Conservation Plan Act of 1991 (California Fish and Game Code 2800-2835) allow for the development of Habitat Conservation Plans (HCPs), or NCCPs under California law, to manage multiple species and their habitats in a given geographical area. Section 10(a)(1)(B) of the ESA defines HCPs as “planning documents required as part of an application for an incidental take permit... [that] describe the anticipated effects of the proposed taking; how those impacts will be minimized, or mitigated; and how the HCP is to be funded” (USFWS 2009). In addition, HCPs provide management recommendations for listed and nonlisted species



(i.e., candidate species) and their habitats (USFWS 2009). HCP “planning is a cooperative process that often involves local, state, and Federal agencies and the public... [that] encourage[s] the active participation and support of landowners and others in the conservation and stewardship of natural resources in the plan area during plan development using appropriate measures, including incentives” (City of San Diego 1998).

The primary Multiple Species Conservation Program (MSCP) plan for a 900-square-mile area in southwestern San Diego County was completed in August 1998 (some sub areas plans were completed later). The goal of the 1998 plan is to contribute “to [the] preservation of regional biodiversity through coordination with other habitat conservation planning efforts throughout southern California” and to manage projects using an ecosystem based approach as opposed to the traditional project-by-project approach (City of San Diego 1998). The MSCP for southwestern San Diego County recommends developing preservation areas throughout the county that connect various regions of species habitat to encourage protection of regional biodiversity (City of San Diego 1998). In addition, the plan states that Federal and state governments will “contribute 36,510 acres of existing Federal and state lands, excluding military lands, to permanent habitat conservation and management; acquire 13,500 acres of privately owned habitat lands in the MSCP preserve from willing sellers; and manage and monitor the Federal and state share of the MSCP preserve” (City of San Diego 1998).

NBSD and other military lands are within the MSCP study area but are being planned separately. At this time, NBSD is not required to contribute, or acquire lands, to meet MSCP goals. However, NBSD strives to ensure that its land use and regional planning efforts are complementary with surrounding biodiversity conservation efforts such that NBSD lands help support the region’s habitat conservation needs while also providing continued support of the military mission.

Habitat conservation efforts within the City of San Diego’s MSCP preserve area, referred to as the Multi-Habitat Planning Area (MHPA), focus on acquiring critical areas of sensitive habitat and securing wildlife corridors within the MHPA and initiating monitoring efforts. The MHPA delineates core biological resource areas and corridors targeted for conservation. The city’s MSCP study area includes 206,124 acres within the city’s jurisdiction. The city’s planned MHPA totals 56,831 acres, with 52,012 acres (90 percent) targeted for preservation (approximately 30 percent of the planned regional preserve) (City of San Diego 2011).

Portions of the open space for the following NBSD housing areas within the City of San Diego overlap with the MSCP MHPA:

- Bayview Hills
- Chollas Heights
- Home Terrace
- Murphy Canyon Heights
- Pomerado Terrace.

While these lands are shown pictorially in the MHPA, nothing in the MSCP Subarea Plan or implementing ordinances applies to Federal owned military property (City of San Diego 1997). Nonetheless, the natural resources management goals and activities on NBSD lands are compatible with those of the MSCP. Projects planned or implemented to meet sustainability objectives on military properties within and adjacent to MSCP lands include: (1) special status species education, survey and monitoring, and habitat improvement; (2) wetlands and watershed management, monitoring, maintenance,

and rehabilitation as necessary; (3) wildlife and habitat management; (4) exotic and invasive species management; and (5) wildland fire management.

1.7.2.3 San Diego Bay INRMP

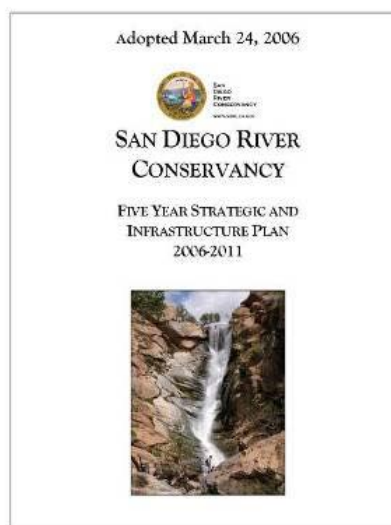
In November 2011, the Navy partnered with the San Diego Unified Port District (SDUPD) to release an INRMP for the San Diego Bay. The purpose of the plan was to develop an ecosystem based plan for the San Diego Bay that incorporates natural resources, natural and human uses of the San Diego Bay, and the missions of each stakeholder who manages or operates within the San Diego Bay (U.S. Navy et al. 2011a). The overall goal of the plan is to “flesh out a progression towards... [a San Diego Bay] that is wilder, with softer shorelines, richer and more abundant in native life... that, while used for thriving urban, commercial, and military needs, has an increasing proportion of use... [that include] public access, recreation, education and enjoyment of the myriad benefits of a healthy, dynamic ecosystem” (U.S. Navy et al. 2011a). Five core strategies, with over 1,000 individual strategies, for management of San Diego Bay resources were developed including (U.S. Navy et al. 2011a):

- Managing and restoring habitats, populations, and ecosystem processes
- Planning and coordinating projects and activities compatible with natural resources
- Improving information sharing, coordination and dissemination
- Conducting research and long-term monitoring that supports decision making
- Putting in place a Stakeholders’ Committee and Focus Subcommittees for collaborative, ecosystem based problem solving in pursuit of the goal and objectives.

NBSD bayside marine resources are managed within the San Diego Bay INRMP and are not discussed further within this INRMP. In addition, projects identified in the San Diego Bay INRMP will not be included within this INRMP.

1.7.2.4 San Diego River Conservancy

In 2006, the San Diego River Conservancy developed a strategic plan to guide activities over the next 5 years, and to develop goals and objectives to provide wildlife habitat and species restoration and protection, and wetlands protection and restoration. Habitat loss through urban development and non-native species invasion is the primary threat to the conservation of biological diversity in the San Diego River Area. This INRMP is compatible with Project 1 of Program Area 3: “Reduce, control, and where feasible, eradicate invasive non-native species while restoring Area habitats to native function.” Objectives were grouped into four program areas to better facilitate project development and include: (1) land conservation, (2) recreation and education, (3) natural and cultural resources preservation and restoration, and (4) water quality and natural flood conveyance (San Diego River Conservancy 2006). At this time, NBSD is not required to contribute, or acquire lands, to meet Conservancy goals.



1.8 Natural Resources Constraints and Opportunities

Maintaining compliance with the numerous laws, policies, and regulations that provide protection of environmental elements and guidance for management of natural and cultural resources may create constraints to accomplishing the military mission. Some of these laws include the ESA, CWA, Rivers and Harbors Act, Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), Coastal Zone Management Act (CZMA), and the National Historic Preservation Act (NHPA). Constraints may include limiting certain activities or prohibiting access to restricted areas in order to preclude damage to important cultural and natural resources.

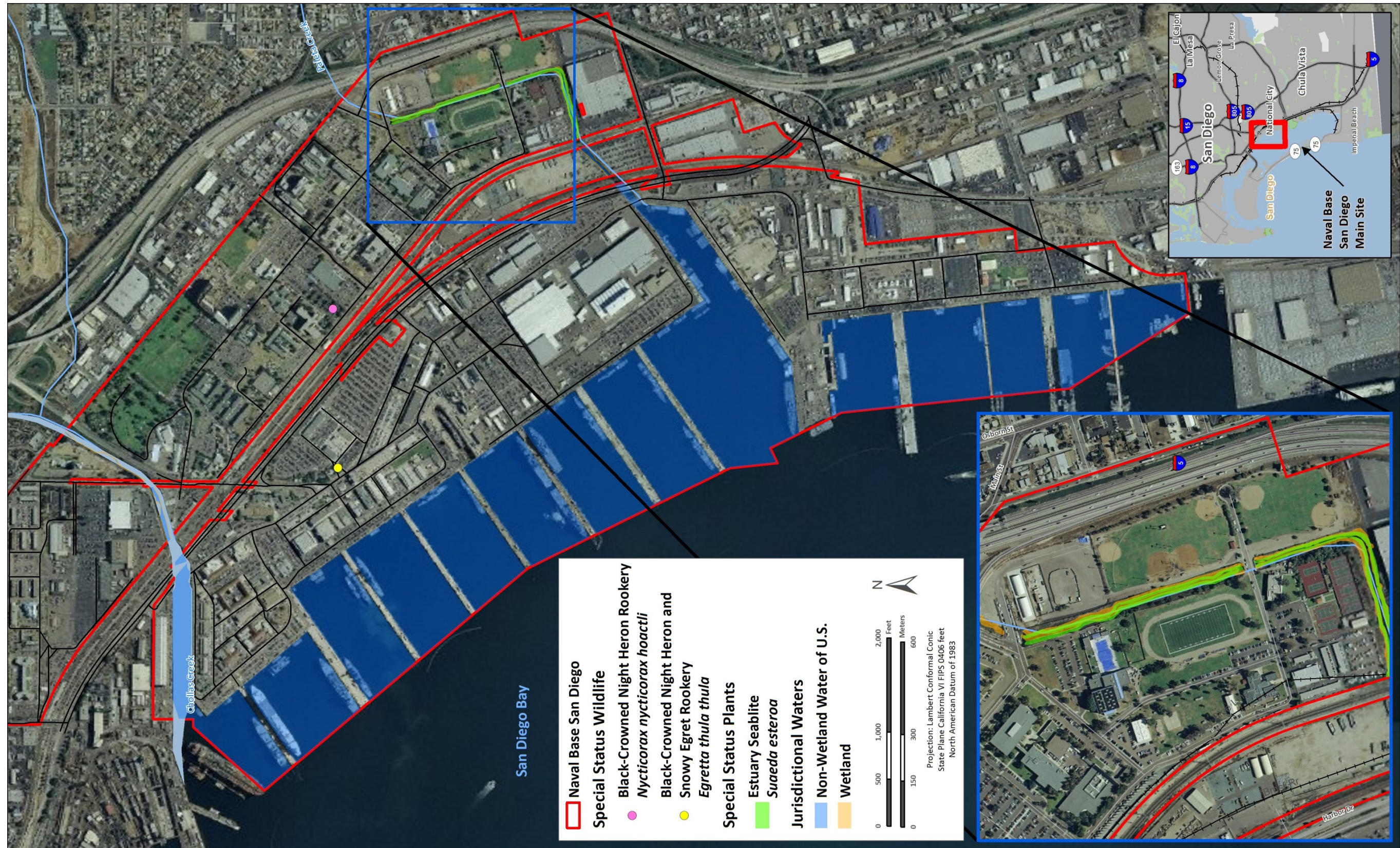
Similarly, opportunities are areas on an installation where there is little to no restriction on training or operations. Opportunities may include potential buffer areas and corridors, and encroachment partnering areas (U.S. Navy 2006a).

Constraints -- include known locations of federally listed and other special status species, areas preferentially managed for special status species, and areas with a regulatory driver (e.g., waters of the U.S., including wetlands or migratory bird nest sites).

Opportunities -- include situations related to natural resources in which the Navy might be able to increase efficiency, reduce costs, increase the quality of projects, or otherwise enhance military mission sustainability through coordination with outside entities, internal coordination among departments on specific projects, or achieve the solution to multiple challenges through one unified approach.

Constraints and opportunities on NBSD facilities are illustrated in **Figures 1-1 through 1-9**. Constraints and opportunities figures were not created for those areas lacking natural resources or natural resource constraints.

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Source: ESRI World Imagery 2009; U.S. Navy 2010b
 Disclaimer: Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 1-1: Natural Resources Constraints/Oportunities Naval Base San Diego Main Site

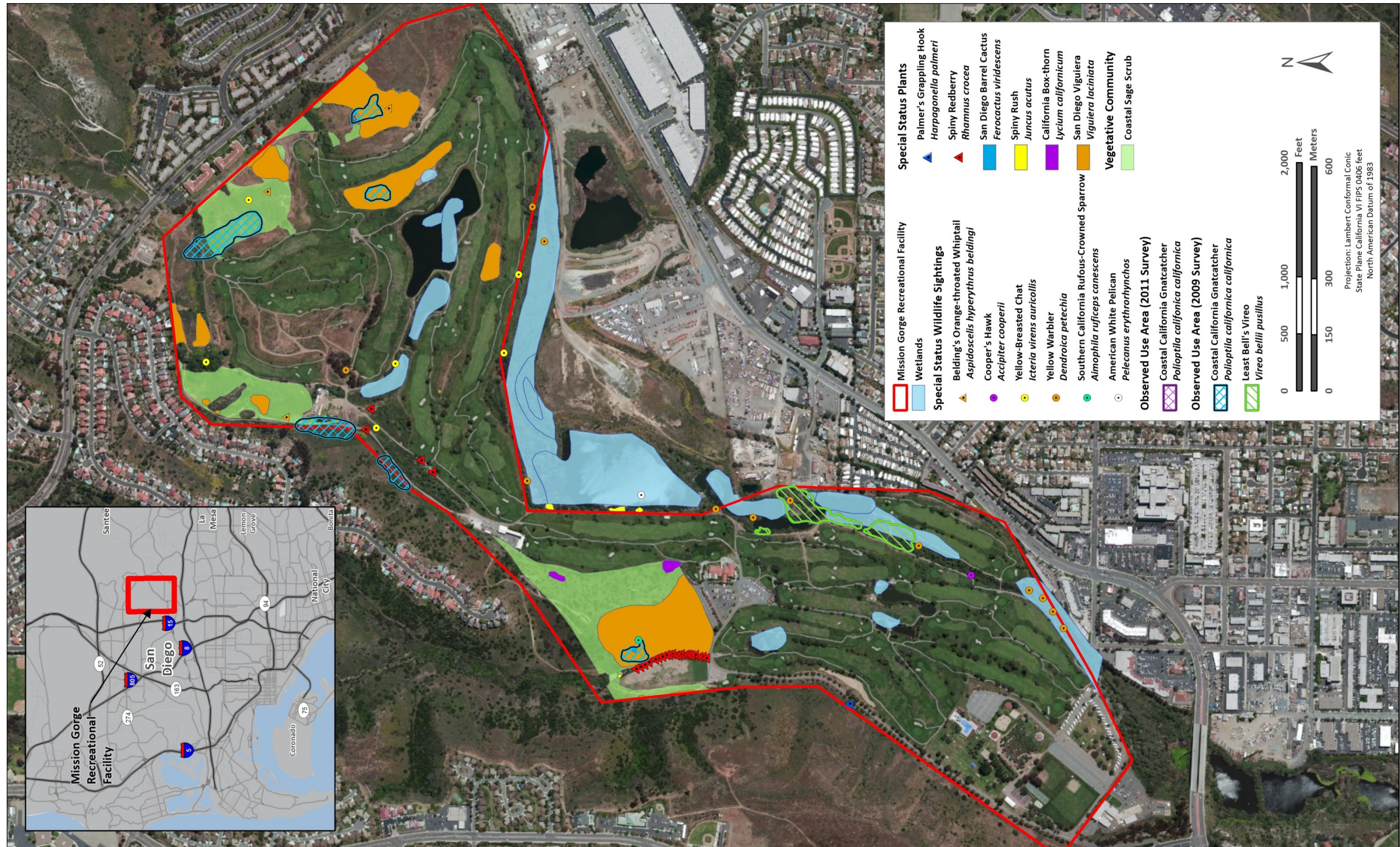


Figure 1-2: Natural Resources Constraints/Opportunities on Mission Gorge Recreational Facility

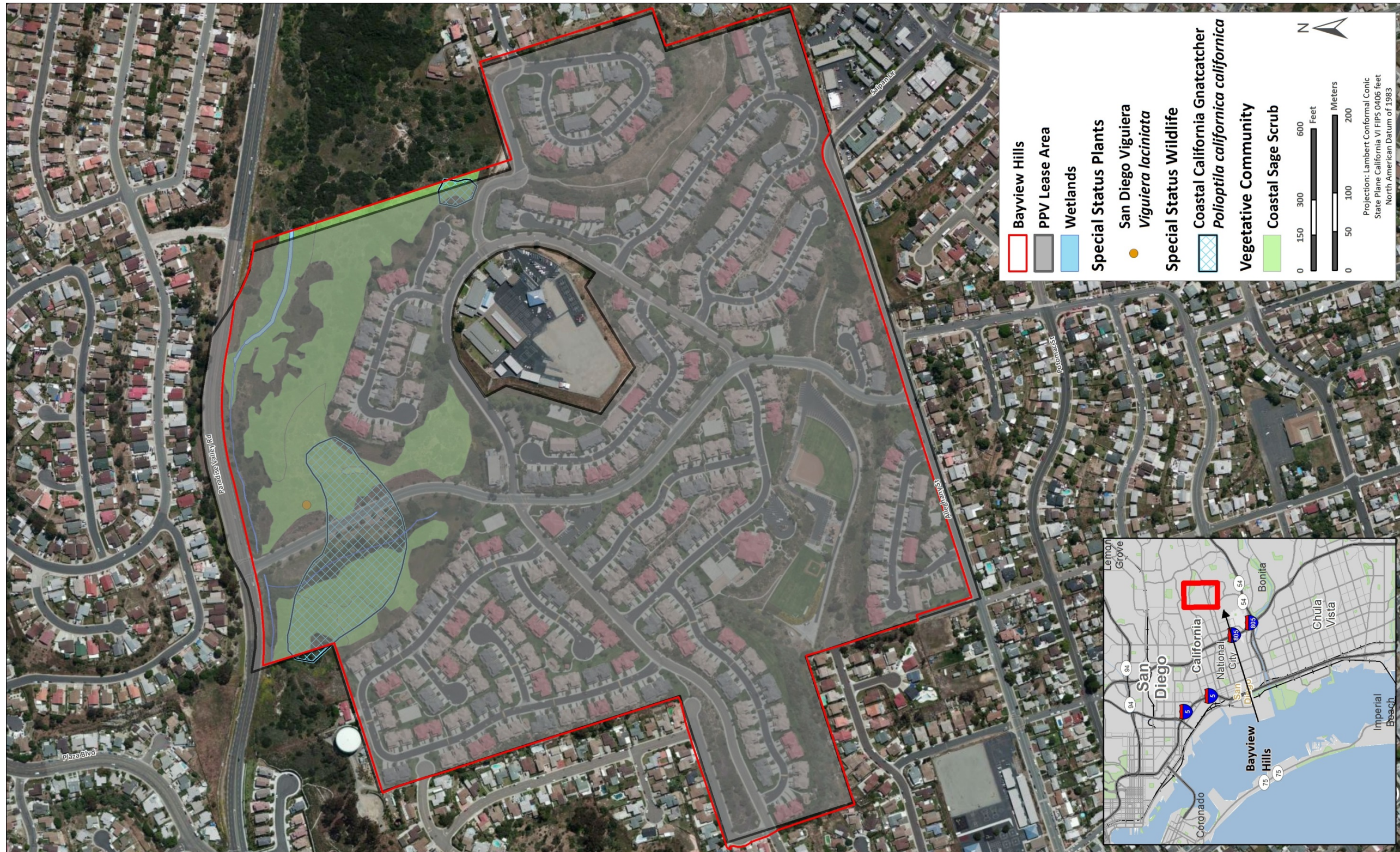
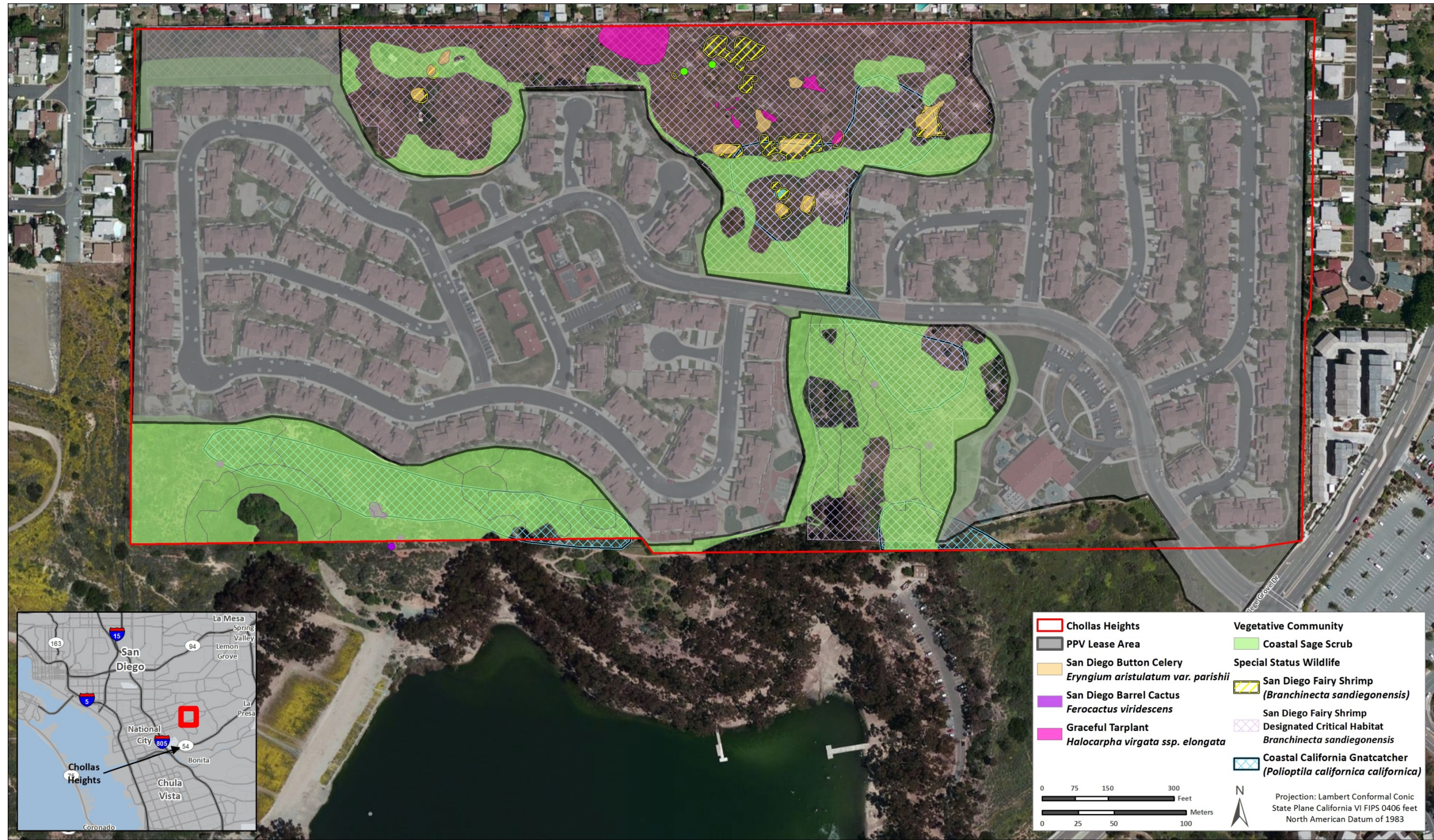


Figure 1-3: Natural Resources Constraints/Opportunities on Bayview Hills Housing Area*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.



Imagery source: Microsoft Bing Maps 2009; U.S. Navy 2011
Disclaimer: Maps do not represent legal boundaries. Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 1-4: Natural Resources Constraints/Opportunities on Chollas Heights Housing Area*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.



Figure 1-5: Natural Resources Constraints/Opportunities on Eucalyptus Ridge Housing Area*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.



Figure 1-6: Natural Resources Constraints/Opportunities on Home Terrace Housing Area*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.

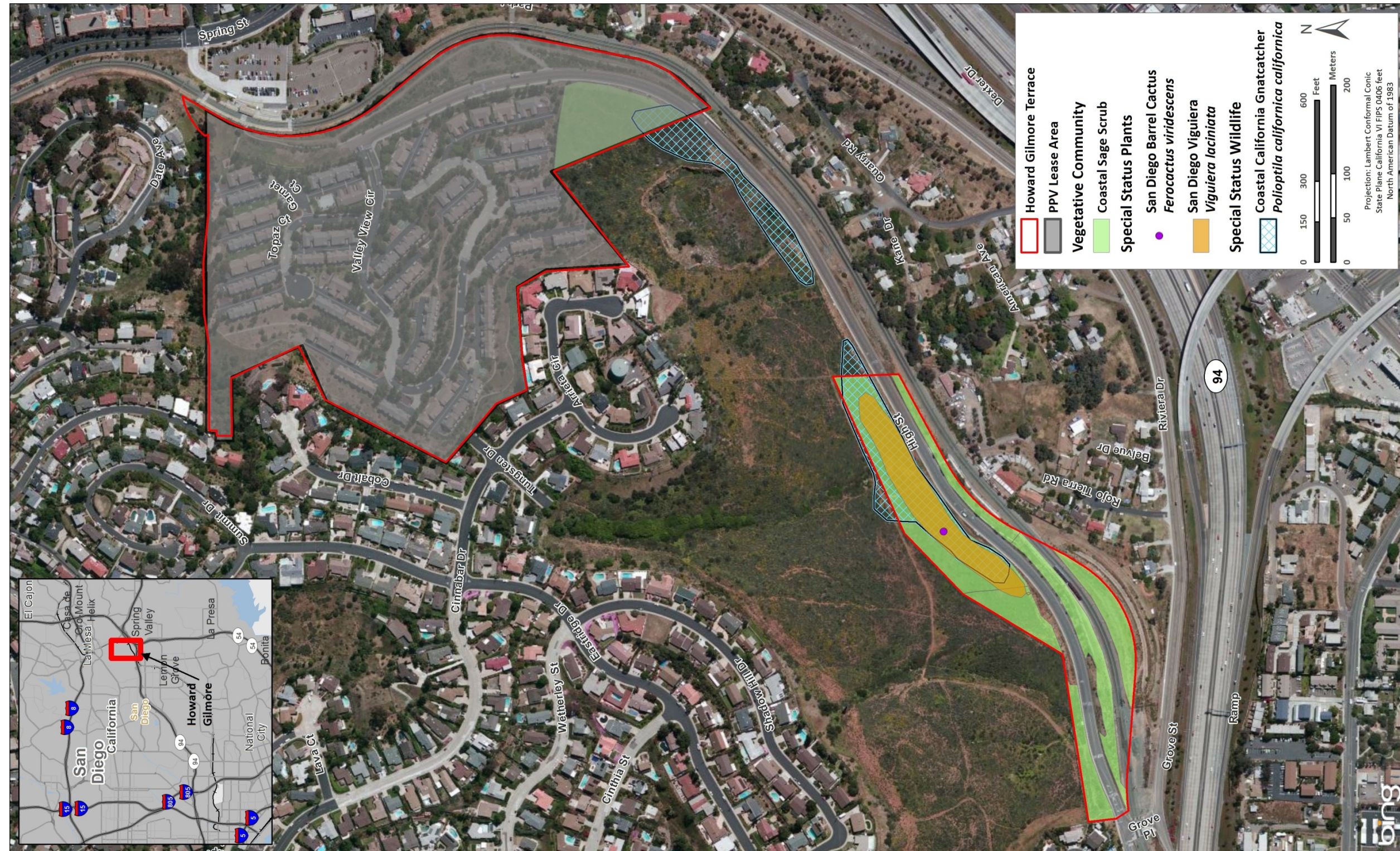


Figure 1-7: Natural Resources Constraints/Opportunities on Howard Gilmore Housing Area*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.

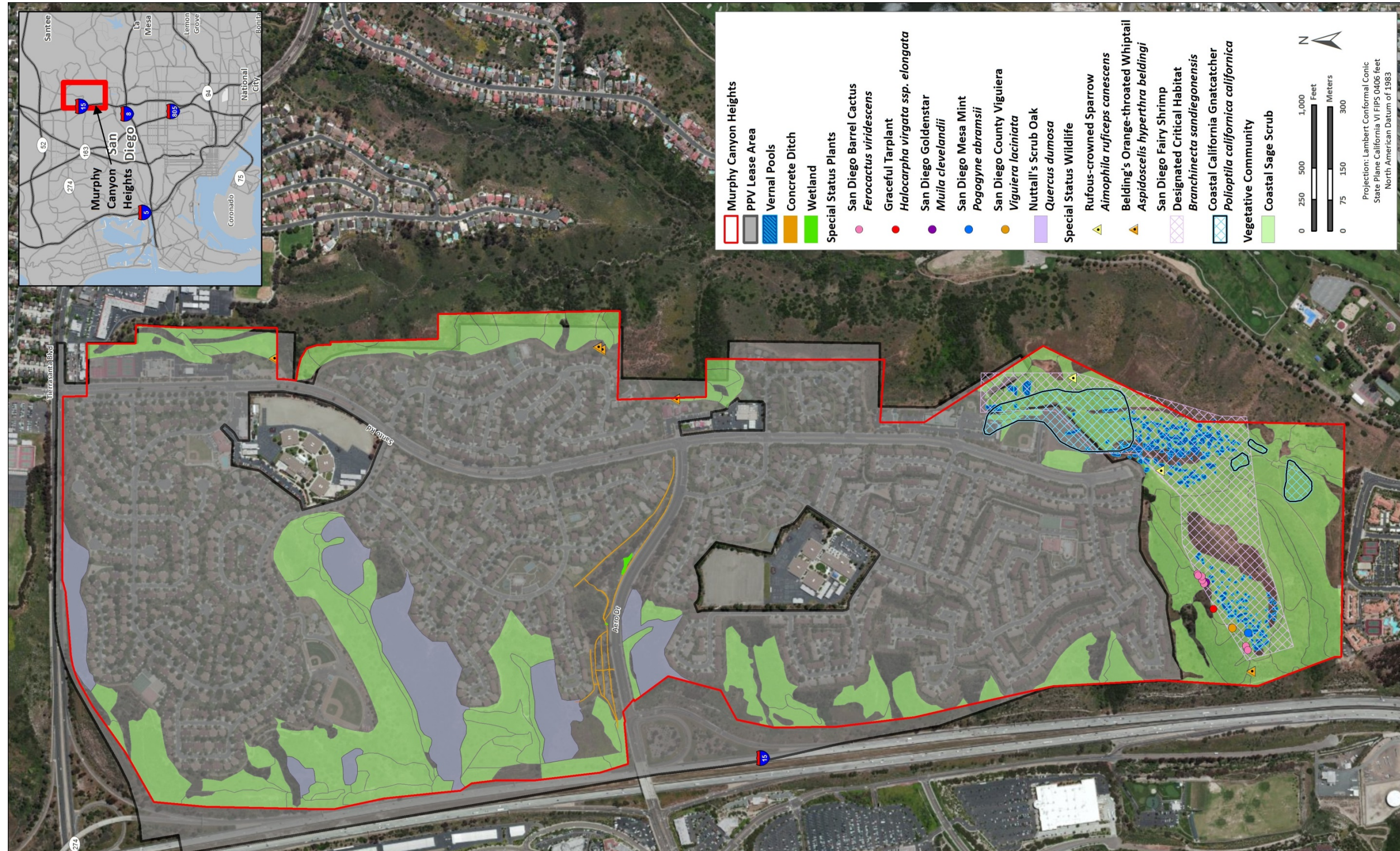


Figure 1-8: Natural Resources Constraints/Opportunities on Murphy Canyon Heights Housing Area*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.



Figure 1-9: Natural Resources Constraints/Opportunities on Terrace View Villas Housing Area*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.

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2. Location, Military Use and Natural Resources Management

2.1 Location, History, and Military Mission

NBSD is located in San Diego County, California (see **Figure 2-1**) and is comprised of four main facilities including NBSD Main Site; Broadway Complex; MGRF; and 17 housing areas. The following sections describe in detail the location, history and mission of each facility within NBSD.

2.1.1 Naval Base San Diego, Main Site

2.1.1.1 Location and Facilities

NBSD Main Site is located on the eastern edge of San Diego Bay, bordered by the cities of San Diego to the north and east and National City to the south and east in San Diego County, and is situated about 3 miles southeast of the San Diego city center and 10 miles north of the U.S./Mexico International Border (U.S. Navy 2002a).

NBSD Main Site occupies a site lying east and west of Harbor Drive and occupies 1,036.5 acres (419.5 hectares) of land and 298 acres (120.6 hectares) of water extending into San Diego Bay (U.S. Navy 2010b). A 25.8-acre (10.4 hectare) compound owned by Naval Supply Center and 40 acres (16 hectares) of railroad right-of-way owned by the Atchison, Topeka & Santa Fe Railway and the Metropolitan Transit Development Board are within the NBSD boundary (U.S. Navy 2002a).

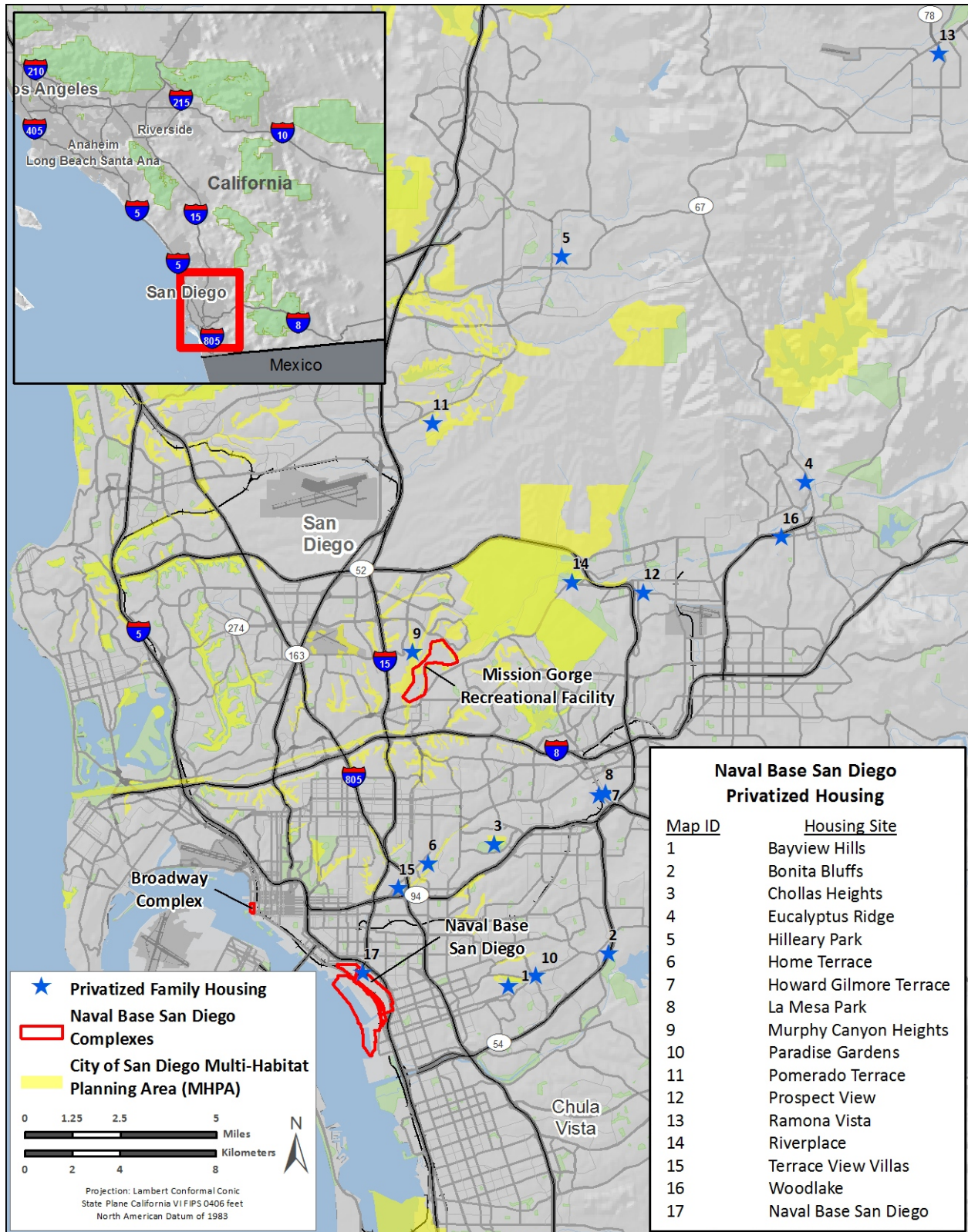
NBSD Main Site, the largest facility in the NBSD complex in terms of ships, people, and supported operations, is centrally located to meet the administrative mission of NBSD to coordinate between joint operations and the functioning of regional service centers such as Naval Supply Command, Navy Public Works Center, and the regional commissary store (U.S. Navy 2005a). NBSD is highly developed and has few natural resources, other than two heron and egret nesting rookeries, Paleta Creek, Chollas Creek, and general landscaping on the community facilities complex, which is the area of NBSD Main Site east of Harbor Drive (also referred to informally as the “dryside”) (U.S. Navy 2005a). The bayfront area (west of Harbor Drive), is highly industrialized and lies along the San Diego Bay. Chollas and Paleta creeks also cross NBSD Main Site (U.S. Navy 2002a) (see **Figure 4-1**).

2.1.1.2 History

The City of San Diego deeded the initial parcel of property on which NBSD was located to the United States government in 1919. It consisted of 77.2 acres (31 hectares) of upland and 21 acres (8.5 hectares) of marshlands/tidal flats.

On February 15, 1921, the U.S. Navy acquired the land, buildings, and some machinery. Later that year, the *USS Prairie*, commanded by Commander H. N. Jenson, was ordered to the area to take over and prepare the site for receipt of destroyers that were slated for decommissioning. On February 23, 1922, General Order 78 created U.S. Destroyer Base San Diego. The primary mission of the Destroyer Base was the upkeep and preservation of 39 decommissioned World War I destroyers.

Further growth was slow until the late 1930s and the 1940s, during which time the remainder of the installation was built in a succession of land acquisition and facility development programs. These included the Naval Supply Center’s Naval Station Facility, the Fleet Training Center and Service School Command training facilities, waterfront facilities, a boat shop, a graving dry-dock, a fleet exchange, and administrative facilities.



Source: ESRI StreetMap USA 2007, U.S. Navy 2010b, U.S. Navy 2011, SanGIS 2003.
 Disclaimer: Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 2-1: Naval Base San Diego Regional Location

To reflect its expanding and changing role, the U.S. Destroyer Base was renamed U.S. Naval Repair Base San Diego in 1943. During World War II, more than 43,000 officers and enlisted men were received and trained for repair duties. During the same period, 5,117 ships were sent to the Naval Repair Base for overhaul and maintenance, including the repair of battle damage. Approximately 2,190 of these ships were dry-docked, using facilities previously established at the Naval Repair Base.

The present “South Pier Area” was acquired and developed in the middle 1940s. The end of World War II was imminent and piers were needed to mothball a reserve fleet of decommissioned ships.

Almost the entire east side of the station was built during the 1940s, including the Navy Exchange and Commissary complex, the “Brooklyn Barracks” unaccompanied personnel housing compound, a family housing tract known as “Public Quarters No. 1,” and a magazine area for storage of fleet ammunition. The quarters and magazines have since been demolished to provide sites for modern training, health care, and personnel support facilities.

In 1946, the name of the Naval Repair Base was changed, to Naval Station San Diego. Locally, NBSD is also referred to as 32nd Street or Naval Station. The mission of Naval Base San Diego was expanded to support the ships of the Pacific Fleet, with the primary mission of providing logistical support, including repair and dry-docking to locally based units. On June 3, 2008, per OPNAVNOTE 5400, the official name of the Naval Station San Diego was changed to Naval Base San Diego.

2.1.1.3 Mission and Land Use

The mission of the Naval Base San Diego, Main Site is to provide appropriate logistical support for the operating forces of the U.S. Navy and for dependent activities and other commands as assigned.

Naval Base San Diego is homeport to 59 ships and hosts 120 shore and afloat tenant commands. The total on-base population is 20,000 military personnel and 6,000 civilians (U.S. Navy 2012b).

Commander, Pacific Fleet Instruction (CINCPACFLTINST) 5450.24k defines the mission of Naval Base San Diego as “is to deliver the highest standard of support and quality of life services to the fleet, fighter, and family.” This mission is outlined in more detail below (U.S. Navy 2002a):

1. Operations (including transportation, communications, security, port and harbor services, harbor and installation defense, shore patrol and local law enforcement liaison, and detention and correction services) and training.
2. Administration (including public affairs, legal services, management engineering/industrial management support, comptroller, and accounting and fiscal services).
3. General engineering support and mission operations (includes fire protection and Station maintenance).
4. Personnel support (housing, welfare, recreation, exchanges, commissaries, dependent activity support).
5. Medical and dental services.
6. Material maintenance.
7. Real property maintenance and utility operations.
8. Supply operations.

2.1.2 The Broadway Complex

2.1.2.1 Location and Facilities

The Broadway Complex is located in downtown San Diego at 937 North Harbor Drive.

The Broadway Complex is an administrative facility located on government owned land near the downtown San Diego waterfront in San Diego, California (see **Figure 5-1**). The facility is highly urbanized and consists of office buildings and parking lots. Natural resources at the Broadway Complex are limited to minor landscaping around the facility (U.S. Navy 2002a).

2.1.2.2 History

The Broadway Complex includes buildings that were constructed between the early 1920s and the mid-1940s and the Navy Pier which in 2004 became the home of the *USS Midway*, a World War II era aircraft carrier now serving as a public museum. The Navy Pier is no longer managed under NBSD (SDUPD 2003).

2.1.2.3 Mission and Land Use

The Complex houses the Commander, Navy Region Southwest (CNRSW), NAVFAC SW, Personnel Support Activity, Reserve Readiness Command Southwest, NAVSUP Global Logistics Support (GLS), NAVSUP Fleet Logistics Center (FLC) San Diego, and Navy Computer and Telecommunications Station, and several other Navy administrative activities, and is central to other military installations including Naval Base Point Loma, Naval Base Coronado, and NBSD (Pers. Comm. A. Wastell 2012, U.S. Navy 2006b).

2.1.3 Mission Gorge Recreational Facility

2.1.3.1 Location and Facilities

MGRF is a 448-acre (181-hectare) facility located north of the community of Allied Gardens in the city of San Diego along the San Diego River. The facility is located east of Interstate 15, north of Friars Road, west of Mission Gorge Road, and south of Marine Corps Air Station Miramar (U.S. Navy 2002a).

The majority of the land use at MGRF consists of two 18-hole golf courses and a driving range (see **Figure 6-1**). Support facilities such as a dance pavilion, snack bar, and coffee shop are located within this area. Additional recreational facilities consisting of tennis and volleyball courts, baseball fields, and a recreational vehicle camping area are located on the southwestern edge of the MGRF.

The facility primarily consists of cultivated or landscaped habitat with various ornamental trees and shrubs planted on the golf course and surrounding areas. Natural habitat on-site includes riparian woodland along the San Diego River and coastal sage scrub adjacent to the golf course on the north and northwestern edges of the property. Most of the natural habitat on-site either occurs within the San Diego River or along very steep slopes (25 to 50 percent or greater) and is not suitable for development.

2.1.3.2 History

Admiral Baker Field, part of what is now referred to as MGRF, first became a part of Naval Station San Diego (now one of the NBSD major complexes) in 1956. The history of its land use prior to that time is linked to that of adjacent lands that were at one time part of Camp Elliott. Camp Elliott was established

in 1941 as a U.S. Marine Corps facility to serve as training and transfer camp. Lying immediately north and northeast of Admiral Baker Field are the ordnance impact areas of historic Camp Elliott. For more than 40 years, the Camp was used for artillery, anti-aircraft, and machine gun firing practice. As a result of those military training exercises, munitions and ordnance (including unexploded ordnance) remained on the property when the Camp was closed in 1961.

Admiral Baker Field was a portion of U.S. Naval Training Command Camp Elliott before it became a Naval Recreation Center. The operation and maintenance of Admiral Baker Field was assigned to the Commanding Officer of NBSD on July 1, 1956. Since that time it has been used as a recreational center for NBSD, with most of its available land devoted to a golf course.

2.1.3.3 Mission

The mission of MGRF is to provide for maximum participation in recreational programs that are designed to enhance physical, mental, and social well-being of all active duty personnel and their dependents.

2.1.4 Navy Housing Areas

The Department of the Navy (Navy) has entered into certain ground leases on Government-owned land, pursuant to the Military Housing Privatization Initiative (MHPI). The United States Congress enacted the MHPI authorities on February 10, 1996, as part of the National Defense Authorization Act for fiscal year 1996. MHPI is codified at Title 10 United States Code, Sections 2837 and 2871 et seq. Congress made the MHPI authorities permanent in 2004. Under the MHPI authorities, the Department of Defense can partner with the private sector to revitalize certain housing for military members and their families, including by conveyance or leasing of property or facilities. The Navy refers to projects undertaken under the MHPI authorities as Public/Private Venture (PPV) projects.

Pursuant to the MHPI authorities, the Navy has entered into two current ground leases with respect to NBSD, whereby Government-owned land is leased out to a Limited Liability Company (Lessee) for military housing purposes. As noted above, there are two relevant, current ground leases for NBSD PPV projects: (1) The Second Amended and Restated Real Estate Ground Lease, dated October 1, 2007, by and between the United States of America, acting through the Department of the Navy, as Lessor, and San Diego Family Housing, LLC (SDFH), as Lessee (lease referred to as the “SDFH Ground Lease”); and (2) The Real Estate Ground Lease and Conveyance of Improvements, dated December 15, 2006, by and between the United States of America, acting through the Department of the Navy, as Lessor, and California Naval Communities LLC (also referred to as “Clark”), as Lessee (lease referred to as the “Pacific Beacon Ground Lease”).

The SDFH Ground Lease has an end date of July 31, 2051. The NBSD PPV neighborhoods covered in the subject ground lease are as follows: Bayview Hills, Bonita Bluffs, Chollas Heights, Eucalyptus Ridge, Hilleary Park, Home Terrace, Howard Gilmore, La Mesa Park Townhouses, Murphy Canyon Heights, Naval Base San Diego Quarters A and B (within the NBSD fenceline), Paradise Gardens, Pomerado Terrace, Prospect View, Ramona Vista Apartments, Riverplace, Terrace View Villas, and Woodlake. This SDFH Ground Lease covers the NBSD PPV neighborhoods listed above, as well as numerous other leased PPV neighborhoods throughout California and Nevada. Certain provisions of the subject ground lease are relevant to this INRMP, as they either directly or indirectly address the issue of natural resources.

The Pacific Beacon Ground Lease has an end date of December 14, 2056. All land/improvements covered by this lease are located on board Naval Base San Diego (within the fenceline). Specifically, this Pacific Beacon Ground Lease leases certain land to the Lessee, and conveys certain improvements to the Lessee. These improvements include a residential structure known as “Palmer Hall,” all other

structures/buildings/fixtures located on the leased land as of the time of lease execution, and improvements to be constructed by the Lessee (which have since been constructed). These improvements which were constructed by the Lessee include a residential suite-style apartment complex for unaccompanied military service members, consisting of three towers with 941 suite-style apartments and various corresponding amenities (i.e. fitness centers, swimming pool). Per the lease terms, the Government retained fee simple title to the leased land, but the improvements conveyed by the Lease (including the existing buildings and newly constructed buildings) belong to the Lessee, and are to be abandoned in place and become the property of the Government upon the termination/expiration of the Ground Lease. Certain provisions of the Pacific Beacon Ground Lease are relevant to this INRMP, as they either directly or indirectly address the issue of natural resources. There are 17 PPV Military Family Housing communities that came under NBSD jurisdiction in 2006 (see **Figures 7-1** and **Table 7-1**).

2.2 Other Operations and Activities

2.2.1 Transportation and Utilities

NBSD and Broadway Complex are located in downtown San Diego close to Interstate 5 (I-5), and can be accessed by an intercity and commuter rail line, the San Diego Trolley, Coaster Commuter Rail, Amtrak Intercity Rail, and local/express buses (U.S. Navy 2006b). MGRF is between Interstates I-15 and I-8 and can be accessed off of Friars Road (U.S. Navy 2002a). The Naval Housing Facilities are located throughout the metropolitan San Diego area.

Electricity and natural gas are purchased from the San Diego Gas & Electric Company (SDG&E) for all NBSD facilities. Power is transmitted primarily through SDG&E's Division and Kidd substations to 11 substations located throughout the Navy properties (U.S. Navy 2005b). Distribution lines that service both NBSD and the Broadway Complex are located underground, including the pier areas (U.S. Navy 2005b). The Southern California Gas Company is the primary supplier of natural gas to SDG&E, and based on current land uses, the average use of natural gas in the downtown planning area is estimated to be 150,079 cubic meters (5.3 million cubic feet) per day (U.S. Navy 2006b).

The San Diego Metropolitan Wastewater Department (MWW) system provides treatment of all wastewater from NBSD. MWW manages the Metropolitan Sewerage System, which serves the Greater San Diego population of approximately 2.2 million people. The 16 cities and districts that comprise this region generate approximately 691 million liters (180 million gallons) per day of wastewater (U.S. Navy 2006b). The Navy Public Works Center (PWC) maintains and operates the extension of the MWW system on NBSD (U.S. Navy 2005a).

Potable water is supplied to NBSD through the San Diego County Water Authority (SDCWA), a member agency of the Southern California Metropolitan Water District (U.S. Navy 2005b). The metropolitan San Diego area consumes an estimated 300 million cubic meters (243,000 acre-feet) of water per year (U.S. Navy 2006b). In 2000, the SDCWA developed an Urban Water Management Plan to assess future water demand and utilizes demographic data and regional growth forecasts (U.S. Navy 2006b). The analysis predicted that projected water demand would not exceed water supply for the County through the year 2020 (U.S. Navy 2006b).

2.2.2 Waterfront Operations

The Coastal Zone Management Act (CZMA) of 1972 (16 USC Section 1451) encourages coastal states to be proactive in managing coastal zone uses and resources. CZMA established a voluntary coastal planning program; participating states submit a Coastal Management Plan (CMP) to NMFS for approval. Under the CZMA, Federal agency actions within or outside the coastal zone that affect any land or water

use or natural resource of the coastal zone shall be carried out in a manner that is consistent to the maximum extent practicable with the enforceable policies of the approved state management programs. Each state defines its coastal zone in accordance with the CZMA. Excluded from any coastal zone are lands the use of which by law is subject solely to the discretion of the Federal government or which is held in trust by the Federal government (16 USC 1453). Accordingly, although NBC land is Federal government property and, therefore, excluded from the coastal zone, the U.S. Navy nonetheless conducts tests as part of its determination of an action's effects for purposes of Federal consistency review under the CZMA, to factually determine whether that action (even if conducted entirely within a Federal enclave) would affect any coastal use or resource. As this INRMP Revision is a programmatic document, no consultation with the CCC is required at this time. There are, however, specific actions/projects discussed within this INRMP Revision for possible future implementation that may require additional environmental effects analysis, per NEPA, prior to being implemented. If and when such projects are to be carried forward, the U.S. Navy would engage in consultation with the CCC to the extent necessary and appropriate under the CZMA.

In California, the CCC and local governments have the responsibility of managing California's coastal resources. The California Coastal Act is the center of California's CMP, which was certified in 1978. Other legislation guiding the program can be found in Proposition 20 (Coastal Initiative 1972), the California Coastal Plan (1975), the McAtteer-Petris Act, the Suisun Marsh Preservation Act, and the Conservancy Act. The enforceable policies of the California CMP can be found in Chapter 3 of the California Coastal Act and include public access, recreation, marine environment, land resources, development, and industrial development.

A General Consistency Determination for repair and maintenance activities and other types of general activities on naval bases in the San Diego Bay area was developed and approved by the CCC in August 1998 (Consistency Determination No. CD-070-98). The periodic replacement and repair of piers and shoreline structures was found to be consistent with the marine resource, habitat, access, recreational, and shoreline structure policies of the California CMP. The Navy recognizes that activities would occur at NBSD and the Navy Broadway Complex including maintenance to piers, quaywalls, small craft berthing facilities, fueling facilities, armories, and waterfront operations buildings, may have potential impacts to coastal resources. All coastal resources are managed under the San Diego Bay INRMP. A more specific description and management of the marine habitats in the San Diego Bay are discussed in the San Diego Bay INRMP (*Port of San Diego*), which was developed in cooperation between the Navy and San Diego Unified Port District (SDUPD) along with their government and non-government partners.

NBSD manages 1.6 miles (2.6 kilometers) of shoreline that contain 13 berthing piers, one mole pier, two channels, and various quaywalls that have an aggregate capacity of 29,425 feet (9 kilometers). The Broadway Complex is adjacent to the San Diego Bay waterfront and is surrounded by a mix of urban uses, including the USS *Midway*, several piers, and a cruise ship terminal. A General Consistency Determination for repair and maintenance activities in naval bases in the San Diego Bay area (Consistency Determination No. CD-070-98) for general types of activities was developed and approved by the California Coastal Commission in August 1998. The periodic replacement and repair of piers and shoreline structures was found to be consistent with the marine resource, habitat, access, recreational, and shoreline structure policies of the California Coastal Management Program.

2.2.3 Security and Perimeter Buffer Requirements

In January 2009, the DoN revised guidance for the *Navy Physical Security and Law Enforcement Program* (OPNAVINST 5530.14E). The revised policy states the "objective of the Navy Security Program is to safeguard personnel, property, facilities and materiel and to enforce laws, rules, and

regulations at Navy installations, activities, and operational commands.” To ensure physical security at U.S. Navy installations, the instruction requires installations to perform the following (DoN 2009):

- Conduct physical security surveys annually
- Conduct daily security checks
- Conduct security inspections for all critical areas at least every two years
- Conduct a vulnerability assessment of all housing areas, facilities and other activities annually
- Conduct threat assessments through coordination with local, state and other Federal agencies
- Establish a risk management process
- Develop an education program on security
- Maintain an external entry and restricted area access control program to control security to and from the installation
- Employ barriers and patrol craft to ensure water boundaries are protected.

2.2.4 Installation Restoration Sites

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) was passed in 1980 (also known as Superfund) and the Superfund Amendments and Reauthorization Act (SARA) passed in 1986 to address cleanup of abandoned or uncontrolled hazardous waste sites. The SARA legislation created the DON’s Environmental Restoration Program (ERP) to address hazardous waste sites on military properties. The mission of the ERP is to identify, characterize, and clean up contamination on military installations resulting from formerly accepted use and disposal practices of hazardous waste in order to protect human health and the environment. The Navy’s ERP was established to characterize, clean up, and control releases from past hazardous waste disposal operations. The ERP is carefully coordinated with Federal, state, and local environmental agencies during each step of the process. Depending upon the circumstances, ERP sites are identified, investigated, and cleaned up in accordance with RCRA, CERCLA, or with an integrated approach based on both laws.

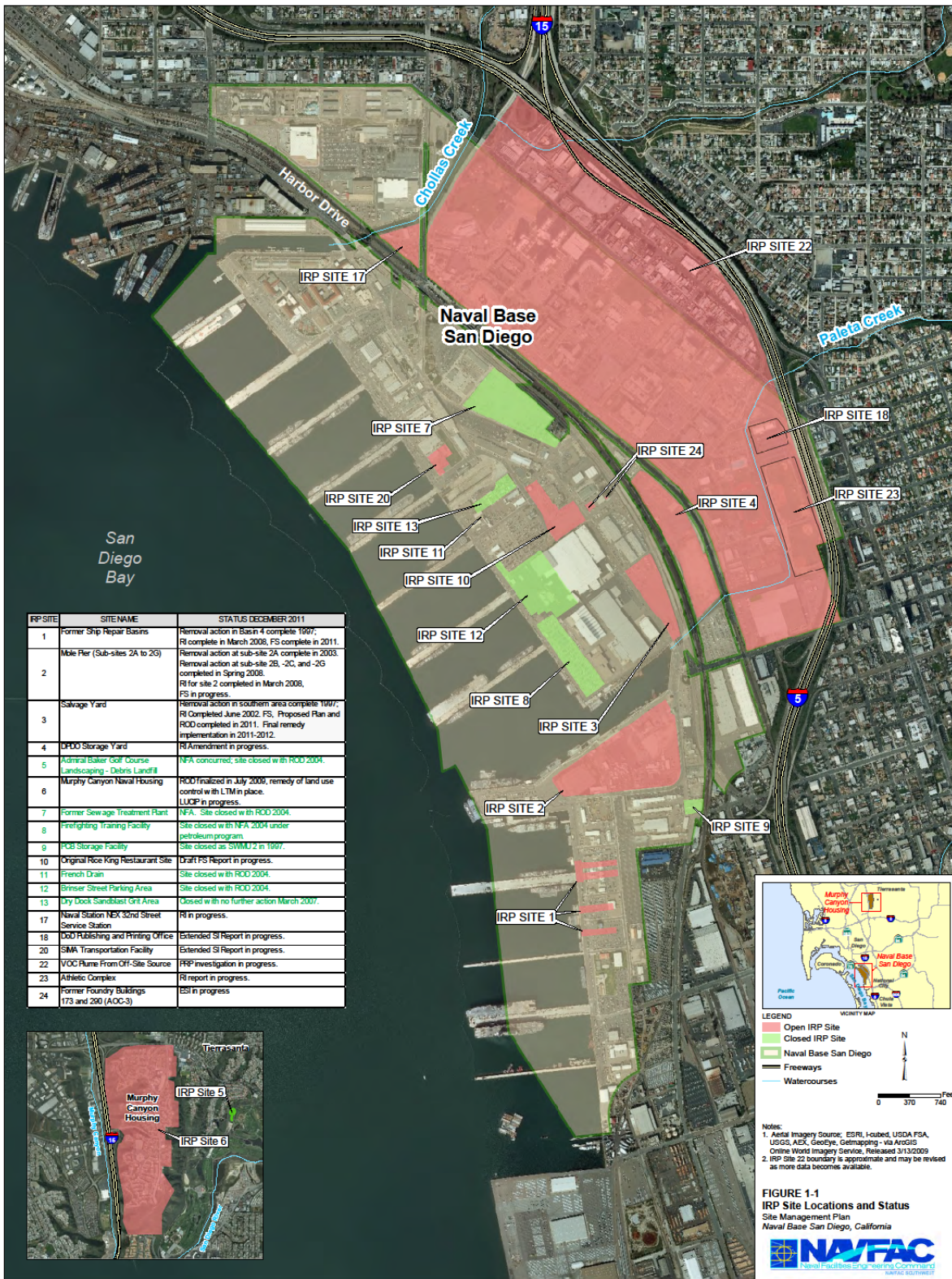
When appropriate, the regional or installation's natural resources management staff will help the Installation Restoration Program Remedial Project Manager (RPM) identify potential impacts to natural resources caused by the release of these contaminants (U.S. Navy 2006a). NAVFAC SW will also participate, as appropriate, in the ERP decision making process by communicating natural resources issues on the installation to the RPM, attending Restoration Advisory Board meetings, reviewing and commenting on ERP documents (e.g., Remedial Investigation, Ecological Risk Assessment), and ensuring that response actions, to the maximum extent practicable, are undertaken in a manner which minimizes impacts to natural resources on the installation.

As of 2011, 24 active Environmental Restoration sites (see **Table 2-1** and **Figure 2-2**) were identified for NBSD. Of these 24 sites, 8 (ERP Sites 3, 5, 7, 8, 9, 11, 12, and 13) have been closed or require no further action. ERP Sites 14, 15, 16, and 19 were never officially established because these sites were termed Solid Waste Management Units (SWMU’s) under the RCRA before being implemented in the ERP. The Navy has also identified 30 SWMUs and 2 Areas of Concern. These 30 SWMU sites have since been closed with Regulatory concurrence.

The remaining ERP sites (ERP Sites 1, 2, 4, 6, 10, 17, 18, 20, 22, 23, and 24) continue under various stages of investigation and remedial action (NBSD 2011) and will remain open until the nature and extent of contamination is fully characterized, or the necessary clean up actions completed.

Table 2-1: Installation Restoration Program Sites for Naval Base San Diego

IRP CERCLA Site	Site Name	Status as of August 2011
1	Former Ship Repair Basins	Removal action in Basin 4 complete 1997; Remedial Investigation (RI) complete in March 2008, Feasibility Study (FS) in progress.
2	Mole Pier (Sub-sites 2A to 2G)	Removal action at sub-site 2A complete in 2003. Removal action at sub-site 2B, -2C, and -2G completed in Spring 2008. RI for site 2 completed in March 2008, FS in progress.
3	Salvage Yard	Removal action in southern area complete 1997; RI completed June 2008, Proposed Plan issued in December 2010. Public comment period and Record of Decision (ROD) in progress.
4	Defense Property Disposal Office Storage Yard	RI field investigation completed June 2008. RI report in progress.
5	Admiral Baker Golf Course Landscaping – Debris Landfill	No Further Action (NFA) concurred; site closed with ROD 2004.
6	Murphy Canyon Naval Housing	ROD finalized in July 2009, remedy of land use control with Long Term Monitoring (LTM) in place. Land Use Control Implementation Plan (LUCIP) in progress.
7	Former Sewage Treatment Plant	NFA. Site closed with ROD 2004.
8	Firefighting Training Facility	Site closed with NFA 2004 under petroleum program.
9	PCB Storage Facility	Site closed as Solid Waste Management Unit (SWMU) 2 in 1997.
10	Original Rice King Restaurant Site	RI report in progress.
11	French Drain	Site closed with ROD 2004.
12	Brinser Street Parking Area	Site closed with ROD 2004.
13	Dry Dock Sandblast Grit Area	Closed with no further action March 2007.
17	Naval Station Naval Exchange 32 nd Street Service Station	RI in progress.
18	DOD Publishing and Printing Office	Extended Site Inspection (SI) in progress.
20	Shore Intermediate Maintenance Activity Transportation Facility	Extended SI in progress.
22	VOC Plume from Off-Site Source	Potentially responsible party investigation in progress.
23	Athletic Complex	RI in progress.
24	Former Foundry Buildings 173 and 290 (Area of Concern 3)	Extended Site Inspection (ESI) Recommended/In Progress



Source: NBSD Site Management Plan

Figure 2-2: Installation Restoration Sites at Naval Base San Diego

Seven of the IRP sites, Sites 5, 7, 8, 9, 11, 12, and 13, have been cleaned up, closed under the IRP via a No Further Action (NFA) Record of Decision (ROD), or moved into another, more appropriate, regulatory program. The ROD for IRP Site 6, Murphy Canyon Naval Housing, was finalized in July 2009. This ROD documents the Navy's remedy (Land Use Controls with Long-Term Management) to protect human health at IRP Site 6 associated with the potential presence of munitions and explosives of concern at the site from its previous use as a military range. Twelve other sites remain open and in various phases of the CERCLA process. In addition, MRP Site 100 (Munitions in San Diego Bay Sediment) has been administratively assigned to NBSD but is not subject to the NBSD Federal Facilities Site Remediation Agreement (FFSRA) signed by the Navy and regulatory agencies (California Department of Toxic Substances Control and Water Board) on June 30, 2007.

2.2.5 Emergency Response Plans

A Facility Response Plan and over 40 business plans have been developed for NBSD facilities. These plans can be obtained from NAVFAC SW. Components of these plans include notification information for both military and nonmilitary responders, spill response strategy, evacuation plan, and the oil and hazardous substance discharge telephone report sheet.

2.3 Current and Future Land Uses

2.3.1 Tenant Commands

Table 2-2 contains a list of the major shore commands on NBSD as of 2012. The most current list of tenant activities is available through the NBSD Real Estate Office.

2.3.2 Recreation and Public Access

Recreation facilities at NBSD Main Site include a few recreational fields, gymnasiums, tennis courts, picnic areas, swimming pools, weight rooms, and a bowling alley. Recreational activities at Broadway Complex include walking, running, jogging, and bicycling on existing roadways and trails.

MGRF is entirely a recreational facility for military personnel consisting of the 36-hole Admiral Baker Golf Course, a driving range, picnic and camping areas, and various other support facilities (e.g., tennis and volleyball courts, baseball fields, and a recreational vehicle camping area) geared towards recreation and well-being of military personnel and their dependents

Although provision of public access is addressed in the Sikes Act, as amended, security concerns in the aftermath of September 11, 2001, have greatly restricted public access on DoD facilities. However, public access is granted at several of the recreation facilities discussed above.

Access to NBSD is granted by obtaining proper identification and documentation as accepted by NBSD. Examples of proper identification include an Active Duty Identification card, a DoD civilian Common Access Card (CAC), and a retired DoD Identification card.

Regular access to the NBSD requires a DoD vehicle sticker. Temporary and visitor passes are also issued by the NBSD Pass and Identification office. Visitors must be cleared through the NBSD Access Control Coordinator before a visitor pass will be issued.

Table 2-2: Naval Base San Diego Tenant Commands

Tenant Commands
Afloat Training Group Pacific
Branch Dental
Branch Medical
Defense Distribution Depot (DDD)
Expeditionary Combat Readiness Center (ECRC)
Expeditionary Strike Group THREE (ESG-3)
Fleet and Industrial Supply Center San Diego (FISCSD)
Navy Criminal Investigative Service (NCIS)
Morale, Welfare, and Recreation (MWR)
Naval Facilities Engineering Command Southwest
Naval Legal Service Office Southwest
Naval Medical Center San Diego
Naval Sea Logistics Center
Navy Commissary
Navy Exchange
Navy Lodge
Navy Marine Corps Relief Society
Navy Mobilization Processing Site San Diego
San Diego Armed Services YMCA
Southwest Regional Maintenance Center
Training Support Center

Source: U.S. Navy 2012a, Pers. Comm. M. Edson 2012

2.3.3 Agricultural Outleasing

NBSD does not lease any lands for agricultural grazing or farming.

2.3.4 Future Land Use

Changes in the existing land use pattern within the City of San Diego will occur mainly through redevelopment of existing areas to mixed-use, higher density villages and commercial districts with neighborhood and visitor-serving facilities, including additional hotel development, mostly around the downtown area. Current long-range planning efforts focus on promoting the City of Villages strategy, which encourages growth to occur in compact, mixed-use activity centers that are pedestrian friendly and linked to an improved regional transit system. Such plans include revitalizing the under-utilized waterfront corridor along North Harbor Drive, expansion of the Convention Center and cruise ship terminals, and improving multi-modal transportation options throughout the city (U.S. Navy 2010a).

An Activity Overview Plan (AOP 2006) has been developed for NBSD to define the direction of operational and support facilities in broad mission readiness, functional, and geographic terms. Once the

AOP has been finalized, projects from the final plan will be included within this INRMP. For planning, the most important aspect is to focus on those projects that may impact natural resources (i.e., those that may develop existing habitat or have an indirect effect on protected species. These types of projects will go through the NEPA process and avoidance and/or minimization will be used to ensure impacts are not significant. Therefore, together with the INRMP no significant impacts would occur to NBSD natural resources.

Future land use outside the installation and pressures from encroachment are discussed further in **Section 8.1.2**.

2.4 Government Regulatory Requirements for Natural Resources Management

2.4.1 Federal, State and Local Laws and Regulations

See **Appendix B** for a comprehensive list of Federal, state, DoD and DoN laws, regulations and guidance.

National Environmental Policy Act

The National Environmental Policy Act (NEPA, Public Law 91-190, 42 U.S.C. 4321-4347 as amended) was enacted to prevent environmental damage by ensuring that Federal agency decision makers give environmental factors appropriate weight before taking any discretionary actions. NEPA requires the preparation of a report that studies the effects of a proposed Federal agency action and evaluates whether the action “significantly affects the quality of the human environment” (42 U.S.C. 4332). Elements of the report include an analysis of project alternatives and analysis of cumulative effects on each resource topic. The analysis is used as a decision making tool on whether to proceed with the proposed action.

NBSD had developed policy to guide the site approval and project review process conducted on the installation. For further information pertaining to how NBSD complies with NEPA is discussed in **Section 8.7**.

Endangered Species Act

Section 7 of the ESA requires all Federal agencies to enter into consultation with the USFWS or the NOAA Fisheries whenever proposed actions might affect federally listed threatened and endangered species. Section 7 consultations will be initiated if warranted, otherwise, written documentation that there are no effects on federally listed species will be generated by NBSD and kept in project files. In the context of consultation under the ESA, conservation measures are voluntary actions proposed by the project proponent to minimize and avoid impacts to listed species and provide alternative or protected habitat that promote conservation.

See **Section 2.4.2** for additional information on threatened and endangered species consultation at NBSD.

Migratory Bird Treaty Act

The MBTA (16 U.S.C. 703-712) protects all migratory birds and prohibits the direct taking of migratory birds, their young, nests, and eggs, except as permitted by the USFWS. The USFWS recommends that NBSD avoid impacting birds protected under the MBTA by surveying for nesting birds in areas proposed for disturbance and if necessary, waiting until the nesting and fledging process is complete. Alternatively, the USFWS recommends conducting activities outside of nesting areas or outside of the general migratory bird-nesting season that extends from mid-February through the end of August, to help avoid direct impacts. The MBTA implements various treaties and conventions between the United States and Canada,

Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Under the Act, taking, killing, or possessing migratory birds is unlawful.

Unless permitted by regulations, the MBTA provides that it is unlawful to pursue, hunt, take, capture, or kill; attempt to take, capture, or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or receive any migratory bird, part, nest, egg or product, manufactured or not.

On March 15, 2005, the USFWS published in the Federal Register (FR 70[49]:12710-12716) a final list of the bird species to which the MBTA does not apply because they are not native to the United States and have been introduced by humans everywhere they occur in the nation. The list is required by the Migratory Bird Treaty Reform Act of 2004. The actual list of migratory birds protected by the MBTA is published in the CFR (Title 50, Part 10.13). When it became law in 2004, the Reform Act excluded any species not specifically included on the Title 50, Part 10 list from protection. In addition, DoD and the USFWS entered into a Memorandum of Understanding (MOU) in July 2006, to Promote the Conservation of Migratory Birds, in accordance with Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds (DoD 2007). This MOU describes specific actions that should be taken by DoD to advance migratory bird conservation; avoid or minimize the take of migratory birds; and ensure DoD operations other than military readiness activities are consistent with the MBTA. The MOU also describes how the USFWS and DoD will work together cooperatively to achieve these ends. The MOU does not authorize the take of migratory birds; the USFWS, however, may develop incidental take authorization for Federal agencies that complete an Executive Order (EO) MOU.

As of the date of this INRMP, there are no active MBTA permits. Refer to **Appendix F** for additional information on migratory bird management at NBSD.

Clean Water Act

Regulatory authority for Section 404 of the CWA has been delegated by the EPA to the USACE. Section 404 regulates the discharge of dredge or fill material into the waters of the U.S., including wetlands. USACE has set up the Nationwide Permit Program (NWP) to streamline the permit process for activities similar in nature and with minimal impacts. The NWP Program is re-evaluated every five years; NEPA is performed and each NWP is re-evaluated. If the thresholds determined for the NWP will be exceeded or conditions cannot be met, the NWP does not apply and the proposed action will have to be proposed as an Individual Permit. An Individual Permit requires a public notice, an alternatives analysis (the 404(b)(1) analysis), and a NEPA document specific to the proposed project. USACE is currently implementing a National policy for “no net loss of services and functions” for wetland water of the U.S.

USACE has a three step mitigation sequencing procedure MOA between the USACE and EPA, February 7, 1990). First, the project proponent must demonstrate avoidance and minimization of impacts to waters of the U.S., including wetlands to the maximum extent possible. Avoidance includes demonstrating there is no practicable alternative which would have a less adverse impact. Minimization requires consideration be given to redesigning or staging a project to reduce impacts. Compensatory mitigation is only authorized for unavoidable impacts and must replace the loss of services and functions of the waters of the U.S., including wetlands proposed for impact. Compensatory mitigation includes creation, restoration, enhancement or preservation. All impacts must be avoided or minimized before compensating mitigation will be considered. In some cases, mitigation banking is the appropriate approach to compensating mitigation (33 CFR S 320.4[r]).

All projects requiring USACE permits are reviewed by the Project Review Board. A current list of active USACE permits can be obtained from the Work Induction Board NEPA Planner.

Marine Mammal Protection Act

All marine mammals are protected by the Marine Mammal Protection Act (MMPA) of 1972, as amended. The MMPA prohibits the take (hunting, killing, capture or harassment) of marine mammals in U.S. waters and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products. The USFWS is responsible for the following marine mammals: sea and marine otter, walrus, polar bear, three species of manatee, and dugong. The USFWS may authorize and permit take (with limitations and mitigation measures) of marine mammals under their purview. Those mammals that are truly marine inhabitants, cetaceans and pinnipeds, other than walrus, are the responsibility of NMFS.

As of the date of this INRMP, there are no active MMPA consultations. A current list of active consultations can be obtained from the Work Induction Board NEPA Planner.

2.4.2 Threatened and Endangered Species Consultation

Federal agencies are required by the ESA to manage federally listed threatened, endangered, and candidate species, their habitat, or the designated critical habitat (CH) of a listed species in a manner that promotes conservation of federally listed species and is consistent with species recovery plans. ESA directs all Federal agencies to participate in conserving these species. Specifically, section 7 (a)(1) of the ESA charges Federal agencies to aid in the conservation of listed species, and section 7 (a)(2) requires the agencies, through consultation with the service, to ensure that their activities are not likely to jeopardize the continued existence of listed species or adversely modify designated critical habitats. The USFWS has jurisdiction over federally listed land and freshwater fish species, and NOAA Fisheries manages marine fish that spend their entire lives at sea and anadromous fish, which hatch in freshwater, migrate to the ocean as subadults, and return to spawn in freshwater. In some cases, the agencies split the responsibility through a joint MOU.

At NBSD, proposed projects, operations, or other actions, are scrutinized for potential impacts to federally listed species through a review process. Informal or formal consultations will be initiated if warranted, otherwise, written documentation that there are no effects on federally listed species will be generated by the natural resources manager and kept with the project files. The natural resources manager will use the installation's INRMP as a tool to identify at an early stage the potential impacts of planned Navy actions on endangered or threatened species and provide a basis for altering the action to prevent or minimize those impacts.

Impacts on the military mission: USFWS or NOAA Fisheries (or both) could require changes or minimization measures that could result in delays and additional costs. Because of this, it is imperative that the installation initiate early environmental/natural resources review of proposed actions, in order to assess risks, develop alternatives, and correctly identify minimization measures costs both in terms of time and dollars.

Table 2-3 contains a summary of Biological Opinions for NBSD.

2.4.3 Planning Jurisdictions

NBSD lies within San Diego County, California. The San Diego County Department of Planning and Land Use determines and regulates land use in the unincorporated areas within San Diego County through the Zoning Ordinance regulations. Specific parameters and regulations for land development are addressed in Section 4000 – 4920 of the San Diego County Zoning Ordinance (County of San Diego 2009). Information pertaining to San Diego County zoning regulations can be found at: <http://www.co.sandiego.ca.us/dplu/zoning/index.html>.

Table 2-3: Biological Opinions at Naval Base San Diego

Reference Number	Authoring Agency	Title	Date
1-6-93-5-33	USFWS	Biological Opinion for Construction of Eucalyptus Hills Family Housing Project (and Modification)	1993 (Modification: April 1996)
1-6-94-F-23	USFWS	Biological Opinion on Permit Application (94-00501) for Construction of Navy Family Housing at the Naval Radio Transmitting Facility, Chollas Heights, San Diego, California (#1-6-94-F-23) Modification email received on 12 March 2012 (FWS-SDG-12B0144-1210239) to conservation measure (#21) to allow use of herbicides within the Chollas Heights Vernal Pool Preserve. USFWS concurred with Navy's proposed action to allow herbicide use within the upland areas in accordance with the authorization email.	1995 (Modification 12 March 2012)
1-94-F-23	USFWS	Chollas Heights Navy Family Housing, San Diego County, California – Request for Re-Initiation of Formal Section 7 Consultation (Biological Opinion No. 1-6-94-F-23)	2002
1-6-02-F-3131.2	USFWS	Biological Opinion for Chollas Heights Navy Family Housing Erosion Control Measures, San Diego County, California (FWS Log No. 1-6-02-F-3131.2)	2003
FWS-SDG-08BO150-0810145	USFWS	Section 7 Consultation on the Child Development Center Project at the Murphy Canyon Housing Development, San Diego County, California Amendment to allow munitions and explosive of concern investigation. The USFWS concluded that the munitions and explosive of concern investigation would not adversely affect federally listed species at the Murphy Canyon Housing Development.	2009 (Amended 16 April 2010)

The City of San Diego's General Plan was updated in 2008. The General Plan also represents the individual 42 community plans that have been prepared for each major community. The update to the General Plan includes plans to update each community plan. Most relevant to the naval facilities is the Centre City (downtown). The Centre City Community Plan forecasts significant growth by 2030, including an increase in population from 27,500 to 90,000 (227 percent growth) and an increase in employment from 74,500 to 167,700 jobs (125 percent growth) (U.S. Navy 2010a).

Other than downtown, City of San Diego land uses surrounding the naval facilities are not anticipated to change. Zoning consists of primarily low to high density residential and neighborhood commercial uses.

2.5 Achieving Success and No Net Loss of Military Mission

Implementation of this INRMP by NBSD will ensure that natural resources will continue to support the NBSD mission while remaining compliant with Federal and state laws and regulations. Supporting the elements contained within this INRMP will ensure that mission activities are uninterrupted and future operations, development, and redevelopment activities are conducted in an environmentally sensitive way.

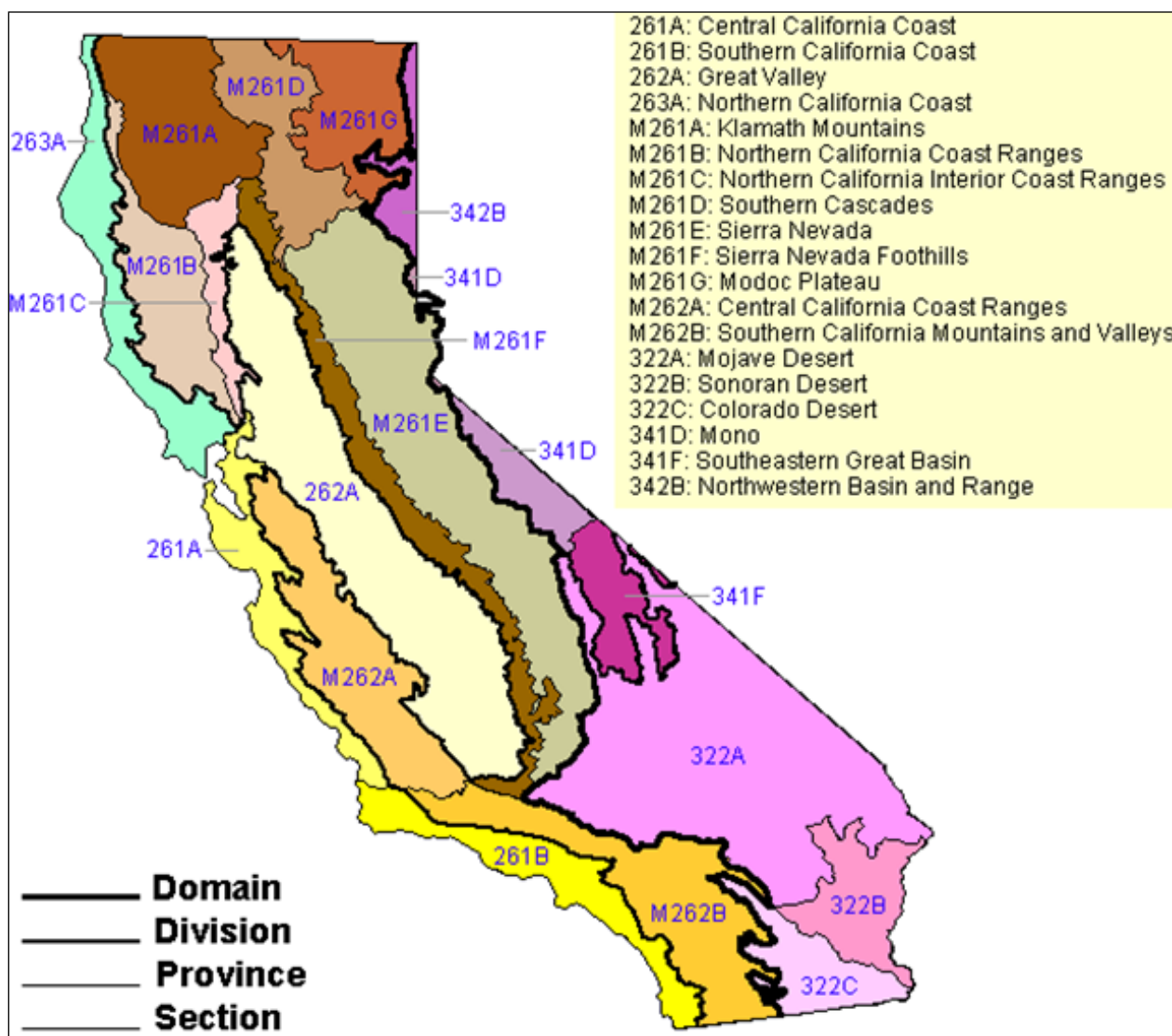
The INRMP goal, objective, and strategies may be revised over time to reflect changing missions and environmental conditions. Any future changes in mission, training activity, or technology should be analyzed to assess their impact on natural resources and compliance with applicable laws. As new installation plans and DoN guidance are developed, they will be integrated into this INRMP.

The installation is achieving a no net loss in the ability to provide logistical support for the operating forces of the U.S. Navy through the implementation of the NBSD INRMP. NEPA documentation and Consultation under Section 7 of the Endangered Species Act have been completed to allow for continued support of Navy Operations. Due to the number and distribution of protected species on NBSD, natural resources management strategies will continue to be needed to support current and future logistical support and facilities projects.

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3. Regional Ecological Setting

NBSD lies within the Mediterranean Ecosystem Division (Ecological Unit [EU] 261) of the Humid Temperate Ecosystem Domain (EU 200) (see **Figure 3-1**) (Bailey 1995). The South Coast Region of EU 261 is characterized with average temperatures ranging from 46 to 68 degrees Fahrenheit. Annual rainfall on NBSD averages 9.5 inches (CNM 2011); most of this precipitation occurs between November and early April. Humidity averages approximately 70 percent. Days are warm and sunny and nights moderate, with warm summers and mild winters. Prevailing northwest winds are moderated by the Pacific Ocean. Seasonal Santa Ana winds bring hot winter winds from the east. In addition, this region is recognized as one of the world’s hotspots for fauna diversity (CDFG 2007). The region is home to 476 vertebrate animal species, which is approximately 38 percent of all the vertebrate species found in California. The coastal California area is also a major migration route for both water and land birds (Bailey 1995).



Source: Bailey 1995

Figure 3-1: California Ecosystem Division

NBSD also lies within the California Coastal Chaparral Forest Shrub Province (CCCFSP) that is characterized by discontinuous coastal plains, low mountains, interior valleys, and land surface forms (Bailey 1995). The CCCFSP is adjacent to the Pacific Ocean, ranging from San Francisco to San Diego. Elevation ranges from mean sea level (MSL) to 2,400 feet and covers approximately 0.3 percent of the United States, or 10,300 square miles (Bailey 1995). Soils are characterized as mostly Alfisols and Mollisols, which have very low acidity and are quite fertile when the region is not experiencing drought conditions (Bailey 1995).

3.1 Ecological Drivers

Ecological drivers are environmental factors that exert a major influence on the fitness of individual organisms and their populations, and help constitute the physio-chemical template of an ecosystem (Winters et al. 2004). Environmental factors such as, geology, glacial history, climate or precipitation regime, flow regime and stream gradient determine the natural form and function of environments, such as aquatic, riparian, and wetland ecosystems. Ecological drivers control physical features such as land slope and aspect, stream form and gradient, thermal and moisture regimes, soil depth and fertility, and stream substrate and chemistry that constrain biological composition and processes (Winters et al. 2004). For example, combinations of ecological drivers can be analyzed to provide information on the landscape structure, which may be conducive to the presence and abundance of aquatic, riparian, and wetland resources (Winters et al. 2004).

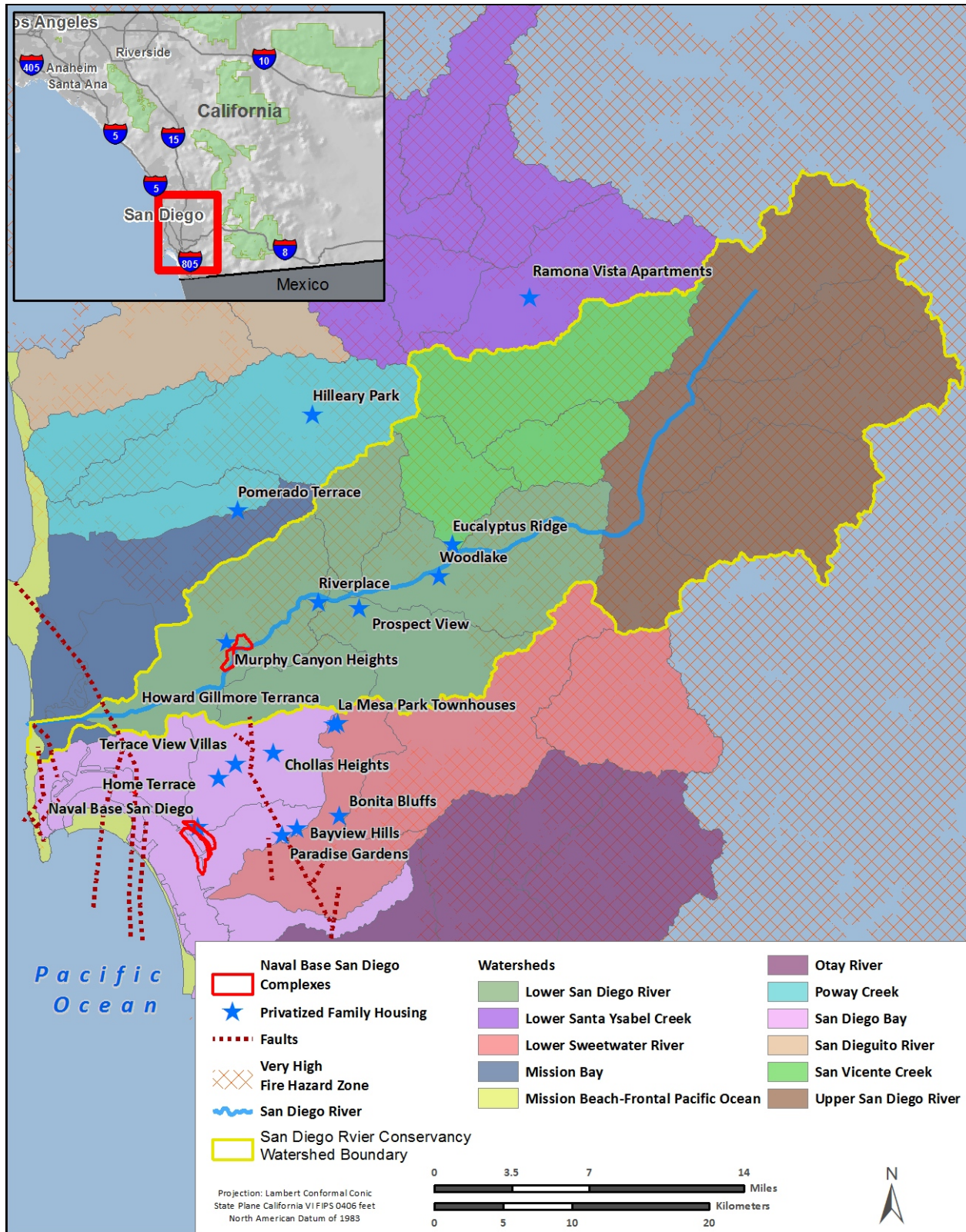
3.1.1 Faults and Seismicity

Several seismic fault lines emerging from three main fault zones, Rose Canyon, La Nacion and Point Loma, are beneath San Diego County and NBSD (see **Figure 3-2**) (U.S. Navy 2002a). While each of these fault lines are considered potentially active and the potential for severe earthquakes in the county exists, no historic ground surface ruptures or earthquakes have been recorded. The International Conference of Building Officials assigned San Diego County with a Seismic Zone 3 rating, and the NAVFAC Design Manual 2 assigned a Zone 4 rating (U.S. Navy 2002a).

Hazards associated with fault activity include surface fault rupture, strong ground motion or shaking and liquefaction (where the soil shakes until it is unstable). Liquefaction can result in structural damage or settling. Artificial fill, Holocene (Recent) fluvial or water transported deposits, and Holocene estuarine deposits are three types of deposits found locally that are most susceptible to the hazards of liquefaction. Other results of fault activity may include tsunamis, which are powerful, high velocity waves that can surge through low-lying coastal areas, and seiches, which are earthquake-induced waves occurring in a confined or embayed body of water. The largest recorded tsunami in San Diego Bay occurred in 1960 and had a recorded height of 4.6 feet (1.4 meters). Potential seiches in San Diego Bay have been estimated to have maximum heights between 6 and 12 feet (1.8 to 3.7 meters) (U.S. Navy 1998).

3.1.2 Water Resources

The San Diego Region experiences a Mediterranean climate, and precipitation follows a strong seasonal pattern. More than 90 percent of the annual precipitation typically occurs during the 6-month period of November through April. Likewise, the majority of evaporation, approximately 80 percent, occurs during the summer and autumn months and ranges from approximately 3.7 feet per year in coastal valleys to more than 4.2 feet per year in inland valleys (RWMG 2007).



Source: ESRI StreetMap USA 2007, SanGIS
 Disclaimer: Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 3-2: Naval Base San Diego Regional Setting

The San Diego Region is comprised of eleven parallel and similar hydrologic units that discharge into coastal bays, estuaries, lagoons, and the Pacific Ocean (RWMG 2007). Precipitation and streamflows are highly seasonal with approximately 90 percent of the Region's streamflow occurring from December through May. Groundwater, inland surface waters, and coastal waters within the Region support a wide variety of water supply uses, recreational uses, and important ecosystems and habitats (RWMG 2007).

Regional water resources are comprised of surface water in the form of streamflow and coastal waters, and groundwater driven by localized alluvial aquifers (semi-consolidated, or consolidated sediments, and fractured rock) (RWMG 2007). Surface water within the region is characterized by streamflow (primarily driven by precipitation runoff), accounting for the majority of surface flow in streams and rivers, and coastal waters which support wildlife habitats, endangered species, and recreational uses. Groundwater resources support regional municipal, agricultural and industrial processes. In addition, riparian habitat and groundwater dependent vegetation are known to exist in the Region (RWMG 2007).

The U.S. Geological Survey (USGS) and U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) developed *Federal Guidelines, Requirements, and Procedures for the National Watershed Boundary Dataset*, which establishes interagency guidelines, requirements, and procedures that created a national, consistent, seamless, and hierarchical hydrologic unit dataset based on topographic and hydrologic features across the United States (USGS and USDA NRCS 2009). This Watershed Boundary Dataset (WBD), at a 1:24,000 scale in the conterminous United States, consists of digital geographic data that include two additional levels of detailed hydrologic unit boundaries nested within existing or modified 1:250,000-scale hydrologic units. In 2009, the WBD was revised based on NRCS guidance entitled *Federal Standard for Delineation of Hydrologic Unit Boundaries, Version 2.0*, dated October 1, 2004, and through contributions of the WBD Technical Support Team, as requested by the Subcommittee on Spatial Water Data.

According to the revised WBD, NBSD lies within the Laguna-San Diego Coastal Basin 180703 (3,860 square miles) of the Southern Subregion 1807 (11,100 square miles), which is further located in the California Region 18 (135,960 square miles). The Laguna-San Diego Coastal Basin drainage system is further defined by eleven hydrologically connected watersheds stemming from the Moro Canyon drainage basin near Laguna Beach to the California-Baja California international boundary, and ultimately discharging into the Pacific Ocean (see **Figure 3-2**).

3.1.3 Fire

Wildfire is a natural and important ecological process in the South Coast that allows vegetation to grow and store energy via biomass production (CDFG 2007). Growth is restricted by the availability of other resources, particularly precipitation, and energy stored as vegetative biomass that is released as it is consumed by herbivores, detritivores, and fire (Millington 2003). Widespread wildland management practices, as well as increases in human-caused wildfires, have altered fire regimes, and in some cases caused dramatic changes in regional habitats. Efforts to establish fire regimes that mimic historical fire patterns and frequencies, while also minimizing loss of property and life, are important to maintain and restore wildlife habitat. Dry conditions, along with annual hot, dry Santa Ana winds, make the San Diego Region's ecosystems fire-prone (CDFG 2007).

The South Coast has experienced several drought years within the last decade, which has left the regional ecosystem especially dry and vulnerable to fire (CDFG 2007). Furthermore, the expansion of residential development into rural and natural areas has increased the incidence of human-caused fire. In the 1990s and early 2000s, extensive wildfires affected the entire region, and costs from property loss and fire suppression rose to billions of dollars annually. In 2003, almost 400,000 acres burned, costing more than \$1.2 billion for fire suppression efforts and to repair damages resulting from the fires (CDFG 2007).

The causes and ecological consequences of wildfires differ among the region's ecological communities. In sage scrub, chaparral, and grassland systems, lightning-induced fires are fairly infrequent; however, human-caused fires have resulted in unnaturally high fire frequencies, especially along roads and near the urban-wildland interface, with some locations experiencing three fires within a period of 15 to 20 years (CDFG 2007). Increased fire frequencies favor nonnative Mediterranean grasses that were introduced to the region with the arrival of European settlers and livestock. Once established, these grasses grow in a dense-thatch pattern that chokes out native vegetation and lowers habitat quality for wildlife, while providing ample fuel for the cycle of frequent burning. Attempts at fire prevention have not stopped the region's scrub and chaparral lands from burning, and it is the rate of human-caused fire and the Santa Ana wind conditions, rather than fuel build-up, that determines the extent and frequency of wildfire in these systems. Although frequent fires can promote the spread of nonnative grasses, the effect of fire on grassland and shrubland ecosystems depends on the time of year the fire occurs (CDFG 2007).

3.1.4 Drought

According to the California Natural Resource Conservation Service (CA-NRCS), drought is a normal, recurrent feature of climate. It occurs almost everywhere, although its features vary from region to region. Droughts in California typically occur gradually over several years. California's extensive water supply system can mitigate the effects of short-term dry periods; however, California's dependence on water for agriculture, industry, and recreation makes drought planning an economic necessity. When a drought occurs, the impacts are felt first by those most reliant on annual rainfall (CA-NRCS 2007).

Most definitions of a drought refer to abnormal dryness, as opposed to normal dryness that occurs during the summer in the southwestern United States (McNab and Karl 1991). The strongest drought signals occur during seasons when substantial precipitation is expected, but fails to fall. Therefore, if precipitation is the carrier of the drought signal, then climate describes the long-term characteristics of this signal. The climatic factors associated with drought, which include various aspects of local climate (e.g., anticipated precipitation, temperature, atmospheric water vapor, atmospheric circulation patterns, sources of moisture, vertical movement of air, storms, atmosphere and ocean and land surface boundaries, and climatic anomalies), are related to atmospheric circulations that could extend well beyond the local area. Drought is commonly perceived as an abnormally long period without precipitation; however, decreased frequency of precipitation is not the only climatic factor that causes precipitation deficiencies. Droughts are also associated with weather systems resulting in minimal precipitation. For example, if minimal precipitation is delivered by an anticipated storm along a coastline, then a severe drought could ensue (McNab and Karl 1991).

3.1.5 Invasive Flora and Fauna

Relatively few nonnative species were introduced to California prior to settlement by Spaniards in the 1700s. With the beginning of European settlement, nonnative species were carried to California attached to the hulls of ships, submerged in the ships' ballast, or carried along in shipments of grain. Today, there are many different ways in which nonnative invasive species are introduced to the state. Commercial shipping remains a major source of unintentional introductions, along with smaller commercial fishing boats and recreational watercraft (CDFG 2007). People traveling between natural areas, farms or waterways for work or recreation unintentionally spread invasive species on their vehicles, boats, equipment and even clothing. Both historically and today, nonnative plant species have been introduced purposely for erosion control, livestock forage, landscaping and aquarium or garden ornamentals without an understanding of the potential consequences of those introductions (CDFG 2007). In addition, various animal species brought into California as sources of food, fur or pets, have turned into major pests (CDFG 2007).

Invasive species (plant and animal) threaten the diversity of native species through competition for resources, predation, parasitism, interbreeding with native populations, transmitting diseases, or causing physical or chemical changes to the invaded habitat (CDFG 2007). In addition, invasive plants may outcompete native species for light, water, and soil, and may also offer inferior habitat and nutritional values for native animal species and sometimes alter ecosystem processes, such as natural fire regimes (CDFG 2007). Likewise, “invasive animals outcompete, prey upon, or disturb the habitat of native wildlife and may spread diseases” (CDFG 2007).

Through their impacts on natural ecosystems, agricultural and other developed lands, and water delivery and flood protection systems, invasive species may also negatively affect the economy, human health, and wildlife and wildlife habitats. A large population of an invasive species can start from a very small number that may easily go unnoticed and become a multimillion-dollar problem for the state. Early detection and rapid response are the most effective and cost efficient responses to invasive species, after prevention (CDFG 2009c).

3.1.6 Ecological and Natural Resources Disease

Ecological and natural resources diseases refer to those diseases that have an effect on flora and fauna species health, fecundity, and ultimately diversity. The National Biological Information Infrastructure (NBII) identifies four hot topic diseases impacting wildlife species populations including chronic wasting disease (CWD), avian flu, whirling disease and West Nile virus (WNV) (NBII 2009). Of these, only WNV poses a threat to wildlife on NBSD.

According to the Center for Disease Control and Prevention (CDC) and the California Department of Health Services, one of the most severe public and ecological health concerns has been the unimpaired spread of WNV (Reisen et al. 2004). The WNV is an insect-borne flavivirus that is commonly found in Africa, western Asia and the Middle East, and never reported in the Western Hemisphere before 1999 (Reisen et. al. 2004). It has been detected in at least 48 species of mosquitoes, over 250 species of birds, and at least 18 mammalian species, including humans (USGS 2009).

The University of California Cooperative Extension (CCE) identifies and keeps track of the impact of plant diseases on native and agricultural plant species. A couple of the diseases that the extension tracks include sudden oak death, and witch broom/mistletoe infestations. The California Oak Mortality Task Force (COMTF) is a nonprofit organization formed in 2000 to analyze the cause and determine solutions for reducing oak mortality in California (COMTF 2009). The organization defines sudden oak death as a forest disease caused by the *Phytophthora ramorum* pathogen resulting in the dieback of tanoak (*Lithocarpus densiflorus*) and oak tree (*Quercus* spp.) species in California and Oregon (COMTF 2009). Some of the species identified by COMTF in California include coast live oak (*Q. agrifolia*), California black oak, Shreve oak (*Q. parvula*), canyon live oak (*Q. chrysolepis*), California bay laurel (*Umbellularia californica*), Douglas fir (*Pseudotsuga menziesii*), and coast redwood (*Sequoia sempervirens*) (COMTF 2009). Likewise, septoria leaf blight (*Septoia quercicola*) and oak anthracnose (*Apiognomonina errabuna*) are fungi which affect the leaves of oak species (CCE 2005).

While neither sudden oak death nor witch borom/mistletoe infestations have been documented on NBSD, the installation natural resources manager should be aware of their symptoms and potential for spreading in Southern California.

3.1.7 Climate and Climate Change

The metropolitan areas of southern California have a Mediterranean climate, characterized by mild, sometimes wet winters and warm, very dry summers (NOAA 2009b). California owes its climate to a

semi-permanent high-pressure area located over the eastern Pacific Ocean, which deflects storms northward and secures fair weather for the region. During the winter months, this high-pressure area breaks down allowing the jet stream to steer mid-latitude weather systems along a more southern track of the prevailing westerly winds (NOAA 2009b). For this reason, the vast majority of precipitation comes from winter storms between November and March (NOAA 2009b).

General characteristics of southern California's climate are shaped by the influences of (NOAA 2009b):

- **Winter storms**, where cold air associated with deep troughs of low pressure become modified by the mild ocean waters.
- **Summer monsoon**, where a strong upper ridge builds over the four corners region or the Great Basin. The resulting easterly or southeasterly flow on the south side of this high, draws warm air from Mexico into the Southwest United States.
- **Marine layer**, in the form of dense fog or radiation fog, is the most dominating weather feature in Southern California. This feature starts with a semi-permanent high pressure over the eastern Pacific Ocean, which produces persistent northwest winds that parallel the West Coast.
- **Sea breeze**, where the sun warms both the ground and ocean at the same rate. However, since the heat in the ground is not absorbed well, it returns heat to the warm air. As the air cools, it begins to collect, resulting in an increase in pressure, creating a "high" wind pressure.
- **Santa Ana winds**, where strong, dry offshore winds blow from east or northeast. These winds are strongest below passes and canyons of the coastal ranges of Southern California.
- **Hurricanes**, where sea surface temperatures rise above 80 degrees Fahrenheit (°F), providing the necessary energy required for the formation of a hurricane. However, since the California Current is a cool ocean current that parallels the California Coast, hurricanes normally do not occur in the region.
- **El Niño and La Niña**, where air pressure rises over the western Pacific Ocean and lowers over the eastern Pacific. This change weakens or even reverses the trade winds and as a result brings heavy rains and strong winds to the region. La Niña is the opposite of the El Niño, where equatorial Pacific Ocean waters are cooler than normal.
- **Global warming (Greenhouse Effect)**, where the observed average temperature of the earth is rising as a result of increased levels of carbon dioxide and other gases being released into the atmosphere, which could impact global climates.
- **Sun, earth, sea, space, and optical phenomena**, where naturally occurring phenomena such as: solar and lunar phenomena, optics, astronomy, space weather in the form of aurora borealis or solar flares, ocean behavior beyond sea state, earthquakes, and volcanoes can reshape or temporarily modify the regional climate.

The California Climate Change Center (CCCC) has determined that during the last 50 years, winter and spring temperatures have been warmer, spring snow levels in lower- and mid-elevation mountains have dropped, snowpack has been melting 1 to 4 weeks earlier, and flowers are blooming 1 to 2 weeks earlier (CCCC 2006). These regional changes are consistent with global trends. During the past 100 years, average temperatures have risen more than 1 degree Fahrenheit (°F) worldwide (CCCC 2006).

Continued climate change in California could result in an increase in extreme climate conditions, which pose the most serious human health and ecological risk (CCCC 2006). By 2100, if temperatures rise to the higher warming range, there could be up to 100 more days per year with temperatures above 90°F in Los Angeles and above 95°F in Sacramento (CCCC 2006). There will be higher temperatures, more

precipitation will fall as rain instead of snow, and the snow that does fall will melt earlier, reducing the Sierra Nevada spring snowpack by as much as 70 to 90 percent (CCCC 2006). This loss of snowpack would pose challenges to water managers, hamper hydropower generation, and nearly eliminate snow-related recreational activities (CCCC 2006).

Hydrologic conditions in the San Diego Region, and in the Colorado River Basin could be altered as a result of global climate change (based on conditions observed over the past century) (RWMG 2007). Listed below are seven key probable global changes identified in the San Diego Regional Water Management Group (RWMG), 2007 Integrated Regional Water Management Plan (IRWMP), which potentially have an effect on the hydrologic conditions of the Region (RWMG 2007):

- **Snowpack Changes:** Snowpack in the Sierra Nevada Mountains represents California's largest water storage component. Decreased snowpack in the Sierras will result in increased runoff during October through March, adversely affecting California's water storage and potentially affecting the amount of imported water available to the Region.
- **Hydrologic Patterns:** Global warming may result in a shift in storm tracks.
- **Storm Intensity:** Flood management, erosion, and water quality impacts could occur if climate change results in increased precipitation intensity and a reduction in healthy plant cover.
- **Sea Level Rise:** Sea level rises associated with global warming could increase coastal erosion, impacting ecosystems and tidal wetlands. Sea level rises would also increase salinity intrusion into various bays, adversely impacting the quality of State Water Project supplies delivered to the Region.
- **Water Temperatures:** Increased air temperatures and modified storm patterns may result in increased reservoir water temperatures, adversely affecting cold water and other species and increasing the intensity of algae blooms.
- **Water Demand:** Potential global warming effects on vegetation evapotranspiration are currently unknown. While increased temperature results in increased evapotranspiration, this may be partially offset by the fact that increased atmospheric carbon dioxide can result in reduced vegetation water consumption.
- **Energy Demand:** Global warming effects may result in increased energy demands that will require increased conservation and efficiency measures.

Climate is a primary determinant of fire patterns, and climate change may add a significant variable to efforts to understand historical fire regimes and to find management measures that can maintain the region's mosaic of habitats (CDFG 2007). Additionally, the expansion of residential communities into fire dependent ecosystems creates a conflict between maintaining ecological integrity and protecting property (CDFG 2007).

Finally, noxious and invasive weeds currently infest more than 20 million acres of California farmland (CCCC 2006). Climate change may cause noxious and invasive weed ranges to shift into, and alter native plant ranges. Continued climate change could also result in the abundance of many pests, lengthen their breeding seasons, and increase pathogen growth rates (CCCC 2006).

Impacts to the San Diego Region as presented in the San Diego Foundation Regional Focus 2050 Study include sea level rise, increased risk of large wildfires, increasingly uncertain water supplies from the Sacramento Delta and Colorado River imports, increased energy demands, increased pressure on wildlife populations (particularly special status species), and public health issues associated with heat waves and an increase in some infectious diseases like WNV. The authors relied on analysis of results from three

climate models (the National Center for Atmospheric Research's Parallel Climate Model, NOAA's Geophysical Fluids Dynamics Laboratory version 2.1, and the French Centre National de Recherches Meteorologiques) to predict the impacts to San Diego weather (e.g., precipitation and El Niño), sea level and coastal impacts, impacts to regional drinking water sources, projected changes in wildfire, threats to regional biodiversity and ecological processes, effects of climate change on public health, and potential infrastructure impacts (e.g., electricity generation and use) (SDF 2008). The full report can be accessed by visiting the San Diego Foundation website (www.sdfoundation.org) or using the following link: <http://www.sdfoundation.org/Portals/0/Newsroom/PDF/Reports/Focus2050glossySDF-limateReport.pdf>

3.2 Ecosystem Function

Ecosystem function is the culmination of four basic fundamental processes: water cycling, mineral cycling, energy flow, and community dynamics (also called succession), that operate simultaneously in order to create a functioning ecosystem (Keppel 2003). Ecosystem function is also dependent on abiotic and biotic resources. Abiotic (nonliving) resources consist of sunlight, temperature, precipitation, fire, water or moisture, and soil or water chemistry (Keppel 2003). Biotic (living) resources include members from each trophic level in the food chain (primary producers, herbivores, carnivores, omnivores, and detritivores) (Keppel 2003). In other words, ecosystem function is the interaction between organisms and their physical environment (Keppel 2003). Modification to any one of these processes, or removal of a resource, could potentially change the entire function of the ecosystem. For example, to have an effective water or mineral cycle, or adequate energy flow, an ecosystem must have communities of living organisms. For living things to thrive, they need effective energy flow to feed them (interlocking food chains or food web), a water cycle that supplies adequate moisture, and a mineral cycle that supplies vital nutrients (Keppel 2003).

3.3 Ecosystem Management

Ecosystems provide services that are of utility to wildlife, plants, and humans. Healthy ecosystem functions are often viewed separately from human communities; however, human society is inextricably linked to ecosystem structure and function. For example, regulation of hydrological flow is beneficial to human communities to provide drinking water, irrigation, or industrial applications that drive our society. A list of the ecosystem services and the functions they provide are presented in **Table 3-1**.

The guiding philosophy of this INRMP is to take an ecosystems approach to managing the natural resources present on NBSD. The interdisciplinary approach taken by this INRMP follows an ecosystems model, in which all appropriate components are integrated by their functions. The Navy recognizes that ecosystem management is linked to the installation mission, as well as local, regional, and global ecological integrity. Sustaining ecosystem integrity is also the best way to protect biodiversity, ensure sustainable use, and minimize the effort and costs of management. Native and natural communities, and the processes that sustain them, are unique expressions of the evolutionary and geological histories that are essential to sustaining current system function and resilience. While habitat with the potential to dramatically alter ecosystem form and function is limited at NBSD, it is still a priority of NBSD to manage according to this paradigm. The purpose of ecosystem management at NBSD is to conserve regional biodiversity by managing the installation's natural resources as a functional component of the surrounding regional ecosystem, while supporting the installation mission.

Table 3-1: Ecosystem Services and Functions

Ecosystem Service	Ecosystem Functions	Examples of Benefits
Gas regulation	Regulation of atmospheric chemical composition.	Carbon dioxide/oxygen balance, ozone for ultraviolet light protection and sulfur oxide levels.
Climate regulation	Regulation of global temperature, precipitation, and other biological mediated climatic processes at global or local levels.	Greenhouse gas regulation, dimethyl sulphide production affecting cloud formation.
Disturbance regulation	Capacitance, damping, and integrity of ecosystem response to environmental fluctuations.	Storm protection, flood control, drought recovery, and other aspects of habitat response to environment variability mainly controlled by vegetation structure.
Water regulation	Regulation of hydrological flows.	Provisioning of water for agricultural (e.g., irrigation) or industrial (e.g., milling) processes or transportation.
Water supply	Storage and retention of water.	Provisioning of water by watersheds, reservoirs, and aquifers.
Erosion control and sediment retention	Retention of soil within an ecosystem.	Prevention of loss of soil by wind, runoff, or other removal processes, storage of silt in lakes and wetlands.
Soil formation	Soil formation processes: weathering of rock and the accumulation of organic material.	Provisioning of soil for agricultural production and to support development of habitat for wildlife.
Nutrient cycling	Storage, internal cycling, processing, and acquisition of nutrients.	Nitrogen fixation and other elemental or nutrient cycles; potential sequestering of soil carbon to reduce greenhouse gas effect.
Waste treatment	Recovery of mobile nutrients and removal or breakdown of excess nutrients and compounds.	Waste treatment, pollution control, and detoxification.
Pollination	Movement of floral gametes.	Provisioning of pollinators for the reproduction of plant populations.
Biological control	Trophic-dynamic regulations of populations.	Keystone predator control of prey species and reduction of herbivory by top predators; competitive exclusion of nonnative species.
Refugia	Habitat for resident and transient populations.	Nurseries, habitat for migratory species, or regional habitats for locally harvested species or overwintering grounds.
Food production	That portion of gross primary production extracted as food.	Production of fish, game, crops, nuts, and fruits by hunting, gathering, subsistence farming, or fishing.

Ecosystem Service	Ecosystem Functions	Examples of Benefits
Raw materials	That portion of gross primary production extracted as raw materials.	The production of lumber, fuel, and fodder.
Genetic resources	Sources of unique biological materials and products.	Medicine, products for materials science, genes for resistance to plant pathogens and crop pests, and ornamental species.
Recreation	Providing opportunities for recreational activities.	Ecotourism, fishing, hiking/walking, and other outdoor recreational activities.
Cultural	Providing opportunities for noncommercial uses.	Aesthetic, artistic, educational, spiritual, and scientific values of ecosystems.

Source: Costanza et al. 1997

3.3.1 Communication of Ecosystem Management Philosophy to NBSD Personnel

There is an ongoing need for coordination between NBSD and other agencies, and between the NBSD and interested and affected public entities during plan development and implementation to effectively manage the ecosystem.

Objective: Develop the coordination necessary between NBSD, other agencies, and public entities to ensure that an effective and viable ecosystem management approach is developed.

Strategies:

1. Complete this version of the INRMP and use it as a beginning point to develop an ecosystem management approach to natural resources management.
2. Work with offsite land managers to develop partnerships that would allow the restoration of habitat for federally listed species on their lands.
3. Develop a process and schedule for coordinating with agencies to allow for agency comment on management plans.
4. Define and identify the ecosystems and explain the purpose and goals of the management with specific success criteria, adaptive management, and reporting requirements.

3.3.2 Ecosystem Management on NBSD and Mission Requirements

Conceptually, ecosystem management is an appropriate strategy for managing installation natural resources. Pragmatically, the approach is not currently defined well enough to develop an integrated management plan that will guide natural resources management. Additionally, the intricately connected components of the NBSD ecosystem are not well understood across time and across large geographic areas.

Objective: Develop an effective natural resources management approach that integrates all ecological components into a comprehensive management program.

Strategies:

1. Foster landscape-scale thinking among NBSD staff and provide them with appropriate training if needed.
2. Use GIS to store, manage, analyze, interpret, and report data in a scientifically valid, efficient, and cost-effective manner.
3. Develop new, and enhance existing, databases, and acquire applicable databases from outside sources for application in GIS.
4. Implement actions identified in the INRMP once plans are developed or revised.
5. Identify the installation's natural resources, critical indicator species, as well as monitoring programs to determine the health of the ecosystem.

4. Naval Base San Diego Main Site

4.1 Purpose, Approach and Rationale

Natural resources management at NBSD Main Site strives to integrate conservation of biodiversity and an ecosystem based approach into an adaptive management framework. Management projects and plans often consist of multiple program elements with several different resource experts collaborating together. A number of items have been identified in subject areas that affect the natural resources present on and immediately adjacent to NBSD Main Site. The purpose of this section is to identify objectives and strategies for natural resources management on NBSD Main Site. Specific objectives and strategies were developed to meet the overriding goal listed below for natural resources managed on NBSD Main Site.

The NBSD INRMP goal is to provide an adaptive ecosystem based conservation program that will support the NBSD mission and provide for the sustainability of natural resources.

The strategies, or projects, were developed to implement the objectives and to assist natural resources personnel with gauging the effectiveness of the NBSD natural resources management program. These strategies are consecutively numbered for each resource. A summary of the strategies as well as the estimated time frame for completion is presented in **Appendix D, Table D-1**.

Some of the actions described in this section will be accomplished through interactive partnerships with other Federal, state, and local organizations. Natural resources staff at NBSD will initiate partnerships based on the benefits to the regional ecosystem and the local environment.

4.2 Natural Resources Current Conditions and Management

4.2.1 Topography and Geology

The topography of NBSD is characterized as highly urbanized and relatively flat, except between Wabash Boulevard, 32nd Street, and south of Main Street at the Naval Exchange (U.S. Navy 2002a). NBSD, situated on San Diego Bay, is located approximately 10 feet (3 meters) above MSL. The San Diego Bay bottom has been dredged to accommodate shipping traffic and has a depth of 30 to 37 feet (9.1 to 11.3 meters) at the NBSD berthing area (U.S. Navy 2002a).

The Bay Point Formation is the principal geological feature of NBSD along with artificial compacted fill material that was brought in during development of the region. The Bay Point Formation, a post-Eocene-era deposit, is widespread and well exposed in the area adjacent to the present day coastline. It is composed mostly of marine and nonmarine, poorly consolidated, fine and medium grained, pale brown, fossiliferous sandstone. Fossils found are between 0 to 98 feet (0 to 30 meters) above mean high tide and include mollusks, foraminifera, and ostracods. Together, this indicates a brackish water estuarine depositional environment and is indicative of the late Pleistocene. The marine part of the Bay Point Formation interfingers with unfossiliferous sandstone that lies generally more than 98 feet (30 meters), but less than 196.9 feet (60 meters) above sea level. This part of the Bay Point Formation is considered to be non-marine slope wash. The Artificial Compacted Fill is comprised of Pleistocene and Holocene surficial deposits. It consists of artificially compacted earth materials derived from many sources.

4.2.2 Watershed Management

NBSD is a large facility located within three *Hydrologic Subareas*, the *Chollas Hydrologic Subarea* (908.22) of the *San Diego Mesa Hydrologic Area* (908.20); and the *El Toyon Hydrologic Subarea*

(908.31), and the *Paradise Hydrologic Subarea* (908.32) of the *National City Hydrologic Area* (908.30). The three *Hydrologic Subareas* are in the *Pueblo San Diego Hydrologic Unit* (908.00).” NBSD lies within the 60,007-acre San Diego Bay watershed), and the 16,270-acre Chollas Creek watershed. The Chollas Creek watershed includes Chollas, and Paleta creeks that pass through NBSD property (see **Figure 4-1**) (U.S. Navy 2002a). The Chollas Creek watershed is almost completely urbanized and lacks natural soil cover. Chollas Creek is completely channelized on NBSD, and the stream bank along Paleta creek is degraded. Both of these are subject to flooding. For example, “a tentative estimation of flood potential indicates that an area 4,000 feet wide at the mouth of Chollas Creek could be covered with one to two feet of water in a major storm” (U.S. Navy 2002b).

Paleta Creek has a very small drainage basin and small channel capacity, resulting in the potential for flooding during a 10-year flood event, or during a high tide event combined with a storm (U.S. Navy 2002b). Paleta Creek, which includes a field house, racquet courts, and hobby shops west of the creek and baseball fields east of the creek, also has the capacity to accommodate 70 percent of the floodway resulting from a 100-year flood (U.S. Navy 2002b).

Watershed management is important to natural resources management because it directly affects both surface water and groundwater quality and is critical to maintaining valuable aquatic habitats.

4.2.2.1 Soils, Erosion, and Sedimentation

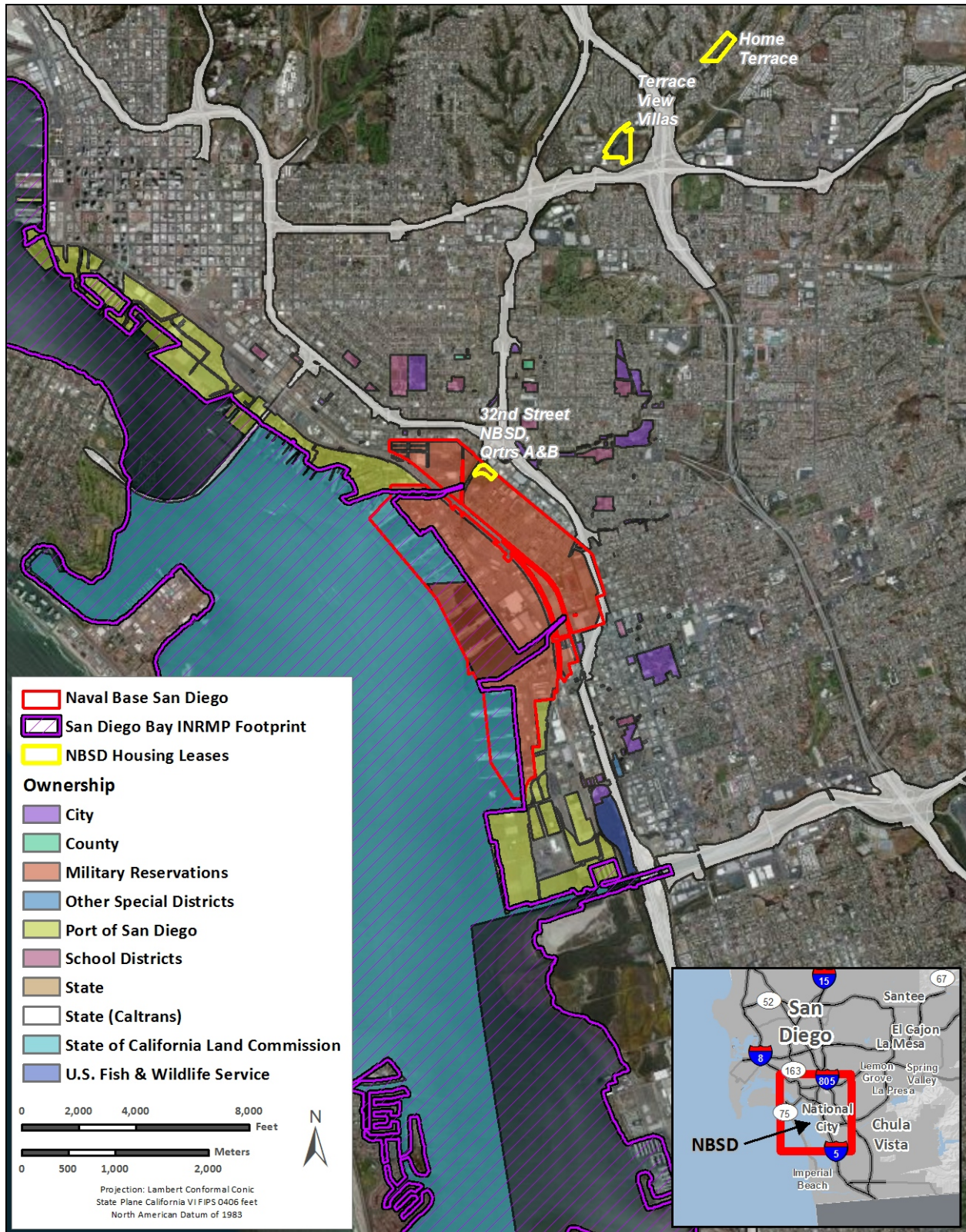
Healthy, soils are the foundation of a healthy ecosystem. As soils lose their structure and begin to erode, other systems also begin to fail. Vegetation and wildlife decline in numbers and diversity, and the quality of surface water declines as it becomes loaded with eroded sediments. Some soil types, such as those found at NBSD, took centuries to develop and are not easily replaced or repaired if lost or damaged. Inherent in the nature of NBSD's soils is a risk of significant erosion when vegetation is removed or soil structures are disturbed. The fragile nature of these soils make the protection of NBSD's soils vital for maintaining many of the functional systems that make up a healthy ecosystem.

Soils in San Diego were mapped by the Soil Conservation Service (now the NRCS) in 1973 using established protocols developed by the agency. Dredging activities beginning during the 1940s altered the San Diego Bay bayfront from a natural landscape to the highly urbanized landscape seen today (U.S. Navy 2002a). Specifically, the area comprising NBSD and the areas north and south were filled in to accommodate Navy vessels. As such, soil types at NBSD either consist of manmade or highly altered soils (see **Figure 4-2**). Soils identified during the 1973 survey include (U.S. Navy 2002a):

Huerhuero-urban land complex, 2 to 9 percent slopes (HuC). Huerhuero-urban land complex occurs on marine terraces, on elevations that range from sea level to 400 feet (122 meters). The landscape has been altered through cut and fill operations and leveling for building sites. At NBSD, this complex is found in the areas adjacent to Eighth Street. These soils consist of moderately drained loams with a clay subsoil developed in sandy marine sediments.

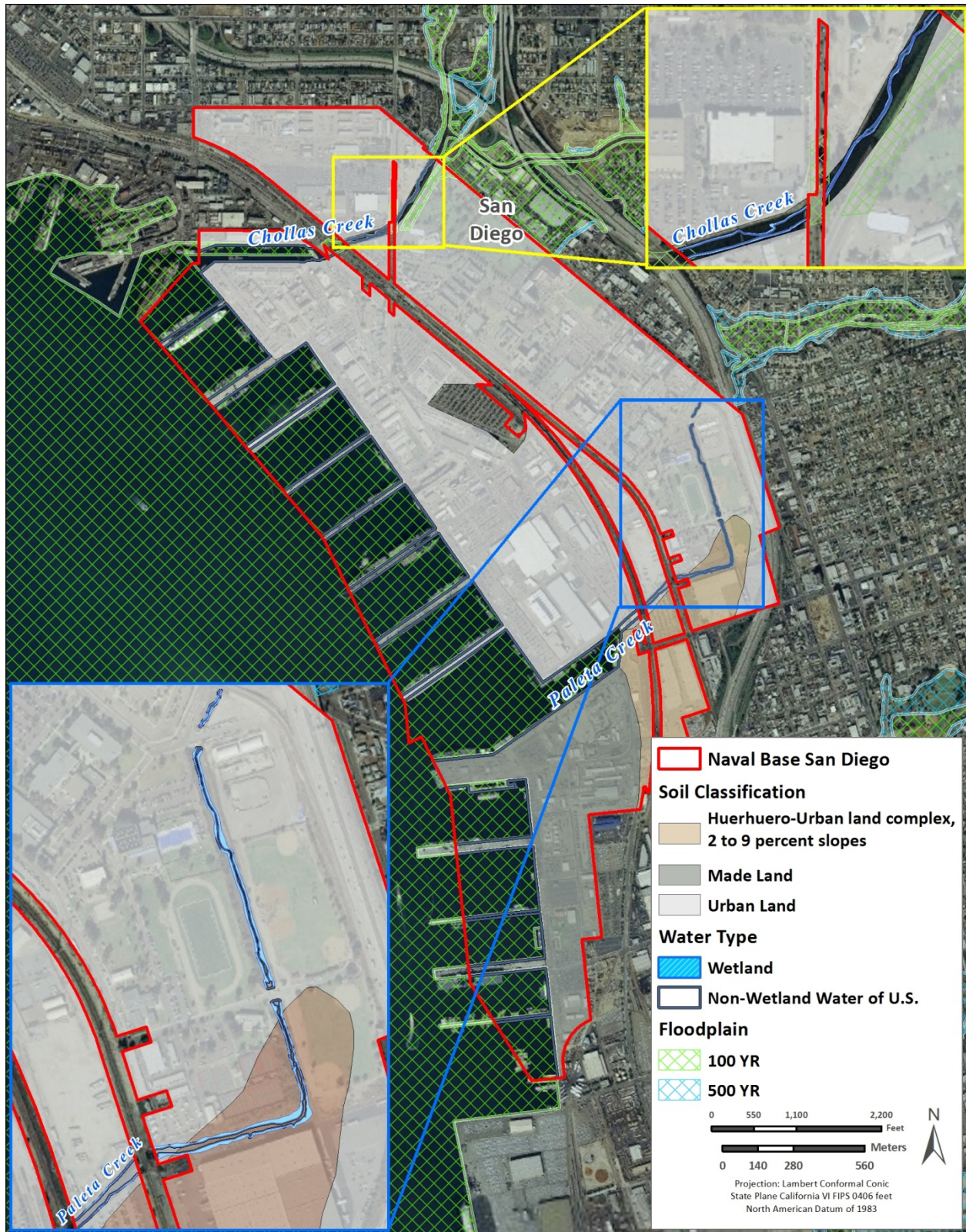
Made land (Md). Made land consists of smooth, level areas that have been filled with excavated and transported soil material, paving material, and soil material dredged from lagoons, bays, and harbors.

Urban land (Ur). Urban land consists of closely built-up areas in cities. Buildings, streets, and sidewalks cover almost the entire surface, resulting in no identifiable soil characteristics. This classification applies to the land north of Paleta Creek and Eighth Street in National City. A large portion of this bay frontage is hydraulic fill dredged from the harbor and stabilized by surcharging.



Source: (c) 2010 Microsoft Corporation and its data suppliers, U.S. Navy 2010b, SanGIS
 Disclaimer: Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 4-1: Naval Base San Diego Main Site Location



Source: ESRI World Imagery 2009; Floodplains: FEMA June 2012
Disclaimer: Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 4-2: Naval Base San Diego Main Site Soils and Water Resources

Specific Concerns

- Development/anthropogenic disturbances.

Current Management

OPNAVINST 5090.1D requires that installation sources of dust, runoff, silt, and erosion debris be controlled to prevent damage to land, water resources, equipment, and facilities, including adjacent properties. An erosion-and-sediment-control plan must be implemented where appropriate. Maintenance of vegetative cover is consistent with ecosystem management goals expressed earlier. Other materials can be used including gravel, fabrics, riprap, and recycled concrete and pavement that are environmentally safe and compatible with the site. However, bioengineered stabilization should be considered prior to hard structures. Placing fill materials into waters of the U.S., including wetlands is a regulated activity and using bioengineered bank stabilization could mean an easier permitting process (CWA 404/401) and/or potentially no mitigation requirements. Where bare ground is necessary, other measures for dust, sedimentation, and erosion control should be implemented (e.g., check dams, windbreaks, diversions). To minimize land maintenance expenditures and help ensure environmental compliance, physically intensive activities should be located on areas least susceptible to erosion. The erosion potential of a site and adjacent water resources need to be identified and analyzed in development, training, and land use plans.

Management Objective and Strategy

Objective: Protect soils by maintaining soils and reducing runoff, erosion, and gully formation, and implement appropriate BMPs.

Strategies:

1. Develop, implement, and include an Erosion Control Plan.
2. Monitor and rehabilitate degraded soil resources as outlined in the Erosion Control Plan. Soil resources will be monitored, evaluated, and rehabilitated as prescribed within the plan. Survey results will be analyzed to assist with identification of degraded soil or eroded areas.
3. Develop and disseminate informational materials to appropriate NBSD personnel on the erosion control best management practices (BMPs) and watershed protection issues.
4. Educate personnel who are likely to impact the watersheds on regulatory requirements including timing and necessity of applicable approval processes by various resource agencies, erosion and sedimentation BMPs, and watershed protection issues.
5. Develop and use an erosion and sedimentation questionnaire designed to gauge the effectiveness of the informational materials and short seminar.
6. Annually review erosion control BMPs to ensure that they are still adequate to control adverse erosion and sedimentation on NBSD. Conduct surveys to determine whether activities on NBSD are adversely impacting soil and water resources as a result of erosion and sedimentation.
7. Maintain accurate, usable, and informative GIS data for ease in management planning and documentation.

4.2.2.2 Water Quality

All U.S. Navy facilities are subject to Federal, regional and local rules and regulations such as the Clean Water Act. Naval Base San Diego operates under a National Pollution Discharge Elimination System (NPDES) permit and it is by way of compliance with such permits that water quality is managed by the U.S. Navy. San Diego Bay is listed on the CWA 303D for impaired water bodies because of benthic community effects and sediment toxicity. In accordance with CWA Section 303, Total Maximum Daily Loads (TMDLs) will be established for water bodies that are listed as impaired. These are the maximum levels of pollutants that a water body can receive while continuing to maintain specific water quality criteria targets.

Water quality at Chollas Creek and Paleta Creek are highly degraded and the State Water Resources Control Board (SWRCB) lists both as “impaired” water bodies on the Clean Water Act 303(d) List as well. As such, TMDLs will be established for each. The portion of Paleta Creek near the San Diego Bay is listed for copper and lead. Chollas Creek is listed for copper, diazinon, indicator bacteria, lead, phosphorus, total nitrogen, trash and zinc.

Due to the marginal capacity of Chollas Creek and Paleta Creek to convey flood flows, sedimentation is a significant factor, especially at the Division Street and Fourth Street crossings of Paleta Creek where sedimentation of the culverts can aggravate flooding.

Specific Concerns

- Erosion and sedimentation.
- Development/anthropogenic disturbances.

Current Management

The discharge of pollutants, dredged or fill material (i.e., material placed in waters of the U.S. where the material placed has the effect of either replacing any portion of the waters of the U.S. with dry land or changing the bottom elevation of any portion of a water [33 CFR Part 323]) into waters of the U.S., including wetlands, except as authorized by an NPDES or a dredge or fill material permit is prohibited. Under the Naval Base San Diego NPDES, the discharge of sand, silt, clay, or other earthen materials from any activity, including land grading and construction, in quantities that cause deleterious bottom deposits, turbidity or discoloration in waters of the state or that unreasonably affect, or threaten to affect, beneficial uses of such waters is prohibited.

Management Objective and Strategy

Objective: Review all land use actions and provide BMPs and adaptive management recommendations to prevent destabilization of stream banks and reduce stormwater runoff from entering Chollas and Paleta Creeks.

Strategies:

1. Conduct periodic surveys of Chollas and Paleta creeks to identify erosion, sediment accumulations, or other threats to stream stability.
2. Develop actions specific to each unstable stream reach that can be undertaken to assist with stream recovery. Support stream stability by managing activities that affect riparian buffers and water entering streams.

3. As funding allows, undertake natural channel design principles to restore stream reaches with highly unstable conditions.
4. Annually evaluate streams to ensure that streams are not adversely impacted by installation activities.
5. Maintain accurate, usable, and informative GIS data for ease in management planning and documentation.

4.2.3 Habitat Management

4.2.3.1 Terrestrial Vegetation and Wildlife Habitat

For a complete listing of terrestrial floral species observed on NBSD, see **Appendix G**.

Most of the terrestrial vegetation on NBSD is characterized as urban, or habitat that is limited to ornamental trees and shrubs typically found in urbanized landscaped areas, and grasses commonly found in recreational areas (i.e., pampas grass [*Cortaderia jubata*], shoregrass, and fountain grass [*Pennisetum setaceum* Forsskal]) (U.S. Navy 2010b).

In addition to the urban/developed land, an area of southern coastal salt marsh has been identified on NBSD at Paleta Creek (U.S. Navy 2002a). Southern coastal salt marshes are generally located along the inland portions of bays, lagoons and estuaries (U.S. Navy 2002a). These areas consist of a moderate to dense covering of salt tolerant herbaceous species. The salt marsh at NBSD is subject to regular inundation by the San Diego Bay and consists of hydric soils. Plant species in the southern coastal salt marsh take advantage of the warmer temperatures in the southern region of California and have a long growing season during the summer months. Plant species commonly found in the southern coastal salt marsh include pickleweed (*Salicornia depressa*), saltwort (*Batis maritima*), estuary seablite (*Suaeda esteroa*), and shoregrass (*Monanthochloe littoralis*). Southern coastal salt marsh supports migratory birds, resident bird species including Belding's savannah Sparrow (*Passerculus sandwichensis beldingi*), as well as small mammals, invertebrates and fish species (U.S. Navy 2002a).

A natural resources inventory report was conducted at NBSD from November 2006 to January 2008. **Table 4-1** summarizes the vegetative communities and associated acreage observed during the survey (U.S. Navy 2010b).

Table 4-1: Naval Base San Diego, Main Site Vegetation Communities and Land Cover Types

Vegetation Community / Land Cover Type	Acres
Pickleweed- Jaumea Series	1.2
Pickleweed Series	0.4
Giant Reed Series	<0.1
Open Water Series	298.8
Urban/Developed Land	736.1
Total	1,036.5

(Sawyer and Keeler-Wolf Classification 1995)

Source: U.S. Navy 2010b

The following provides a brief description of each vegetative community as described in the 2008 survey report (see **Figure 4-3**) (U.S. Navy 2010b). The vegetation classification system used in this INRMP meets the standards of the National Vegetation Classification System as required by the Federal Geographic Data Committee. This vegetation classification system differs from the NatureServe habitat classification detailed on the Navy Conservation Website because the NatureServe database is incomplete for California.

Pickleweed–Jaumea Series. The majority of the salt marsh habitat along Paleta Creek has been classified as jaumea series vegetation. This vegetation community contains two co-dominant salt tolerant species, pickleweed and jaumea (*Jaumea carnosa*). Additional species occurring within this vegetation community include shoregrass and seaside arrow-grass (*Triglochin concinna*).

Pickleweed Series. The pickleweed series vegetation occurs at the most northern and southern reaches of Paleta Creek as well as along Chollas Creek. The average width of this habitat is approximately 1 to 5 feet. Pickleweed series vegetation occurs primarily beneath banks reinforced with riprap.

Giant Reed Series. One portion of Chollas Creek contains the giant reed series vegetation. This patch of giant reed (*Arundo donax*) occurs at the top of the riprap, located at the northern end of Chollas Creek on the west bank.

Open Water Series. The open waters of Chollas Creek, Paleta Creek, and the San Diego Bay within the limits of NBSD have been classified as open water series.

Urban/Developed Land. Urban/developed land includes the majority of land at NBSD. All buildings, the grass lawns, the golf course, and ball fields are included in the urban/developed land classification.

Specific Concerns

- Invasive species.
- Development/anthropogenic influence.
- Erosion and sedimentation.
- Climate change (e.g., changes in temperature or sea level rise).
- Soil compaction.

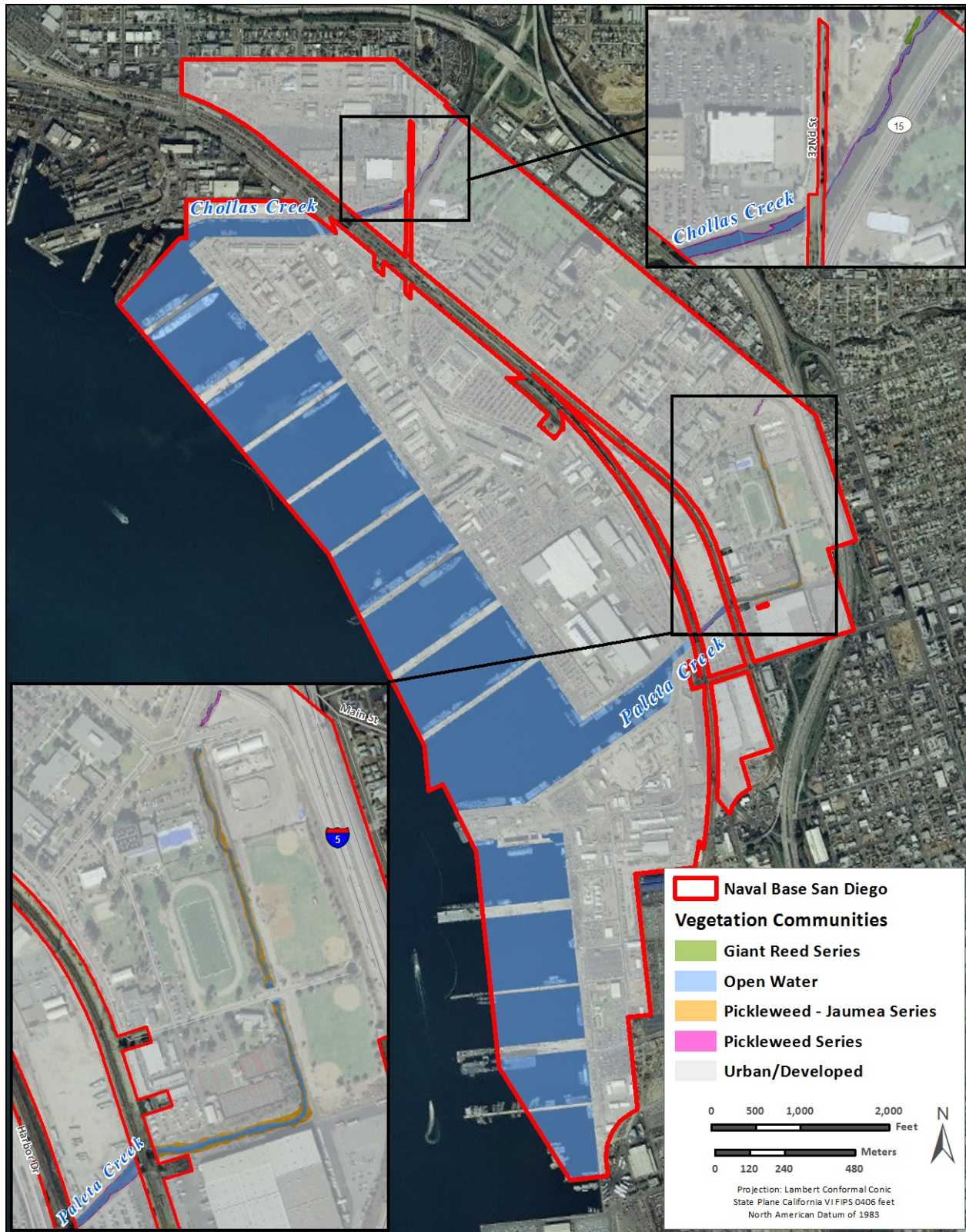
Current Management

Due to the extent of urban and developed land at NBSD, opportunities to manage native habitats are limited. Management of native habitats at NBSD includes their enhancement by the removal of invasive exotic plant species and planting of native species, as well as habitat restoration of sorely disturbed areas. Removing invasive exotic plants, planting native species, and restoring habitat activities are conducted through coordination with the NAVFAC SW biologist.

Management Objective and Strategy

Habitat Preservation and Rehabilitation

Objective: Develop and implement a program for natural land and habitat preservation and rehabilitation.



Source: ESRI World Imagery 2009, U.S. Navy et al. 2011b
 Disclaimer: Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 4-3: Naval Base San Diego Main Site Vegetation

Strategies:

1. Conduct long-term resource monitoring to detect changes caused by military activities.
2. Continue invasive and noxious weed identification and control as necessary.
3. Complete evaluation and prioritization of active erosion sites.
4. Update vegetation mapping.
5. Ensure that natural resources staff responsible for plant community conservation update training regarding management of these resources on a military installation on an annual basis.
6. Develop specifications and standards for reseeded/revegetation of disturbed sites for use in contracts, maintenance, and other projects.
7. Annually review management to ensure it still meets ecosystem management goals.

Soil Resources

Objective: Minimize soil compaction and restore erosion sites.

Strategies:

1. Tailor land uses to appropriate soil types.
2. Continue to implement plans for eroded site rehabilitation.
3. Identify additional sites for land rehabilitation planning.
4. Survey areas where soil erosion and compaction might occur and install BMPs outlined in the erosion control plan are implemented and are effective.

4.2.3.2 Wetlands and Floodplains

Wetlands, as defined by the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (USACE), are “areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas” (USACE 1987). In addition, USACE regulates activities within 3 nautical miles of land, including the San Diego Bay (U.S. Navy 2010b).

Waters of the U.S., generally include all waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; all interstate waters, including interstate "wetlands"; and all other waters such as interstate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce.

The major goal in wetland and floodplain management is to minimize the impact that NBSD has on wetlands and floodplains. The natural resources staff strives to maintain the existing functions and services of the all wetlands and non-wetland waters of the U.S. located on NBSD. When possible, wetlands and non-wetland waters of the U.S. may be rehabilitated to increase the functions and services these resources provide within the ecosystem and to society. It is also the goal to maximize floral diversity of wetland communities, which, in turn, maximizes the faunal diversity of the ecosystem.

Through achieving these goals, NBSD can manage for no net loss of wetland and floodplain acreage, functions, and services.

According to OPNAVINST 5090.1C CH-1, the Navy will comply with the national goal of no net loss of wetlands, and will avoid loss of size, function and value of wetlands. According to the most recent survey, NBSD has 1.6 acres (0.65 hectares) of wetlands, and 298.8 (121 hectares) of non-wetland jurisdictional waters (U.S. Navy 2010b).

The Federal no net loss policy for wetlands is the principle by which counties, agencies, and governments strive to balance unavoidable habitat, environmental and resource losses with replacement of those items on a project-by-project basis so that further reductions to resources may be prevented. Avoidance, minimization, or compensatory mitigation may be required through the permitting process to offset any impacts to waters of the U. S., including wetlands.

Waters of the U.S., including wetland management strategies vary depending primarily on the wetland classification, which is determined by the value of a particular wetland area. A wetland's value is decided by the quality of the functions and services it provides or has the potential to provide, including its biomass production, habitat, erosion control, storm water storage, water quality protection, aquifer recharge potential, and low flow augmentation. Some of the factors used to measure the quality of these functions are the wetland's size, its location in the watershed, the amount of development in the watershed, vegetative structure and composition, rate of water flow through the wetland, the size of natural buffers, and surrounding land uses. Regardless of the habitat value, wetland areas are almost always poor choices for building sites or for most activities, other than providing non-consumptive enjoyment of the outdoors. Installation natural resources staff will ensure during the program/project review process that program/project managers are aware of the laws and regulations and permitting process regarding the protection of waters of the U.S., including wetlands.

Paleta Creek is located within the 100-year floodplain and is susceptible to flooding due to its small drainage basin and channel capacity. A high tide combined with a storm could cause the creek to flood. In addition, as of 2002, Paleta Creek had only 70 percent of the floodway capacity to accommodate a 100-year flood.

Specific Concerns

- Development/anthropogenic disturbances.
- Invasive species encroaching into wetland habitat.
- Climate change.
- Erosion and sedimentation from either anthropogenic or natural causes.
- Pollution.

Current Management

Wetlands were delineated on NBSD during the 2006 and 2008 natural resources survey for NBSD. A total of 1.6 acres (0.65 hectares) of wetlands and 298.8 acres (121 hectares) of other USACE regulated waters of the U.S. were identified on NBSD (see **Table 4-2** and **Figure 4-3**) (U.S. Navy 2010b).

Jurisdictional delineations for waters of the U.S., including wetlands, are conducted as needed on NBSD based on mission and development initiatives. As long as delineations are conducted and associated Jurisdictional Determinations are obtained on NBSD on a regular basis and information from the delineations is maintained in the GIS database, management of wetlands should not pose an issue at NBSD.

Table 4-2: Naval Base San Diego, Main Site Jurisdictional Waters

Jurisdictional Waters on NBSD	Acres
Wetland	1.6
Non-wetland waters of the U.S.	298.8
Total	300.4

The San Diego Bay INRMP covers waters within the bay adjacent to NBSD Main Site including Paleta Creek. A more specific description and management of the marine habitats in the San Diego Bay are discussed in the San Diego Bay INRMP (*Port of San Diego*), which was developed in cooperation between the Navy and SDUPD along with their government and non-government partners.

Management Objective and Strategy

Objective: Avoid impacts to waters of the U.S., including wetlands located on NBSD to the maximum extent practicable while maintaining the existing functions and services of these resources.

Strategies:

1. Update the water resource inventory data, including wetland distribution and categories.
2. Conduct Environmental Review for activities that could affect wetlands.
3. Plan development and training activities to avoid waters of the U.S., including wetland impacts to the maximum extent possible and mitigate unavoidable impacts on waters of the U.S., including wetland functions, size, and services.
4. Maintain water quality to protect surface waters and wetlands from excessive sediment laden runoff through implementation of BMPs from the Erosion Control Plan.
5. Prevent stormwater runoff and erosion to protect waters of the U.S., including wetlands, from pollutants and excessive sedimentation.
6. Remain in compliance with the CWA and implement procedures to manage for a no net loss of wetland and floodplain acreage, functions, and services.
7. Reduce habitat fragmentation and control the spread of invasive species.
8. Annually review the natural resources management program and implement adaptive management techniques to ensure that management actions do not adversely impact wetlands.
9. Implement erosion control BMPs to avoid adverse environmental impacts to wetlands.
10. Maintain accurate, usable, and informative GIS data for ease in management planning and documentation.

4.2.3.3 Marine Habitats

The San Diego Bay region supports at least 150 species of marine and terrestrial plants, more than 70 species of fish, 300 species of resident or migratory birds, and at least 650 species of marine, estuarine, and salt marsh invertebrates (U.S. Navy et al. 2011a). In addition, the Bay plays a vital role in the southern Pacific Ocean food web, and is a key spawning location for fish.

Habitats within the San Diego Bay are categorized by depth with respect to the tides, then by substrate, water clarity, and other factors. Habitat types within the San Diego Bay at NBSD are shown in **Figure 4-4** and include deep subtidal and shallow subtidal. The following is a summary of the deep subtidal and shallow subtidal habitats described in the San Diego Bay INRMP (U.S. Navy et al. 2011a). The San Diego Bay INRMP covers waters within the bay adjacent to NBSD Main Site. A more specific description and management of the marine habitats in the San Diego Bay are discussed in the San Diego Bay INRMP (*Port of San Diego*), which was developed in cooperation between the Navy and SDUPD along with their government and non-government partners.

Deep Subtidal

Deep subtidal (deeper than –20 feet [6 meters] mean lower low water [MLLW]) describes the surface water, water column, and sediments for areas greater than 6 meters in depth. The MLLW number is the level at which coastal flooding commonly occurs. There are approximately 1796.8 hectares (4,440 acres) of deep subtidal zone in the Bay that is associated with maintained navigational channels. The majority of the deep subtidal zone has been dredged since the 1940s. Dredging has caused an approximate 100 percent gain in acreage of deep subtidal area in the Bay.

Shallow Subtidal

The shallow subtidal zone (–2.2 to –12 feet [–7 to –4 meters] MLLW) is separated into unvegetated and vegetated shallow soft bottom habitats approximately 0.8 to 4.8 hectare (2 to 12 feet) below the intertidal zone. These areas are continually submerged and extend from the low tide zone. Presently 1,511.1 hectares (3,734 acres) of subtidal habitat, a 41 percent loss from historic predevelopment numbers, exists within the Bay. The South Bay area has seen the least amount of disturbance from dredging. The shallow waters are higher in number and diversity of birds and fishes and are the preferred habitat of bottom feeders and plunge divers such as Scoter, Scaup, and Terns.

Unvegetated Shallow Soft Bottom. The unvegetated soft bottom habitats consist of unstable sand shifting unconsolidated sediments disturbed by bottom feeding animals, currents, wind, and other abiotic factors.

Vegetated Shallow Subtidal. The vegetated shallow subtidal areas of the Bay are composed mainly of beds of eelgrass (*Zostera marina*), a marine angiosperm (flowering plant) and type of sea grass. Eelgrass, a native marine angiosperm, provides a key benthic habitat in San Diego Bay. Eelgrass habitats rank among the most productive habitats in the ocean. Eelgrass beds in San Diego Bay have suffered substantial loss due to their location in sheltered waters where human activity is concentrated.

Eelgrass

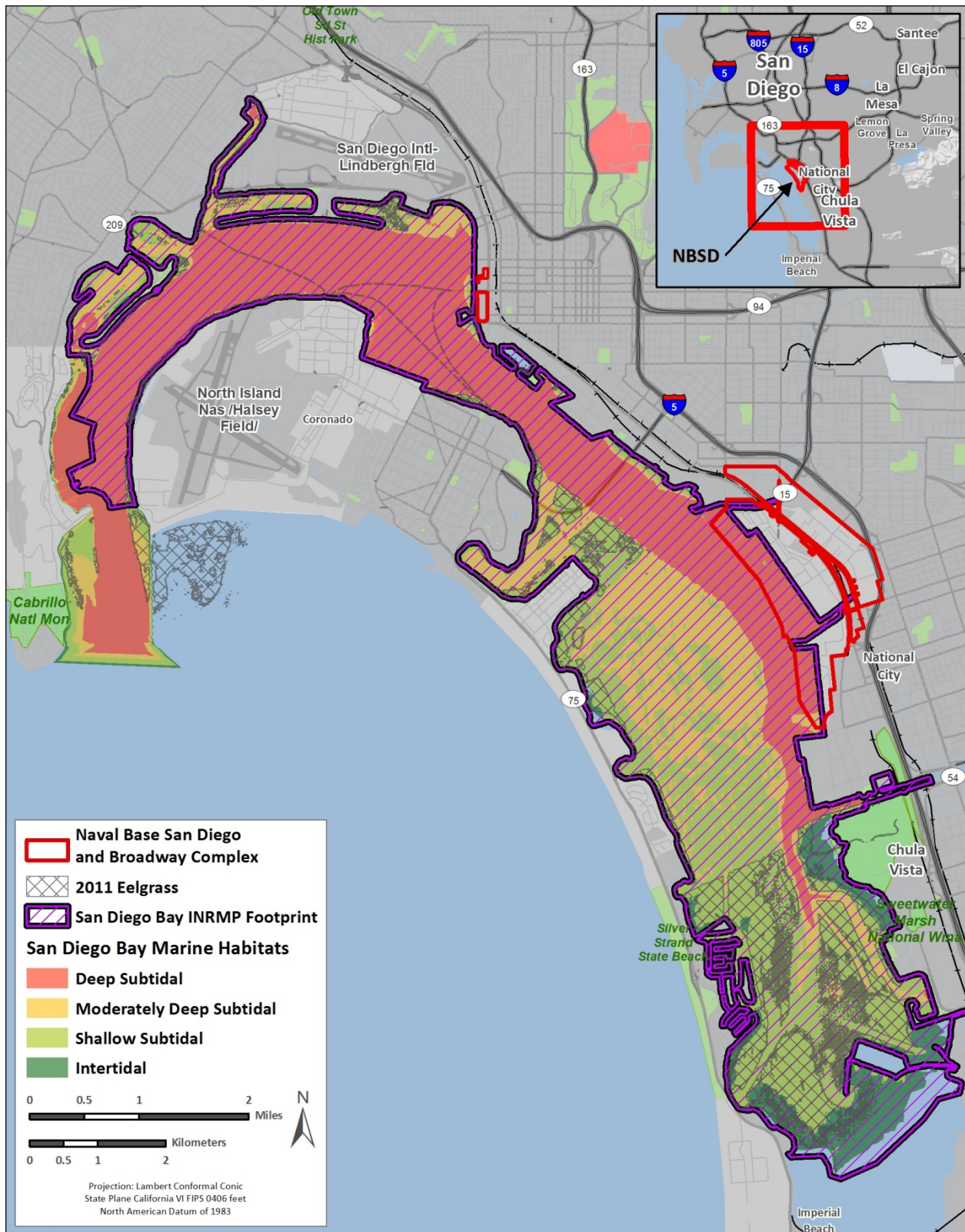
Eelgrass is a perennial marine flowering aquatic plant that provides habitat for several varieties of fish and invertebrates in the San Diego Bay (U.S. Navy et al. 2011b). Eelgrass beds are a valuable source of food and habitat for various life stages. Much of eelgrass' productivity enters the food web as detritus or decayed material consumed by invertebrates. Fishes and invertebrates, such as juvenile lobster, use eelgrass beds to escape from predators, as a food source, and as a nursery. Fish documented to use eelgrass beds include topsmelt (*Atherinops affinis*), guitarfish (Rhinobatidae family), diamond turbot (*Hypsopsetta guttulata*), bat ray (*Myliobatis californica*), dwarf perch (*Micrometrus minimus*), arrow goby (*Clevelandia ios*), jack mackerel (*Trachurus symmetricus*), bay



Eelgrass

(*Zostera marina*)

Credit: J. Ekeboom, Metsähallitus



Source: ESRI StreetMap USA 2007, Imagery (i-cubed)
 Disclaimer: Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 4-4: Naval Base San Diego Main Site Marine Habitats

pipefish (*Syngnathus leptorhynchus*), Pacific sardine (*Sardinops sagax*), striped mullet (*Mugil cephalus*), and walleye surfperch (*Hyperprosopon argenteum*) (U.S. Navy 2010a). The plants provide surfaces for egg attachment and sheltered locations for juveniles to hide and feed. Fish produced from these beds are consumed by fish-eating birds, including the endangered California Least Tern (*Sterna antillarum browni*) (U.S. Navy 2010a).

Eelgrass beds within the San Diego Bay cover the majority of some of the nearshore areas along the San Diego Bay. The health of eelgrass beds in the San Diego Bay may be attributed to cooperation between Federal and state agencies to implement mitigation policies to reduce impacts to this species (U.S. Navy et al. 2011b). The Southern California Eelgrass Mitigation Policy adopted in July 1991 between USFWS, NOAA Fisheries, and CDFW provided information on eelgrass in southern California, and provided a consistent policy for mitigating adverse impacts to eelgrass populations (USFWS et al. 1991).

The 2011 update to the eelgrass distribution within San Diego Bay showed that it extended over a total bottom area of 1,830.4 acres and follows the general patterns of distribution noted in prior surveys. The greatest extent of eelgrass is found within the shallow southern ecoregion of the Bay with more extensive eelgrass also being found on the shallower fringes of the western Bay shorelines where gradual shorelines are more prominent (U.S. Navy et al. 2011b). The inventory did not identify any eelgrass specifically within the NBSD marine footprint, but it has the potential to occur.

4.2.3.4 Wildland Fire

Not applicable to NBSD due to minimal open space and nearby urbanization.

4.2.3.5 Critical Habitat

No designated critical habitat has been designated on NBSD. There is critical habitat designated for the Western Snowy Plover approximately 0.5 miles south of NBSD Main Site, however no habitat for this species exists on the installation and it is not known to occur.

4.2.3.6 Other Regulatory or Habitat Planning Designation

The CDFW Natural Diversity Data Base (NDDB) has designated a number of communities as rare, including the southern coastal salt marsh that occurs on NBSD at Paleta Creek (U.S. Navy 2002a). The CDFW defines rare communities as “those communities that are of highly limited distribution... [that] may or may not contain rare, threatened, or endangered species” (CDFG 2000). In addition, the coastal waters of Southern California and the San Diego Bay, including the portion off of NBSD, has been designated as essential fish habitat (EFH) for coastal pelagic species, such as northern anchovy (*Engraulis mordax*) and Pacific sardine, and Pacific coast groundfish, including several species of sharks, rockfish, flatfish, roundfish, rattfish, morids, and grenadiers (U.S. Navy 2011).

4.2.4 Fish and Wildlife Management

For the purposes of this INRMP, wildlife management is defined as manipulation of the environment and wildlife populations to produce desired objectives. The primary goal of wildlife management at NBSD is to maintain wildlife populations at levels compatible with land use objectives while promoting the existence, importance, and benefits of nongame species.

The basis of managing a rich assemblage of nongame wildlife is to provide a mosaic of habitats that are structurally and biologically diverse. In managing for a diversity of habitats and diversity within those habitats, the potential exists for numerous species to be found. NBSD should employ these basic techniques for managing wildlife.

- **Monitoring Wildlife.** Creating, monitoring, and updating GIS data on wildlife species will allow NBSD to store, retrieve, present, and analyze the data to make informed management decisions.
- **Managing for Migratory Birds.** The MBTA provides for a year-round closed season for nongame birds and prohibits the taking of migratory birds, nests, and eggs, except as permitted by the USFWS. Impacts on birds protected under the MBTA will be avoided through surveying for nesting birds in areas proposed for disturbance and, if necessary, waiting until the nesting and fledging process is complete. Alternatively, the USFWS recommends that conducting activities outside of nesting areas or outside of the general migratory bird-nesting season can help avoid direct impacts.
- **Protecting Sensitive Areas.** NBSD should maintain biological diversity by protecting, to the extent practical, sensitive areas that provide unique habitat niches. Protection measures might include restricting vehicle movement, and protecting habitats of exceptional biological value by establishing protective buffers and maintaining healthy and diverse ecosystems.

4.2.4.1 Invertebrates and Pollinators

Invertebrates

For a complete listing of invertebrate species observed on NBSD, see **Appendix G**.

Due to the intensive urbanization that has occurred on NBSD, invertebrate species diversity is relatively low (U.S. Navy 2010b). Invertebrate species observed during the 2006 and 2008 natural resources survey at NBSD include scarab beetles (family Scarabaeidae), noctuid moths (family Noctuidae), blue butterflies (family Lycaenidae), skipper butterflies (family Hesperidae), water midges (family Chironomidae), ichneumonid wasps (family Ichneumonidae), ants (family Formicidae), sweat bees (family Halictidae), jumping spiders (family Salticidae), and wolf spiders (family Lycosidae) (U.S. Navy 2010b).

Pollinators

A pollinator is an animal or insect that transfers pollen grains from flower to flower (DoD Legacy 2010a). Pollinators are responsible for pollinating 80 percent of the crops we consume, as well as the majority of plants and fruits consumed by wildlife. Examples of pollinators in the San Diego region include bees, butterflies, moths, beetles, flies, and birds. Several potential invertebrate and avian pollinator species occur on NBSD. Invertebrate species include funereal duskywing (*Erynnis funeralis*), fiery skipper (*Hylephila phyleus*), Lorquin's admiral (*Limenitis lorquini lorquini*), common buckeye (*Junonia coenia*), mourning cloak (*Nymphalis antiopa antiopa*), painted lady (*Vanessa cardui*), Western tiger swallowtail (*Papilio rutulus rutulus*), Sara orangetip (*Anthocharis sara*), sulfur (*Colias* sp.), tiger moth family (Arctiidae), noctuid moth family (Noctuidae), Western pigmy blue (*Brephidium exile*), perplexing hairstreak (*Callophrys dumetorum*), pyralid moth family (Pyralidae), and Behr's metalmark (*Apodemia mormo virgulti*) (U.S. Navy 2010b).

The relationship between the fate of pollinators and the ability of installations to meet readiness and stewardship obligations has been a focus of the DoD Legacy Resources Management Program (DoD Legacy) for the past several years. The DoD recognizes that pollinators ensure that native landscapes on installations do not become barren, or overrun with invasive species (DoD Legacy 2010a). The DoD also acknowledges that habitat restoration and invasive species removal go hand in hand. Through enhancing and restoring pollinator habitat by restoring native plant communities and removing and controlling invasive species, DoD installations can save money, protect threatened and endangered species, and contribute to biodiversity. Some of the projects funded by the DoD Legacy program include a demonstration project at Dyess Air Force Base, Texas to determine the impact of habitat restoration on

pollinator populations through removal of invasive plant species and replacing invasive species with native flora; and development of management plans for use on installation golf courses to reduce course impacts on pollinator populations (DoD Legacy 2010b).

Unfortunately, pollinator populations have been declining since at least the 1950s. The decline in pollinator populations is associated with the excessive and improper use of pesticides, parasites, disease, habitat loss, habitat fragmentation, landscape deterioration, and climate change (DoD Legacy 2010a). Steps that NBSD can undertake to help ensure that populations of pollinators do not continue to decline include the following (DoD Legacy 2010a, The Pollinator Partnership™/NAPPC 2010):

- Restore land with plants that attract pollinators, and include pollinator-friendly plants in gardens
- Provide connectivity between vegetation areas by creating corridors of perennials, shrubs, and trees that provide pollinators shelter and food as they move through the landscape
- Provide wind breaks and nesting areas, such as bat boxes or sites without high vegetation for bee nests
- Control invasive plants with an integrated pest management approach
- Monitor sites over time, noting pollinator species present and habitat composition
- Inventory and become knowledgeable of local pollinators
- Maintain a minimum of lawn areas that support recreational needs
- Restrict the use of pesticides and herbicides when possible and comply with the restoration management plan and the Integrated Pest Management Plan
- Provide water sources in large open areas
- Maintain natural meadows and openings that provide habitats for sun-loving wildflowers and grasses.

Table 4-3 provides details of vegetation traits that attract the various pollinators that may be encountered at NBSD. For more information on DoD's work to support pollinators, visit <http://www.DoDpollinators.org>. Another good source for information on enhancing pollinator populations can be found within The Pollinator Partnership™/North American Pollinator Protection Campaign (NAPPC) publication *Selecting Plants for Pollinators. A Regional Guide for Farmers, Land Managers, and Gardeners in the California Coastal Chaparral Forest and Shrub Province Along the Southern California Coast* available online at:

<http://www.pollinator.org/PDFs/Calif.Coastal.Chaparral.rx2.pdf>

Specific Concerns

- Improper use of pesticides.
- Development/anthropogenic disturbances.
- Climate change.
- Predation.

Table 4-3: Plant Traits and the Pollinators They Attract

Plant Trait	Pollinator						
	Bees	Beetles	Birds	Butterflies	Flies	Moths	Wind
Color	Bright white, yellow, blue, or violet	Dull white or green	Scarlet, orange, red or white	Bright, including red and purple	Pale and dull to dark brown or purple; flecked with translucent patches	Pale and dull red, purple, pink or white	Dull green, brown, or colorless; petals absent or reduced
Nectar Guides	Present	Absent	Absent	Present	Absent	Absent	Absent
Odor	Fresh, mild, pleasant	None to strongly fruity or fetid	None	Faint but fresh	Putrid	Strong sweet; emitted at night	None
Nectar	Usually present	Sometimes present; not hidden	Ample; deeply hidden	Ample; deeply hidden	Usually absent	Ample; deeply hidden	None
Pollen	Limited; often sticky and scented	Ample	Modest	Limited	Modest in amount	Limited	Abundant; small, smooth, and not sticky
Flower Shape	Shallow; have landing platform; tubular	Large bowl-like, Magnolia	Large funnel like; cups, strong perch support	Narrow tube with spur; wide landing pad	Shallow; funnel like or complex and trap-like	Regular; tubular without a lip	Regular: small and stigmas exerted

Current Management

Natural resources managers are not currently managing for pollinator species at NBSD. Management recommendations for pollinators should be developed following an inventory.

Management Objective and Strategy

Objectives: Maintain and enhance pollinator populations and their habitat when not in conflict with health and safety, or the military mission.

Strategies:

1. Inventory and monitor populations of pollinators and develop management recommendations based on survey results.
2. Develop BMPs to ensure that pollinator species are not adversely impacted by NBSD activities.
3. Identify and develop pollinator friendly landscapes.
4. Develop and distribute outreach and education materials on pollinators.
5. Revegetate with native species contained on the NAVFAC SW recommended plant list.
6. Control the spread of invasive species.

7. Review existing literature on pollinators.
8. Develop and implement management program that supports bee relocation as opposed to bee eradication.

4.2.4.2 Fish

The San Diego Bay supports an abundant population of coastal marine, and juvenile fish species, and a large number of fish nurseries (U.S. Navy 2002a). **Table 4-4** provides examples of some of the fish species that can be found in San Diego Bay (U.S. Navy 2002a):

Table 4-4: Fish Species within San Diego Bay

Common Name	Scientific Name
Slough anchovy	<i>Anchoa delicatissima</i>
Topsmelt	<i>Atherinops affinis</i>
Shiner surfperch	<i>Cymatogaster aggregate</i>
Black surfperch	<i>Embiotoca jacksoni</i>
Northern anchovy	<i>Engraulis mordax</i>
Giant kelpfish	<i>Heterostichus rostratus</i>
Cheekspot goby	<i>Ilypnus gilberti</i>
California grunion	<i>Leuresthes tenuis</i>
Dwarf surfperch	<i>Micrometrus minimus</i>
Kelp bass	<i>Paralabrax clathratus</i>
Spotted sand bass	<i>Paralabrax maculatofasciatus</i>
Barred sand bass	<i>Paralabrax nebulifer</i>
California halibut	<i>Paralichthys californicus</i>
Pacific sardine	<i>Sardinops sagax</i>
Barred pipefish	<i>Syngnathus auliscus</i>
Bay pipefish	<i>Syngnathus leptorhynchus</i>
Round stingrays	<i>Urolophus halleri</i>

In 1998, the Pacific Fishery Management Council delineated and designated EFH in San Diego Bay for coastal pelagic species (CPS) and Pacific Coast groundfish. The following provides a brief description of the San Diego Bay EFH.

CPS includes schooling fish, not associated with the ocean bottom, that migrate in coastal waters. The federally managed CPS includes market squid (*Loligo opalescens*) and finfish such as northern anchovy, Pacific sardine, Pacific mackerel (*Scomber japonicus*), and jack mackerel. The east-west geographic boundary of EFH in southern California for each individual CPS finfish and market squid is defined as all marine and estuarine waters from the shoreline along the coasts of California offshore to the limits of the Exclusive Economic Zone (EEZ) and above the thermocline where the sea surface temperatures range between 10 degrees Celsius to 26 degrees Celsius. The southern extent of EFH for CPS finfish is the

U.S./Mexico maritime boundary. The northern boundary is more dynamic and variable due to the seasonal cooling of the sea surface temperature.

Groundfish species typically live on or near the bottom of the ocean, thus the terms groundfish or bottomfish are often used to describe them. The groundfish management unit consists of 83 species from groups including rockfish, flatfish, sharks and skates, roundfish, and others. The groundfish fishery EFH includes all waters from the mean higher high water line and the upriver extent of saltwater intrusion in river mouths, along the coast of California seaward to the boundary of the U.S. EEZ.

The Pacific Coast Groundfish Fishery Management Plan groups the various EFH descriptions into seven units called “composite” EFHs. The seven major habitat types proposed as “composites” have distributions that are relatively stationary and measurable over time and space. The seven composite EFH habitats include estuarine, rocky shelf, non-rocky shelf, canyon, continental slope/basin, neritic zone, and oceanic zone. The estuarine composite, defined as those waters, substrates, and associated biological communities within bays and estuaries of the EEZ, describes the waters of San Diego Bay.

4.2.4.3 Reptiles and Amphibians

For a complete listing of reptile and amphibian species observed on NBSD Main Site, see **Appendix G**. More information on the Partners in Amphibian and Reptile Conservation (PARC) is available in **Section 8.2.1.5**.

Due to the urbanization of NBSD, the only reptile or amphibian species observed on NBSD during the 2006 and 2008 survey was the western fence lizard (*Sceloporus occidentalis*). The bullfrog (*Rana catesbeiana*) is also known to occur on NBSD, but was not observed during the survey (U.S. Navy 2010b).

Specific Concerns

- Improper use of pesticides.
- Habitat loss.
- Invasive species.
- Climate change.
- Predation.

Current Management

Opportunities for the management of reptiles and amphibian species on NBSD are primarily accomplished by managing habitats. NBSD natural resources personnel coordinate with CDFW and USFWS to identify, prioritize and implement habitat enhancement projects targeted for particular species or groups of species (e.g., reptiles). Projects to manage wildlife habitat include invasive plant control, enhancing and protecting wetlands, and conducting surveys (e.g., natural resource inventories).

Management Objective and Strategy

Objective: Employ a systematic approach to managing wildlife resources, using a process that includes inventory, monitoring, modeling, management, assessment, and evaluation.

Strategies:

1. Ensure that the natural resources staff members responsible for wildlife management and conservation obtain focused training regarding management of these resources as related to conservation on a military installation on an annual basis.
2. Continue documenting species that are incidentally observed during surveys.
3. Annually review the monitoring program to make certain it still meets ecosystem management goals.
4. Survey for and monitor herpetofauna populations using guidelines recommended by Partners in Amphibian and Reptile Conservation (PARC).
5. Once finalized, implement DoD PARC Strategic Plan.
6. Revegetate areas, where it is appropriate on the installation, with native species using species on the NAVFAC SW recommended plant list.
7. Control the spread of invasive species.
8. Maintain and promote partnerships with agencies and groups involved in wildlife management.
9. Maintain accurate, usable, and informative GIS data for ease in management planning and documentation.

4.2.4.4 Birds and Migratory Bird Management

For a complete listing of avian species observed on NBSD Main Site, see **Appendix G**. Note that common names for birds used throughout the document are based on the convention of the Ornithological Association.

Due to the urbanization of NBSD, nesting habitat for avian species is limited, and raptor perching sites at NBSD include the athletic field light poles and tall eucalyptus (*Eucalyptus* sp.) trees within the urban areas.

For additional information on MBTA, see **Appendix F**.

Specific Concerns

- Development/anthropogenic disturbances.
- Invasive species (flora and fauna).
- Habitat loss and/or changes.
- Climate change.
- Predation.

Current Management

NBSD personnel provide observations of migratory bird species within the installation boundaries.

Management Objective and Strategy

Objective: Maintain and enhance populations, and nesting and foraging habitats of migratory birds on NBSD.

Strategies:

1. Assess the effects of all projects on migratory birds during NEPA process. Ensure compliance with MOU between USFWS/DoD on the Conservation of Migratory Birds and the “Migratory Bird Rule.”
2. Identify any actions that require an MBTA permit and, if necessary, obtain appropriate permit for intentional take of migratory birds.
3. Develop effective management for minimizing the unintentional take of migratory birds.
4. Conduct regular surveys (e.g., every 5 years when the baseline inventories are scheduled to be repeated) to determine what species of migratory birds may have potential to be on NBSD.
5. Once finalized, implement monitoring protocols contained within the DoD Coordinated Bird Monitoring Plan. Contribute data to the Coordinated Bird Monitoring Database.
6. Continue monitoring listed species as described in this INRMP and adapt monitoring and management actions as needed.
7. Develop migratory bird specific BMPs and ensure these BMPs are included in project plans (e.g., plan all tree trimming during the non-nesting season).
8. Develop and distribute outreach and education materials on migratory birds.
9. Revegetate with native species contained on the NAVFAC SW recommended plant list.
10. Participate in DoD Partners in Flight initiative.
11. Ensure feral cats and cat colonies are eliminated from NBSD per Secretary of Naval Instruction (SECNAVINST) 6401.1A.

4.2.4.5 Bird/Wildlife Aircraft Strike Hazard

Not applicable to NBSD due to a lack of flight operations.

4.2.4.6 Mammals

For a complete listing of mammal species observed, or detected, at NBSD, see **Appendix G**.

Due to the urbanization of NBSD, available habitat for mammal species is very limited. During the 2006 and 2008 natural resources survey only three species of mammals were observed, or detected, on NBSD including gray fox (*Urocyon cinereoargenteus*), the black rat (*Rattus rattus*) and the house mouse (*Mus musculus*) (U.S. Navy 2010b).

4.2.4.7 Marine Mammals

For a complete listing of marine mammals known to occur in the San Diego Bay, as well as the management objectives and strategies related to those species, refer to the San Diego Bay INRMP (U.S. Navy et al. 2011a).

Marine mammals known to occur in the waters near NBSD include members of two orders (U.S. Navy 2010a):

1. Order Cetacea, which includes whales, dolphins, and porpoises.
2. Order Carnivora, which includes true seals, sea lions, and fur seals.

Cetaceans spend their lives entirely at sea. Carnivora, or pinnipeds, hunt and feed exclusively in the ocean, with certain species in southern California coming ashore to rest, molt, breed, and bear young.

Extensive natural history information for marine mammal species occurring within southern California waters has been summarized in previous works (Leatherwood et al. 1982, 1988; Reeves et al. 2002; U.S. Navy 2005c; Carretta et al. 2007; DoN 2008). Approximately 41 marine mammal species or stocks are known to occur within southern California waters based on NOAA Fisheries Stock Assessment Reports (Carretta et al. 2007, DoN 2008). Of these, only three year-round species and one migratory species are expected to be found within the NBSD marine region. These include the California sea lion (*Zalophus californianus*), Pacific harbor seal (*Phoca vitulina richardii*), bottlenose dolphin (*Tursiops truncatus*), and gray whale (*Eschrichtius robustus*).

4.2.4.8 General Fish and Wildlife Management

Specific Concerns

- Improper use of pesticides.
- Habitat loss.
- Invasive species.
- Climate change.
- Predation.

Current Management

Opportunities for the management of fish and wildlife species on NBSD are primarily accomplished by managing habitats. NBSD natural resources personnel coordinate with CDFW and USFWS to identify, prioritize and implement habitat enhancement projects targeted for particular species or groups of species (e.g., birds). Projects to manage wildlife habitat include invasive plant control, enhancing and protecting wetlands, and conducting surveys (e.g., migratory nesting bird survey).

Management Objective and Strategy

Objective: Employ a systematic approach to managing wildlife resources, using a process that includes inventory, monitoring, modeling, management, assessment, and evaluation.

Strategies:

1. Ensure that the natural resources staff members responsible for wildlife management and conservation obtain focused training regarding management of these resources as related to conservation on a military installation on an annual basis.
2. Continue documenting species that are incidentally observed during surveys.

3. Annually review the monitoring program to make certain it still meets ecosystem management goals.
4. Survey for and monitor herpetofauna populations using guidelines recommended by Partners in Amphibian and Reptile Conservation (PARC).
5. Once finalized, implement DoD PARC Strategic Plan.
6. Install bird and bat boxes.
7. Maintain existing vegetation that is known to support wildlife; where it doesn't conflict with other ecosystem management agendas (e.g., invasive vegetation management).
8. Revegetate areas, where it is appropriate on the installation, with native species using species on the NAVFAC SW recommended plant list.
9. Control the spread of invasive species.
10. Maintain and promote partnerships with agencies and groups involved in wildlife management.
11. Maintain accurate, usable, and informative GIS data for ease in management planning and documentation.

4.2.5 Special Status Species Management

Special status species include those species that are federally listed endangered, threatened, or candidate; state listed endangered, threatened, candidate or species of special concern; birds on the Birds of Conservation Concern list; and plants identified by the California Native Plant Society (CNPS) as having a California Rare Plant Rank. **Figure B-2 in Appendix B** provides an illustration of the hierarchy for special status species as used in this INRMP.

Table 4-5 includes the species either observed on NBSD during the 2006 natural resources survey, or species with the potential to occur on the installation.

4.2.5.1 Federal Listed Species

No federally listed species are known to occur at NBSD Main Site.

4.2.5.2 Other Special Status Species

Estuary Seablite

The estuary seablite was the only rare plant documented during the 2006 and 2008 natural resources survey. Estuary seablite is a CNPS Rank 1B.1 species. This herbaceous perennial in the goosefoot family (Chenopodiaceae) has fleshy stems and typically flowers from May to October. Estuary seablite is found along the coast from Ventura County south to Baja California. It usually occurs along the margins of coastal salt marshes below 15 feet (4.6 meters) in elevation.

CNPS Rank 1B includes plants that are rare, threatened, or endangered in California and elsewhere. The plants of Rank 1B are rare throughout their range with the majority of them endemic to California. Rank 1B plants constitute the majority of the plants in CNPS' Inventory with more than 1,000 plants assigned to this category of rarity. All of the plants constituting CNPS Rank 1B meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Secs. 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing (CNPS 2011).

Table 4-5: Special Status Species Observed or with the Potential to Occur on Naval Base San Diego, Main Site

Common Name	Scientific Name	Federal Status	State Status	NBSD Presence
Plants				
Estuary seablite	<i>Suaeda esteroa</i>	---	CNPS Rank 1B.1	Found along Paleta Creek.
Birds				
Great Egret	<i>Ardea alba egretta</i>	---	---	Observed foraging in Paleta Creek, no nests present.
Great Blue Heron	<i>Ardea herodias wardi</i>	---	---	Observed foraging in Paleta Creek, no nests present.
Snowy Egret	<i>Egretta thula thula</i>	---	---	Nesting on NBSD.
Black-crowned Night-Heron	<i>Nycticorax nycticorax hoactli</i>	---	---	Nesting on NBSD.
Osprey	<i>Pandion haliaetus</i>	---	WL	Observed at NBSD in 2012.

Source: U.S. Navy 2010b, CNPS 2011, Pers. Comm. A. Wastell 2012

Note: Herons and egrets are identified as special status species due to the concerns that have risen over the proper management of these colonies and the best approach to minimize conflicts with naval operations. They are also protected under MBTA.

Key:

Federal Status: FE = Federal Endangered, FT = Federal Threatened, FC = Federal Candidate, BCC = Birds of Conservation Concern
 State Status: SE = State Endangered, ST = State Threatened, SSC = Species of Special Concern, WL = Watch List, FP = Fully Protected, CNPS = California Native Plant Society, List 1B = Rare, threatened, or endangered in California and elsewhere. 0.1: Seriously threatened in California.

Estuary seablite was found at NBSD Main Site along Paleta Creek, generally interspersed with pickleweed and iceplant. Approximately 500 individuals were observed along Paleta Creek. A few individuals were also observed at the lower extent of Chollas Creek at the base of riprap (see **Figure 4-5**).

Specific Concerns

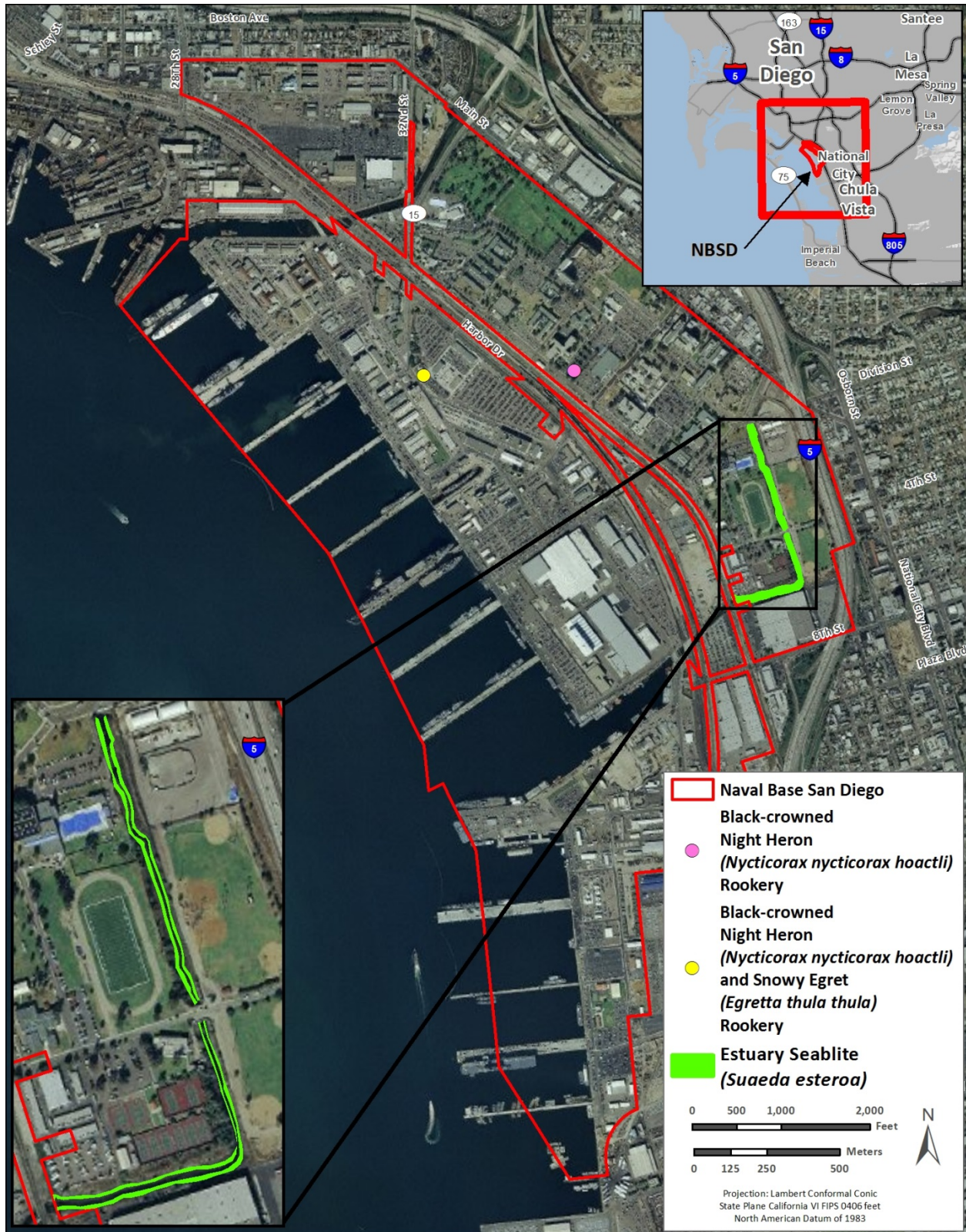
- Invasive species.
- Climate change.

Current Management

NBSD personnel provide observational data regarding presence of estuary seablite on the installation.

Management Objective and Strategy

Objective: Maintain populations of estuary seablite on NBSD.



Source: ESRI World Imagery 2009, U.S. Navy 2010b
 Disclaimer: Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 4-5: Naval Base San Diego Main Site Special Status Species

Strategies:

1. Perform invasive species control in areas where estuary seablite is known to occur.
2. Conduct periodic monitoring (recommend at least every 5 years) to determine existing population health.
3. Perform a vulnerability assessment to assess threats to existing populations.
4. Complete the NEPA/SAR process to avoid/minimize adverse impacts (e.g., threats).
5. Incorporate estuary seablite into revegetation projects, where appropriate.

Hérons and Egrets

There are two heron and egret rookeries (i.e., heron and egret nesting area) at NBSD. The rookery site, located on McKean Street/Surface Navy Street, consists of four large fig (*Ficus* sp.) trees, where Snowy Egrets (*Egretta thula thula*) share this site with Black-crowned Night-Herons (*Nycticorax nycticorax hoactli*). Black-crowned Night-Herons use another rookery that consists of a large cluster of fig trees along McChandless Road in the parking lot of Donnelly Hall (Building 3362) (see **Figure 4-6a**). However, the majority of these trees were removed in accordance with the MBTA for P-405 BEQ Homeport Ashore 11-C-2804, NBSD, Tree Removal. The 2012 *Heron Management Plan for Installations of the Navy Metro Area in the San Diego Bay* provides general and specific management recommendations for herons and egrets on Navy facilities in the San Diego area (U.S. Navy 2012c), including the following:

- Continue monitoring heron colony status and distribution at least every 3 to 5 years. Evaluation and monitoring of reproductive success of the heron colonies should be performed at least every 5 years. Future monitoring efforts should look for nesting Little Blue Herons and Yellow-crowned Night- Herons and any hybrids.
- All operations to alter or shift nesting colonies should be conducted within the compliance requirements of all Federal, state and DoD regulations. The acquisition of Federal and state permits may be required to meet compliance of these regulations. In particular, USFWS may need to be consulted for compliance with MBTA, Sikes Act, NEPA, and the new Migratory Bird Rule.
- Minimize or eliminate prolonged disturbance of heron/egret nesting colonies during the critical periods of the nesting cycles, including courtship and nest construction, egg-laying, and incubation periods.
- Educate military and civilian public on the value of the heron colonies for the regional sustainability of heron populations in southern California.

Table 4-6 shows the numbers of breeding pairs/active nests on NBSD Main Site. The rookery in the parking lot of Donnelly Hall has the potential to grow as only 14 of the 32 existing ficus trees are currently used.

Specific Concerns

- Removal of nesting trees and impacts from tree trimming.
- Disease (e.g. steatitis).

Table 4-6: Heron and Egret Breeding Pairs, Active Nests on Naval Base San Diego, Main Site

Survey Year	Site Location			
	McChandle Road		McKean Street/Surface Navy Street	
	Black-crowned Night-Heron	Snowy Egret	Black-crowned Night-Heron	Snowy Egret
2007*	24	0	0	12
2008	20	0	2	13
2009	18	0	13	8
2012	1	0	10	14

Source: U.S. Navy 2012c, U.S. Navy 2012d

Notes: * Nest count per rookery data was not available for 2007.

Current Management

NBSD's mission does not directly conflict with the presence of herons; however, a strategy for mitigation has been developed for those projects with the potential to impact herons or their nests. Mitigation includes planting Torrey pine trees (*Pinus torreyana*) at heron nest sites, rather than planting eucalyptus trees, which are nonnative and pose a fire hazard. Torrey pine trees are known to provide native suitable nesting habitat for herons, identifying appropriate areas for long-term heron colony placement now, and planting these trees accordingly, will ensure that nesting habitat is available in the future. Prior to planting Torrey pine trees, these sites are analyzed to determine their feasibility and appropriateness for supporting Torrey pines (e.g., soil, slope aspect).

Management guidelines set forth in the 2012 Heron and Egret Management Plan include (1) restriction of non-essential activity adjacent to active heron nests; (2) conservation of nesting habitat; (3) continued monitoring of nesting locations, phenology (timing) of nesting, reproductive effort, and success; and (4) construction of parking covers or shelters to lessen impact of heron droppings.

Management Objective and Strategy

Objective: Maintain nesting for herons and egrets on NBSD.

Strategies:

1. Implement Heron and Egret Management Plan and incorporate appropriate managements strategies into this INRMP.
2. Maintain relationship with Wildlife Assist and Project Wildlife to rescue and rehabilitate injured herons.
3. Coordinate with local and regional efforts on disease research.

4.2.5.3 General Special Status Species Management

An installation's overall ecosystem management strategy must provide for protection and recovery of threatened and endangered species. Under the ESA, an "endangered species" is defined as any species that is in danger of extinction throughout all or a significant portion of its range. A "threatened species" is defined as any species that is likely to become an endangered species within the foreseeable future

throughout all or a significant portion of its range. The USFWS also has available an updated list of species that are regarded as candidates for possible listing under the ESA. Although candidate species receive no statutory protection under the ESA, the USFWS believes it is important to advise government agencies, industry, and the public that these species are at risk and could warrant protection under the ESA.

Specific Concerns

- Habitat loss resulting from urban development and habitat fragmentation.
- Invasive species encroaching on native species habitats.
- Habitat loss due to either anthropogenic or natural causes.
- Erosion and sedimentation from either anthropogenic or natural causes.
- Climate change.
- Predation.

Current Management

Management needs of threatened and endangered or other special status species and their habitats are based on results contained within surveys performed in 2006 and 2008 for NBSD. NBSD will continue to conduct species surveys as deemed necessary and subject to available funding. Management strategies will be developed or revised based on the recommendations of those surveys.

Management Objective and Strategy

Objective: Minimize the potential for adverse effects on special status species and their associated ecosystems while protecting the operational functionality of the installation mission by using an ecosystem based management approach.

Strategies:

1. Investigate the need for implementing research projects to understand ecological requirements of special status species.
2. Continue use of the established Environmental Review process to identify actions that result in adverse effects on special status species or their habitats.
3. Coordinate with the proponent to ensure NEPA and other regulatory requirements are met to reduce adverse effects.
4. Review and update species lists to reflect presence of threatened, endangered, and other special status species.
5. Conduct regular surveys for special status species that may be present on NBSD.
6. Continue monitoring special status species as described in this INRMP and adapt monitoring and management actions as needed. Use monitoring information and other information to guide adaptive management.
7. Work with stakeholders to develop appropriate habitat goals and management actions to achieve those goals and establish success criteria and reporting requirements.
8. Augment education program currently conducted at NBSD for military personnel who might have

contact with sensitive species or their habitats.

9. Initiate habitat improvement projects to conserve biodiversity and protect plant and animal habitats, as funding is available and when such projects will not adversely affect the military mission (e.g., noxious weeds, or invasive species removal; habitat disturbance where such disturbance will promote native plant growth; preventing habitat disturbance when this will promote nonnative plant growth; and revegetation with native plants).
10. Implement erosion control best management practices (BMPs) to avoid adverse environmental impacts to special status species habitat.
11. Revegetate with native species included on the NAVFAC SW recommended plant list. Include sensitive plant species in the NAVFAC SW recommended plant list.
12. Annually review the natural resources management program to make certain that management actions do not adversely impact habitat for special status species.
13. Maintain accurate, usable, and informative GIS data for ease in management planning and documentation.

4.2.5.4 ESA Consultation and Mission Requirements

Specific Concerns

- Presence of threatened or endangered species.
- Potential for new threatened or endangered species to occur or be newly listed.
- Potential for designation of critical habitat for threatened and endangered species.

Current Management

NBSD personnel and resource managers are aware of and in compliance with ESA regulations. Observations of threatened and endangered species are reported on a regular basis to natural resource managers and to the USFWS, and regular consultation occurs prior to activities that have the potential to impact threatened or endangered species or their habitat.

Management Objective and Strategy

Objective: Maximize effectiveness and efficiency of the NBSD Endangered Species Program to achieve the best conservation possible while maintaining and improving training activities at the desired level.

Strategies:

1. Prioritize management issues within and between species, and within the overall natural resources program to guide management actions and funding expenditures.
2. Coordinate with USFWS to identify actions that adversely impact training capabilities, and identify activities that could adversely affect listed species. Adapt measures as warranted and consult with USFWS to receive incidental take coverage where appropriate.
3. Ensure that NBSD remains in compliance with the ESA.
4. Annually review the natural resources management program to make certain that management actions do not adversely impact threatened and endangered species.

5. Promote species recovery and ensure essential habitat is conserved by providing proper funding, providing a benefit to the species, and ensuring effectiveness of management strategies employed. Maintain accurate, usable, and informative GIS data for ease in management planning and documentation.

4.2.6 Exotic and Invasive Species Management

Invasive species management is a large part of pest management activities. The Federal Noxious Weed Act and Executive Order (EO) 13112 require Federal agencies to control noxious and invasive species on Federal lands. The Federal Noxious Weed Act, enacted January 3, 1975, established a Federal program to control the introduction and spread of foreign noxious weeds into the United States. Amendments in 1990 established management programs for undesirable plants (including noxious weeds) on Federal lands. There are several plant species that are considered noxious and control is mandatory for those found on the Federal list. EO 13112 requires that Federal agencies prevent the introduction of invasive species, detect and control populations of invasive species, and restore native species and habitat conditions in ecosystems that have been invaded. Invasive species are alien species (not native to the ecosystem) whose introduction does, or is likely to, cause economic or environmental harm, or harm to human health. All of the invasive weeds listed on the federally list are not necessarily found at NBSD.

The California Wildlife Action Plan has identified the growth and spread of floral and faunal invasive species in the state as a major concern to maintaining biodiversity in the state (CDFG 2007). As a result, natural resources personnel on NBSD and NAVFAC SW ensure that invasive species are not introduced on the installation, and have developed a program to control the spread of and the eradication of existing infestations of invasive species.

Problems associated with invasive nonnative plants and animals are currently being addressed at many different levels in California, within the constraints of budgets and staffing resources. Examples include the CNPS which serves as the state's noxious weed coordination center for activities addressing noxious weeds within the state. The NRCS also has a lead role in coordinating an aggressive state/Federal/private effort to eradicate, or at least stop, the spread of invasive species. See **Section 3.1.5** for information on regional concerns about the spread of invasive species.

In 2006 the California Invasive Plant Council (Cal-IPC) updated the 1999 *Exotic Pest Plants of Greatest Ecological Concern in California* inventory list (2006). The updated Cal-IPC inventory ranks invasive species using a *High, Moderate, Limited, or Evaluated but not listed* scale based on the ecological impact of the species. Invasive species were ranked based on four criteria that included (1) ecological impact of the species on native California ecosystems, (2) potential for the species to either be or become invasive, (3) species distribution, and (4) documented levels of the species within a region or ecosystem. A description of each ranking level as defined by Cal-IPC is presented below (Cal-IPC 2006):

High: These species have severe ecological impacts on ecosystems, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. These species are usually widely distributed ecologically, both among and within ecosystems.

Moderate: These species have substantial and apparent—but generally not severe—ecological impacts on ecosystems, plant and animal communities, and vegetation structure. Their reproductive biology is conducive to moderate to high rates of dispersal, though establishment is generally dependent on ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

Limited: The ecological impacts of these species are minor or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasion. Ecological amplitude and distribution are generally limited (these species may be locally persistent and problematic).

Evaluated but not listed: In general, this designation is for plant species that did not have enough information to warrant a rating or the information available indicated that the plant species does not currently have significant impacts within California.

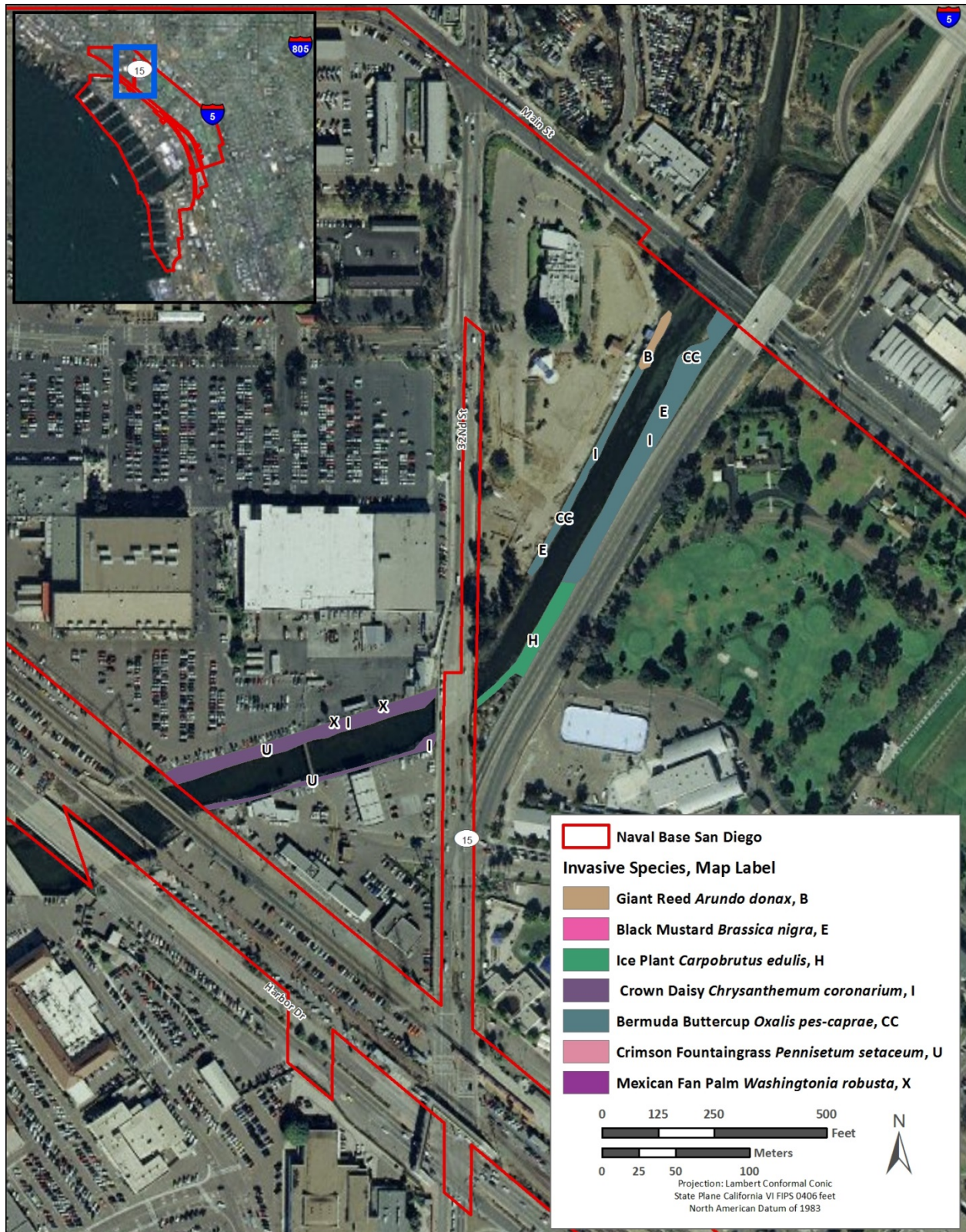
Alert: This is an additional designation for some species in either the high or moderate category, but whose evaluation is limited. The designation alerts managers to species that are capable of rapidly invading unexploited ecosystems, based on initial localized observations and on observed ecological behavior in similar ecosystems elsewhere.

Invasive species, with a Cal-IPC ranking, observed on NBSD are presented in **Table 4-7**, and locations of several of the species present on NBSD are illustrated in **Figures 4-6a** and **Figure 4-6b**.

Table 4-7: Invasive Species Observed on Naval Base San Diego, Main Site

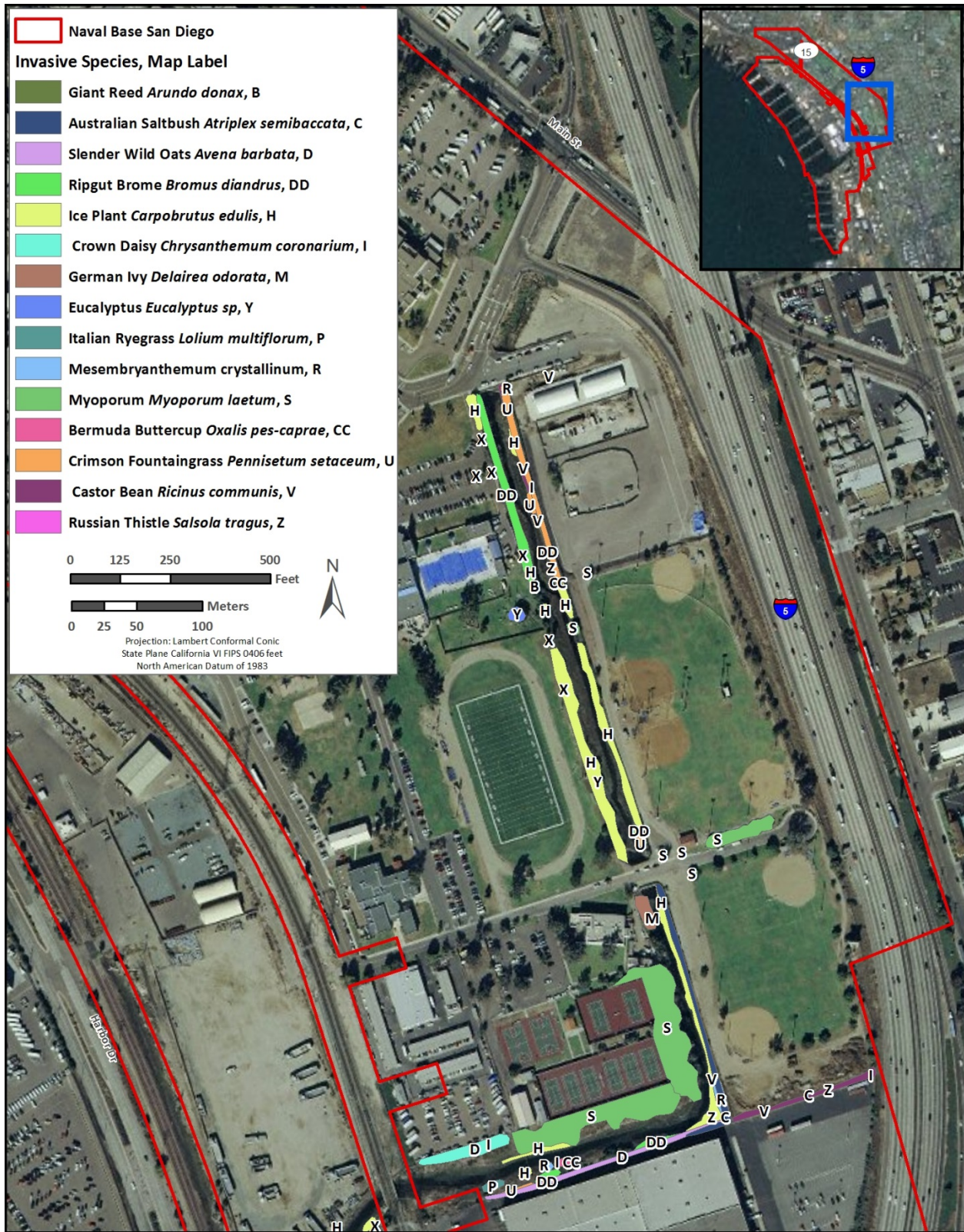
Common Name	Scientific Name	Cal-IPC Rank
Giant reed	<i>Arundo donax</i>	High
Australian saltbush	<i>Atriplex semibaccata</i>	Moderate
Slender wild oats	<i>Avena barbata</i>	Moderate
Black mustard	<i>Brassica nigra</i>	Moderate
Highway Iceplant	<i>Carpobrotus edulis</i>	High
Garland chrysanthemum	<i>Glebionis coronarium</i>	Moderate
Bermuda grass	<i>Cynodon dactylon</i>	Moderate
German ivy	<i>Delairea odorata</i>	High
Eucalyptus	<i>Eucalyptus</i> spp.	Limited – Moderate
Italian ryegrass	<i>Lolium multiflorum</i>	Moderate
Crystalline iceplant	<i>Mesembryanthemum crystallinum</i>	Moderate
Myoporum	<i>Myoporum laetum</i>	Moderate
Bermuda buttercup	<i>Oxalis pes-caprae</i>	Moderate
Crimson fountain grass	<i>Pennisetum setaceum</i>	Moderate
Canary Island date palm	<i>Phoenix canariensis</i>	Limited
Wild radish	<i>Raphanus sativus</i>	Limited
Castor bean	<i>Ricinus communis</i>	Limited
Russian thistle	<i>Salsola tragus</i>	Limited
Peruvian pepper tree	<i>Schinus molle</i>	Limited
Brazilian pepper tree	<i>Schinus terebinthifolius</i>	Limited
Mexican fan palm	<i>Washingtonia robusta</i>	Moderate

Source: U.S. Navy 2010b



Source: ESRI World Imagery 2009, U.S.Navy 2010b
 Disclaimer: Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 4-6a: Naval Base San Diego Main Site Invasive Species



Source: ESRI World Imagery 2009, U.S. Navy 2010b
Disclaimer: Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 4-6b: Naval Base San Diego, Main Site Invasive Species

Specific Concerns

- Anthropogenic disturbances (e.g., foot traffic).
- Landscaping on and off base.
- Rapid spread of invasive non-native plants that displace native species and degrade habitat for native floral and faunal species.
- Climate change.

Current Management

Natural resources managers at NBSD monitor and control the spread of existing infestations of invasive species, and to determine if new species populations have become established. Assessments of invasive species populations are conducted annually during the rainy season to determine the extent of invasive species populations on NBSD. Once assessed, species are prioritized for treatment based on the extent of the infestation, and where the populations are located (e.g., next to listed species habitat).

Management Objective and Strategy

Reduce Spread of Invasive and Exotic Species

Objective: Minimize nonnative species encroachment in areas where severe to moderate encroachment occurs, and in new areas of encroachment where infestation might be spreading but is not yet severe.

Strategies:

1. Annually review and update the NAVFAC SW recommended plant list.
2. Develop and implement a Vegetation Management Plan to control the spread of invasive species on NBSD. The plan should include specific prescriptions to evaluate individual invasive species, to identify and remove targeted species where present and appropriate, to control further spread of targeted species, and to develop and implement a program to monitor species abundance.
3. Conduct annual surveys to determine whether controls on existing infestations of species have been effective, and whether new populations have become established.
4. Develop and implement a review process for all projects that include a landscaping component to ensure nonnative species are not introduced.
5. Coordinate with the Natural History Museum to identify unknown species that may be invasive.
6. Develop outreach and education materials for distribution within the NBSD community.

Early Detection and Rapid Response

Objective: Enhance current early detection and rapid response management capabilities.

Strategies:

1. Ensure the IPMP and IAP plans establish early detection protocol and rapid response options, to include the following:
 - a. Establish adequate monitoring locations to detect invasive species introduction and spread.

- b. Develop a communication network as a rapid response tool to quarantine specific invaders and identify the pathway.
 - c. Support rapid response by determining funding sources, contract vehicles, and cooperative mechanisms that can be accessed quickly.
 - d. Prepare instructions that include measures to prevent the introduction of invasive non-native species, detect early and respond rapidly to new introductions, and control and monitor established populations.
2. Prepare educational materials for NBSD military and civilian employees, contractors, and other visitors as a tool in early detection of non-native terrestrial species.

Project Planning

Objective: Include control and management of invasive species in project planning and maintenance projects.

Strategies:

1. Address non-native species in NEPA and other ground disturbing project plans.
 - a. Ensure funding is secured for non-native removal during all phases (including post-project), if applicable.
 - b. Monitor projects to ensure personnel are following BMPs, conservation measures, and other guidelines and requirements.
2. Manage roads, access routes, and new construction sites to minimize the spread of invasive non-native species.
 - a. Require that maintenance or repair of existing roads stay within established footprints.
 - b. Clean roadside mowing equipment of adhering dirt and vegetation between mowing cycles.
 - c. Schedule roadside mowing to minimize weedy species seed distribution.
3. Investigate including clause in contracts that requires project proponents to fund restoration projects to compensate for development of habitat.
4. Check the project to make sure personnel are following guidelines.

Coordination with Regional Agencies

Objective: Promote cooperative interagency efforts to collect and analyze comprehensive monitoring data, including shared funding and staffing.

Strategies:

1. Coordinate with regional and local agencies on efforts undertaken by NBSD to control the spread of invasive and exotic species.

4.2.7 Grounds and Landscape Maintenance

Environmentally and economically beneficial landscaping practices can reduce maintenance costs while also providing wildlife habitat. Planting windbreaks around buildings and parking areas, establishing

wildflower areas, and reducing mowing are all ways to spend dollars more wisely, educate the public about the benefits of reduced maintenance, and become better stewards of the environment. In managing natural resources in the cantonment area, NBSD acknowledges its responsibilities as listed in the White House Memorandum, *Environmentally and Economically Beneficial Practices on Federal Landscaped Grounds* (1994). The memorandum's requirements include the following:

- Using regionally native plants for landscaping
- Using construction practices that minimize adverse effects on the natural habitat
- Reducing pollution by reducing the use of fertilizer and pesticides, using integrated pest management, recycling green waste, and minimizing runoff
- Implementing water efficient practices
- Creating demonstrations of these practices to promote their use elsewhere.

Specific Concerns

- Water use conservation requirements.

Current Management

The installation's representative biologist and NAVFAC SW landscape architect monitor landscaping and grounds projects to ensure that all projects follow the guidance contained in the NAVFAC SW recommended plant list (see **Appendix I**). This guidance includes:

1. Ensuring that landscape designs and plant lists are reviewed and approved by the installation biologist and the NAVFAC SW landscape architect during the planning phase of the project.
2. Ensuring that projects include California native species from the approved plant list shall constitute a minimum of 60 percent of the plant material within each stratum (herb, shrub, and tree). Other drought tolerant species from this list shall constitute the remainder of the plant material (a maximum of 40 percent in each stratum) for each project. A higher proportion of natives may be required for projects within or adjacent to natural areas. The determination of whether cultivars are considered native or exotic will be made on a project-by-project basis.
3. Allowing for use of additional native species in landscaping designs contingent upon approval by the installation biologist or NAVFAC SW landscape architect.
4. Ensuring that project designers coordinate with the installation's representative biologist and NAVFAC SW landscape architect early in the planning process to determine site-specific needs and constraints. In addition, it should be noted that not all species on this list are appropriate for all settings.

In addition, the NBSD Installation Appearance Plan (IAP) is the official direction for designing, developing and reviewing all installation construction and renovation projects at NBSD. The executive summary for the plan states that the IAP has a two-fold purpose, (1) to provide aesthetic and functional direction for new development and renovation efforts, and (2) to -protect and preserve the Installation's natural and historic resources. Though preservation of resources must be a high priority, the guidelines must be flexible enough to allow for renovation, expansion or demolition of inadequate facilities that may need to be removed to make room for other mission essential facilities (U.S. Navy 2008b). Specific guidelines for grounds and landscape maintenance include (U.S. Navy 2008b):

1. Employ basic principles of landscape design in the planning and execution of all new and renovated landscapes. Comply with UFC 4-010-01 *DOD Minimum Antiterrorism Standards for Buildings*.
2. Preserve all healthy, mature trees unless doing so poses safety or significant design problems or involves prohibitive cost. Preserve healthy, mature shrubs if they are on the plant list approved for the Installation and they are used appropriately.
3. Preserve healthy, mature shrubs if they are on the plant list approved for the Base, and they are used in an appropriate location.
4. To protect wildlife and possible nesting habitat, existing mature trees shall not be removed without prior consultation with and approval from the installation biologist.
5. No plants shall have significant disease, root or maintenance problems. All plants, with minor exceptions, shall maintain an acceptable natural form with no pruning at their mature size, and, as appropriate for the designated space/use.
6. Group plants with similar environmental characteristics, such as sun exposure and water requirements. Adjust plant palettes to accommodate micro-climates.
7. All plants for new and replacement planting shall be selected from the recommended plant list. Planting design shall conform to and be reviewed in accordance with the plant list "Conditions of Use."
8. New and renovation construction will not use turf except for recreational purposes as approved by the Public Works Officer. Minimize existing turf whenever possible to reduce water, maintenance and costs.
9. In coordination with the wildlife biologist, select trees that do not encourage birds to roost or nest over vehicles, tables, or benches.

Management Objective and Strategy

Objectives: Maintain an aesthetically pleasing landscape on NBSD that preserves natural ecosystem functions, conserves water in landscaped areas, and promotes pollinator species.

Strategies:

1. Provide professional advice to assist the grounds landscaping and maintenance program in the use of native species as identified in the NAVFAC SW recommended plant list.
2. Maintain and annually update the list of recommended plants that can be used in landscaping.
3. Develop and implement BMPs for grounds maintenance at NBSD (e.g., water conservation). Annually review the IAP to ensure plan BMPs still meet installation needs.
4. Restore native plant communities and collect seeds of native species for submittal to Natural History Museum.
5. Develop monitoring metrics, and set targets to ensure management strategies are meeting goals and objectives.

4.2.8 Pest Management

Authority for pest management activities on NBSD is directed under the Federal Insecticide, Fungicide and Rodenticide Act as amended (7 U.S.C. 136r-1), DoD Instruction 4150.07, SDMAI Integrated Pest

Management Plan (IPMP), December 2009, and OPNAVINST 6250.4B, Pest Management Programs. Integrated Pest Management (IPM) is a sustainable approach that incorporates the use of multiple techniques to prevent or suppress pests in a given situation. Although IPM emphasizes the use of nonchemical strategies, chemical control might be an option used in conjunction with other methods. IPM strategies depend on surveillance to establish the need for control and to monitor the effectiveness of management efforts. DoD Instruction 4150.07 establishes annual goals, or measures of merit, for IPM that include the following:

- *Goal 1.* 100 percent of DoD installations will have current pest management plans.
- *Goal 2.* Maintain the 55 percent pesticide use reduction achieved from 1993-2003 (in pounds of active ingredient).
- *Goal 3.* 100 percent of all installation DoD and contract pesticide applicators will be appropriately certified or licensed.

In addition, OPNAVINST 6250.4B directs the Navy and Marine Corps to (DoN 1998):

- a. Prevent pests from adversely affecting military operations and missions.
- b. Safeguard human health and morale by controlling pests that transmit diseases, annoy personnel, or represent a hazard to public health or safety.
- c. Maintain and extend the service life of facilities, structures, and materiel by preventing economic pest damage.
- d. Enhance the natural environment through the careful protection and management of ecosystems, endangered and threatened species, wildlife, watersheds and water quality in order to maintain optimal biodiversity.
- e. Ensure pesticide use is safe and consistent with label directions.
- f. Use the principles of IPM to avoid and minimize the use of pesticides when nonchemical alternatives are available and cost effective.
- g. Comply with quarantine laws and regulations as related to protecting plants, animals and human health.
- h. Comply with laws and regulations concerning pesticide storage, application, disposal of hazardous wastes, and transport of hazardous materials and substances.

Specific Concerns

- Water use conservation requirements.
- Overuse of fertilizers and pesticides.

Current Management

The 2009 IPMP for SDMAI, which includes NBSD , describes pest management requirements, identifies pests for SDMAI, outlines roles and responsibility for IPM at each SDMAI, outlines procedures for pest control at each facility, and describes the administrative, safety, and environmental requirements of the program. Specific aspects of the program include pest identification, pesticide management (includes storage, transportation, and use and disposal), environmental health and safety, emergency pest management, and available program resources (U.S. Navy 2009). All installation pest management activity is coordinated by the installation IPM Coordinator. Pesticides to be applied on the installation

must be approved by the regional NAVFAC pest management consultant and included in the installation pesticide authorized use list. All pesticides that are to be applied to natural areas should also be reviewed and approved by the natural resources manager.

Threatened, endangered, or candidate species can be directly or indirectly affected by pest control activities. The following pest management operations require natural resource manager review:

- Weed and outdoor pest control in endangered/threatened species habitats and natural areas
- Outdoor large area insecticide fogging
- Pesticide applications to, over or adjacent to water bodies, waterways, or wetlands
- Installation of bird barriers, exclusion devices, or repelling devices
- Wildlife and feral animal control
- Invasive species control.

Natural resources managers will obtain any necessary approvals, consultations, or permits. No pest management activities will violate the practices described for threatened, endangered, or candidate species by the California Department of Pesticide Regulation. NBSD will use the California Department of Pesticide Regulation Endangered Species Project web site (<http://www.cdpr.ca.gov/docs/es/index.htm>) to determine the best chemicals to control pest species and their use limitation.

In addition, management of feral animals is a component of pest management at NBSD. Feral animals, especially feral cats and dogs, pose a potential threat to public health and safety. They also pose a threat to wildlife, especially federally listed species and migratory birds. Existing Navy policy included in SECNAVINST 6401.1A of August 16, 1994 regarding veterinary health services prohibits dogs, cats, and other privately owned or stray animals from running free on military installations. The CNO issued a policy letter on January 10, 2002 that clarifies the application of SECNAVINST 6401-1A. An objective of the existing policy is to control feral animals in a humane manner to prevent injury or disease to Navy personnel and eliminate adverse impacts on native wildlife. The instruction requires Navy commands to institute proactive pet management procedures in order to prevent establishment of free-roaming cat and dog populations.

The 2009 SDMAI IPMP identifies a number of strategies to conduct pest management at Navy installations in the San Diego Metro area. As long as the strategies discussed within the SDMAI IPMP are implemented, pests should not pose a threat at NBSD.

Management Objective and Strategy

Implementation of the Pest Management Plan

Objective: Ensure compliance with environmental legislation, regulations, and guidelines.

Strategies:

1. Update the SDMAI IPMP as necessary to ensure that the plan reflects changes in pest populations and current management issues. Incremental updates to the plan will be conducted annually.
2. Implement pest management controls from the SDMAI IPMP and other pest-related guidance and plans.

3. Conduct surveys of pests that pose a potential health risk to humans or natural resources.
4. Implement the control of wildlife and the effective elimination of concentrated and diseased populations.
5. Monitor pest and invasive species populations. Track usage of active ingredients and man-hours spent controlling pest and invasive species during implementation to ensure that the management strategies are sufficient.

Management of Feral Animals

Objective: Control populations of feral animals on NBSD as required by SECNAVINST 6401.1A.

Strategies:

1. Develop and implement a program to control feral animals on NBSD. Control populations of feral animals on NBSD.
2. Conduct surveys to determine impact of feral animals on native species on NBSD.

4.2.9 Outdoor Recreation and Public Access

NBSD does not support extensive outdoor recreation activities such as hiking or hunting, since there is limited open space and the installation is highly developed.

Specific Concerns

- Overuse of recreational areas on NBSD.
- Erosion and sedimentation.

Current Management

The outdoor recreation activities provided at NBSD include recreational fields, gymnasiums, tennis courts, picnic areas, and swimming pools. In addition, recreational access is compliant with the requirements associated with the provisions of the American with Disabilities Act of 1990 as amended and the Disabled Sportsman Access Act as amended.

Management Objective and Strategy

Objective: Provide quality outdoor recreation experiences that sustain ecosystem integrity and are compatible with mission priorities.

Strategies:

1. Continue to limit public access and outdoor recreation for reasons that include general security and liability issues, the presence of federally endangered and threatened species, and fire.
2. Develop an outdoor recreation plan for NBSD. Seek opportunities for natural resources based outdoor recreation to improve quality of life for Navy personnel, allow close partnership with the local community, and improve knowledge of the natural world and the Navy's stewardship of natural resources.

3. Identify and evaluate suitable outdoor recreation opportunities for installation personnel that have the potential to impact sensitive species.

4.2.10 Law Enforcement of Natural Resources Laws and Regulations

Specific Concerns

- Unauthorized access or activities in natural areas, or areas used by nesting birds may disrupt and limit the viability of native populations or habitats.

Current Management

Natural resources managers at NBSD have established the following objectives for enforcement: (1) Enforce laws and regulations pertaining to the implementation of the natural resources program; (2) Integrate natural resources enforcement into the overall natural resources program; and (3) Use enforcement personnel to enhance the natural resources program at NBSD.

There are no game wardens stationed at NBSD. The DoD police have the authority of the Commander (exclusive jurisdiction) and of the Sikes Act to enforce all Federal laws relating to the management of natural resources at NBSD, including the ESA and MBTA.

Management Objective and Strategy

Objective: Ensure compliance with state and Federal natural resources laws and regulations.

Strategies:

1. Provide training to personnel responsible for enforcement of applicable laws and regulations.
2. Continue to protect threatened, endangered, and other special status species and the natural communities.
3. Cooperate with other agencies, particularly the USFWS and CDFW, to ensure that natural resources laws are adequately enforced.
4. Annually review Federal and state laws and regulations to ensure natural resources laws and regulations are adequately enforced.

4.2.11 Environmental Awareness

Conservation awareness is instrumental in creating conditions needed to manage natural resources. The Navy approach to awareness stresses education. It provides military personnel and the public with insights into installation natural environments and conservation challenges. The more people know about the unique and valuable natural resources on the installation, the more responsibly they act toward using them.

Education also promotes awareness of critical environmental projects and the rationale behind them. Activities such as fish stocking, land rehabilitation, and wildfire suppression can be accomplished with little conservation awareness effort since installation personnel, recreationists, and the general public support these easily understood efforts. However, such issues as protection of sensitive areas for little known plant and wildlife species, prescribed burning, and permit fees and their uses require effective conservation communication to get positive support and, perhaps more importantly, to avoid adverse

reactions from various users. A conservation awareness program must be directed to both installation and external interests if it is to be effective.

Specific Concerns

- Installation personnel and public are unfamiliar with existing natural resources and related environmental conservation techniques and regulations.

Current Management

Natural resources personnel work with volunteers, whenever feasible, to use their skills and build their interest in the installation natural resources program.

The Sikes Act requires each military service to support environmental education for personnel and for the public where and when it is compatible with military safety and security needs.

Conservation awareness on NBSD is conveyed through interpretive signs. The conservation effort on site will continue to expand as this INRMP and subsequent natural resource management programs are undertaken to ensure efficient and thorough management of the natural resources on base. Educational brochures and training videos are being planned. Conservation efforts at NBSD address energy, water resources, recycling, pollution prevention, and public outreach and education.

Management Objective and Strategy

Objective: Provide people on the installation and in the surrounding community with an understanding of the NBSD natural resources program.

Strategies:

1. Annually review outreach and education materials to ensure that each is still current and meeting goals of outreach and education program.
2. Reach out to local community groups for volunteers.
3. Establish a watchable wildlife program.
4. Educate the local community, as well as installation personnel and tenants about the installation natural resources program. Develop and distribute educational materials about the NBSD natural resources program to stakeholders near NBSD (e.g., neighborhoods, county, etc.).

4.2.12 Geographic Information Systems Management, Data Integration, Access and Reporting

GIS is a computer system for capturing, storing, checking, integrating, manipulating, analyzing, and displaying data related to positions on the Earth's surface. GIS is used to create information layers used to develop and manipulate maps. GIS data are represented as different layers each containing data on a particular kind of feature (e.g., soils, wetlands, roads). Each feature is linked to a position on the graphical image of a map. The data layers are organized to create maps and to perform statistical analysis.

GIS will also provide support for the entire environmental program and the training community. NBSD will use GIS for complex analyses such as project siting, data interpolations, and risk assessments.

GIS software enables installation staff to capture, store, update, manipulate, analyze, and display all forms of geographically referenced data and tabular information about NBSD. The training of the NBSD Environmental, Facilities Management, and Training staff and the allocation of their time to data entry, mapmaking, analysis of data, and interpretation of the results will determine the success of the installation GIS.

Once fully developed, the installation GIS databases can be used for projects such as the following:

- Providing maps
- Selecting suitable areas for construction activities
- Planning land rehabilitation projects
- Providing special maps for Environmental Awareness materials
- Ensuring avoidance of cultural resources during ground disturbing projects
- Ensuring avoidance of rare species habitats and other areas of special concern during construction projects
- Identifying site options for use during NEPA evaluation of alternative sites
- Calculating drainages and water flows
- Determining Neotropical bird habitat preferences.

Specific Concerns

- GIS maps and shapefiles may not have appropriate metadata that identifies who, when, and for what purposes the data were collected.
- Natural resource management decisions could be delayed if there are information gaps in the natural resources database, or if the database is not kept current.

Current Management

Currently, there is no central repository for GIS data and reports, research, and other documentation. GIS data is submitted to Navy Assessment Management or the GIS contractor. CNIC and NAVFAC guidance on metadata is being developed, but has not yet been finalized.

Management Objective and Strategy

Objective: Collect, store, develop, and maintain data about historical conditions, trends, and current status for critical indicators of ecological integrity and sustainability.

Strategies:

1. Use GIS information as benchmarks for developing future natural resources management goals and objectives.
2. Ensure that GIS information is available to biologists, planners, contractors, and others in a quick and timely manner.
3. Annually review GIS data to advise resource managers of needs to update data sets during budget planning and programming.

4. Develop specific language that will be included in all contracts to ensure all spatial data produced are fully compatible with the installation GIS database.
5. Develop a standardized system for installation natural resources manager to record and map significant resource observations (e.g., plants, wildlife, erosion, damage) when incidentally encountered.
6. Provide annual funding for one person to be responsible for updating and maintaining the GIS database. This should include the necessary hardware, software, and training for the use of GIS.

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5. Broadway Complex

5.1 Purpose, Approach and Rationale

Natural resources management at Broadway Complex strives to integrate conservation of biodiversity and an ecosystem based approach into an adaptive management framework compatible with the military mission. As a result, the natural resources program consists of multiple resource disciplines that are frequently interconnected and share similar objectives. Management projects and plans often consist of multiple program elements with several different resource experts collaborating together.

There are no significant natural resources at Broadway Complex. This section describes the various natural resource Program Elements. If it becomes necessary, specific objectives and strategies would be developed to meet the goal listed below for natural resources managed on Broadway Complex.

The NBSD INRMP goal is to provide an adaptive ecosystem based conservation program that will support the NBSD mission and provide for the sustainability of natural resources.

5.2 Natural Resources Current Conditions and Management

5.2.1 Topography and Geology

The topography of Broadway Complex is characterized as highly urbanized and relatively flat (U.S. Navy 2002a). The Broadway Complex is situated on the San Diego Bay, which is located approximately 10 feet (3 meters) above MSL.

Artificial Compacted Fill, a Pleistocene and Holocene surficial material composed of detrital material comprises the geology of Broadway Complex (U.S. Navy 2002a).

5.2.2 Watershed Management

There are no naturally occurring streams or other watercourses on Broadway Complex (U.S. Navy 2002a).

5.2.2.1 Soils

Soils in San Diego were mapped by the Soil Conservation Service (now the NRCS) in 1973 using established protocols developed by the agency. Due to filling and dredging activities beginning during the 1940s that converted the San Diego Bay bayfront from a natural landscape to the highly urbanized landscape seen today the only soil category identified at the site was Urban land (Ur), which is consistent with the built-up nature of the complex (U.S. Navy 2002a).

5.2.2.2 Water Quality

Not applicable to Broadway Complex due to lack of water resources.

5.2.3 Habitat Management

5.2.3.1 Vegetation and Wildlife Habitat

Broadway Complex is completely developed and has sparse ornamental vegetation, and a few trees that could provide nesting habitat for migratory birds (see **Figure 5-1**). The only vegetative community identified during the 2006 and 2008 natural resources inventory for Broadway Complex was urban/developed land (U.S. Navy 2010).

Flora on Broadway Complex is limited to ornamental trees and shrubs typically found in urbanized landscaped areas and miscellaneous herbaceous species, most of which are nonnative weeds (U.S. Navy 2010b). Terrestrial species noted during the 2006 and 2008 natural resources survey on Broadway Complex include pine trees (*Pinus* sp.), eucalyptus, and London plane tree (*Platanus acerifolia*) (U.S. Navy 2010b).

5.2.3.2 Wetlands and Floodplains

Wetlands, as defined by the EPA and the USACE, are “areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas” (USACE 1987). In addition, USACE regulates activities within 3 nautical miles of land, including the San Diego Bay (U.S. Navy 2010b).

No non-wetland waters of the U.S. or wetlands were identified on Broadway Complex during the 2006 and 2008 natural resources survey for NBSD (U.S. Navy 2010b). The Broadway Complex is within the 100-year floodplain.

5.2.3.3 Marine Habitats

Not applicable to the Broadway Complex because the property is landlocked.

5.2.3.4 Wildland Fire

Not applicable to the Broadway Complex due to urban surroundings.

5.2.3.5 Critical Habitat

Critical habitat has not been designated at the Broadway Complex, and there is no critical habitat in the vicinity.

5.2.3.6 Other Regulatory or Habitat Planning Designation

No other habitat planning designation has been identified on the Broadway Complex.

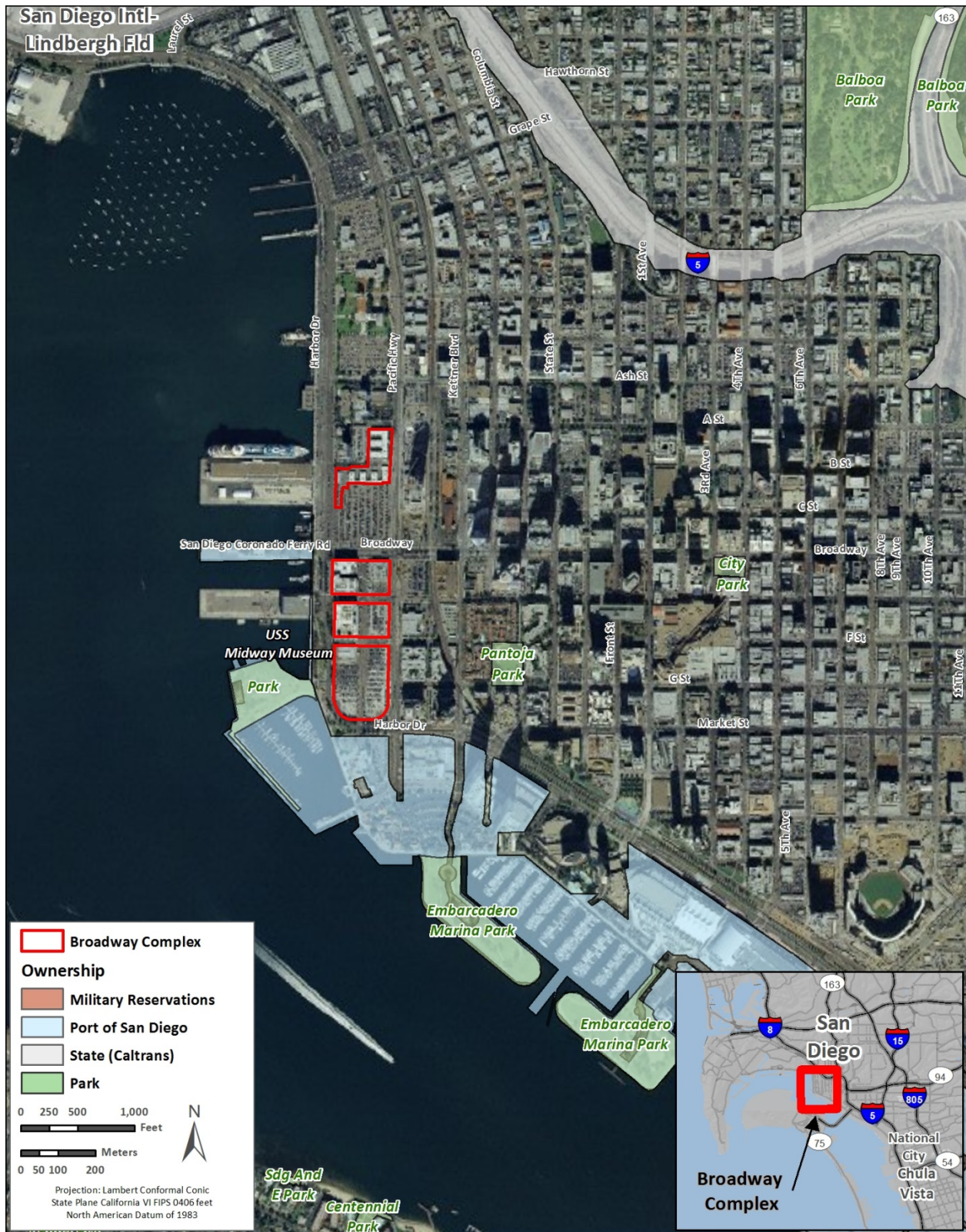


Figure 5-1: Broadway Complex Location

5.2.4 Fish and Wildlife Management

5.2.4.1 Invertebrates and Pollinators

No invertebrates were identified at the Broadway Complex during the 2006 and 2008 survey (U.S. Navy 2010b). However, species expected to occur at the property include noctuid moths, blue butterflies, skipper butterflies, water midges, ichneumonid wasps, ants, sweat bees, jumping spiders, and wolf spiders (U.S. Navy 2010b). General information on pollinators is provided in **Section 4.2.4.1**.

5.2.4.2 Reptiles and Amphibians

No reptiles or amphibians were identified at the Broadway Complex during the 2006 and 2008 survey (U.S. Navy 2010b). However, the western fence lizard, which is common in urban environments, has the potential to occur at the facility.

5.2.4.3 Birds

Due to the urbanization of the Broadway Complex, nesting habitat for avian species is limited; however, several avian species are expected to transit the Broadway Complex because the facility is near the San Diego Bay.

The MBTA (16 U.S.C. 703-712) protects all migratory birds and prohibits the taking of migratory birds, their young, nests, and eggs, except as permitted by the USFWS. The USFWS recommends that the Broadway Complex avoid impacting birds protected under the MBTA by surveying for nesting birds in areas proposed for disturbance and if necessary, waiting until the nesting and fledging process is complete. Alternatively, the USFWS recommends conducting activities outside of nesting areas or outside of the general migratory bird-nesting season that extends from mid-February through the end of August, to help avoid direct impacts.

More information on the MBTA is included in **Appendix F**.

5.2.4.4 Bird/Wildlife Aircraft Strike Hazard

Not applicable to Broadway Complex due to a lack of flight operations.

5.2.4.5 Mammals

Due to the complete development of Broadway Complex, available habitat for mammal species is very limited. During the 2006 and 2008 natural resources survey no mammal species were detected. Urbanized species expected to occur on Broadway Complex include feral cats (*Felis catus*), black rat, and the house mouse (U.S. Navy 2002a).

5.2.4.6 General Fish and Wildlife Management

For the purposes of this INRMP, wildlife management is defined as manipulation of the environment and wildlife populations to produce desired objectives. The primary goal of wildlife management at Broadway Complex is to maintain wildlife populations at levels compatible with land use objectives while promoting the existence, importance, and benefits of nongame species.

5.2.5 Special Status Species Management

Special status species include those species that are federally listed endangered, threatened, or candidate; state listed endangered, threatened, candidate or species of special concern; birds on the Federal Birds of Conservation Concern list; and plants identified by the CNPS as having a California Rare Plant Rank. Due to lack of habitat, no special status species are expected to occur on the Broadway Complex.

5.2.6 Exotic and Invasive Species Management

During the 2006 and 2008 natural resources survey, no invasive vegetation species were observed on the Broadway Complex. For additional information on regulations and guidance pertaining to invasive species management refer to **Section 4.2.6**.

Due to the limited amount of vegetation, assessments of invasive species on Broadway Complex are conducted in coordination with grounds maintenance. Once assessed, species are prioritized for treatment based on the extent of the infestation, and where the populations are located (e.g., next to listed species habitat).

5.2.7 Grounds and Landscape Maintenance

In managing natural resources in the cantonment area, the Broadway Complex acknowledges its responsibilities as listed in the White House Memorandum, *Environmentally and Economically Beneficial Practices on Federal Landscaped Grounds* (1994). The memorandum's requirements include the following:

- Using regionally native plants for landscaping
- Using construction practices that minimize adverse effects on the natural habitat
- Reducing pollution by reducing the use of fertilizer and pesticides, using integrated pest management, recycling green waste, and minimizing runoff
- Implementing water efficient practices
- Creating demonstrations of these practices to promote their use elsewhere.

The installation's natural resources manager monitor landscaping and grounds projects to ensure that all projects follow the guidance contained in the recommended plant list (see **Appendix I**).

5.2.8 Pest Management

Authority for pest management activities on the Broadway Complex is directed under the Federal Insecticide, Fungicide and Rodenticide Act as amended (7 U.S.C. 136r-1), DoD Instruction 4150.07, the San Diego Metro Area Installation (SDMAI) IPMP, December 2009, and OPNAVINST 6250.4B, Pest Management Programs. See **Section 4.2.8** for additional information on pest management regulations and guidance.

The 2009 IPMP for SDMAI, which includes the Broadway Complex, describes pest management requirements, identifies pests for SDMAI, outlines roles and responsibility for IPM at each SDMAI, outlines procedures for pest control at each facility, and describes the administrative, safety, and environmental requirements of the program. Specific aspects of the program include pest identification, pesticide management (includes storage, transportation, and use and disposal), environmental health and

safety, emergency pest management, and available program resources (U.S. Navy 2009). All installation pest management activity is coordinated by the installation IPM Coordinator. Pesticides to be applied on the installation must be approved by the regional NAVFAC pest management consultant and included in the installation pesticide authorized use list.

In addition, management of feral animals is a component of pest management at the Broadway Complex. Feral animals, especially feral cats and dogs, pose a potential threat to public health and safety. Existing Navy policy included in SECNAVINST 6401.1A of 16 August 1994 regarding veterinary health services prohibits dogs, cats, and other privately owned or stray animals from running free on military installations. The CNO issued a policy letter on January 10, 2002 that clarifies the application of SECNAVINST 6401-1A. An objective of the existing policy is to control feral animals in a humane manner to prevent injury or disease to Navy personnel and eliminate adverse impacts on native wildlife. The instruction requires Navy commands to institute proactive pet management procedures in order to prevent establishment of free-roaming cat and dog populations.

The 2009 SDMAI IPMP identifies a number of strategies to conduct pest management at Navy installations in the San Diego Metro area. As long as the strategies discussed within the SDMAI IPMP are implemented, pests should not pose a threat at the Broadway Complex.

5.2.9 Outdoor Recreation and Public Access

Outdoor recreation is limited at the Broadway Complex due to development of the site.

5.2.10 Law Enforcement of Natural Resources Laws and Regulations

Natural resources managers at NBSD have established the following objectives for enforcement: (1) Enforce laws and regulations pertaining to the implementation of the natural resources program; (2) Integrate natural resources enforcement into the overall natural resources program; and (3) Use enforcement personnel to enhance the natural resources program at Broadway Complex.

5.2.11 Environmental Awareness

Conservation awareness is instrumental in creating conditions needed to manage natural resources. The Navy approach to awareness stresses education. It provides military personnel and the public with insights into installation natural environments and conservation challenges. The more people know about the unique and valuable natural resources on the installation, the more responsibly they act toward using them.

Education also promotes awareness of critical environmental projects and the rationale behind them. Activities such as fish stocking, land rehabilitation, and wildfire suppression can be accomplished with little conservation awareness effort since installation personnel, recreationists, and the general public support these easily understood efforts. However, such issues as protection of sensitive areas for little known plant and wildlife species, prescribed burning, and permit fees and their uses require effective conservation communication to get positive support and, perhaps more importantly, to avoid adverse reactions from various users. A conservation awareness program must be directed to both installation and external interests if it is to be effective.

6. Mission Gorge Recreational Facility

6.1 Purpose, Approach and Rationale

Natural resources management at NBSD strives to integrate conservation of biodiversity and an ecosystem based approach into an adaptive management framework compatible with the military mission. As a result, the natural resources program consists of multiple resource disciplines that are frequently interconnected and share similar objectives. Management projects and plans often consist of multiple program elements with several different resource experts collaborating together. This section describes the various natural resources Program Elements along with their primary goals and objectives.

A number of items have been identified in subject areas that affect the natural resources present on and immediately adjacent to NBSD. The purpose of this section is to identify objectives and strategies for natural resources management on NBSD. Specific objectives and strategies were developed to meet the overriding goal listed below for natural resources managed on NBSD.

The NBSD INRMP goal is to provide an adaptive ecosystem based conservation program that will support the NBSD mission and provide for the sustainability of natural resources.

The strategies, or projects, were developed to implement the objectives and to assist natural resources personnel with gauging the effectiveness of the NBSD natural resources management program. These strategies are consecutively numbered for each resource. A summary of the strategies as well as the estimated time frame for completion is presented in **Appendix D, Table D-3**.

Some of the actions described in this section will be accomplished through interactive partnerships with other Federal, state, and local organizations. Natural resources staff at NBSD will initiate partnerships based on the benefits to the regional ecosystem and the local environment.

6.2 Natural Resources Current Conditions and Management

6.2.1 Topography and Geology

MGRF is located along the San Diego River and is surrounded by steep canyons and ridges (U.S. Navy 2002a). Slopes within MGRF are approximately between 0 and 5 percent, and the surrounding slopes range from 9 to 50 percent (U.S. Navy 2002a).

The geologic composition of MGRF consists of four formations from the Cenozoic era: alluvium and slope wash, stream terrace deposits, stadium conglomerate, and Friars Formation.

The alluvium and slope wash deposits were deposited approximately 0.1 million years ago, during the Holocene epoch of the Quaternary period. This deposit type is an undifferentiated compilation of alluvium and slope wash deposits. Alluvium in the area consists primarily of poorly consolidated stream deposits of silt, sand, and cobble-sized particles derived from bedrock sources that lie within and to the east of the area. The slope wash deposits consist primarily of poorly consolidated surficial materials derived from nearby soil and decomposed bedrock sources.

The stream surface deposits were deposited approximately 1.6 million years ago during the Pleistocene epoch of the Quaternary period. They have been preserved in only a few places in the area and consist of a coarse-grained sand deposit at the mouth of Mission Gorge near Mission Valley.

The stadium conglomerate of the Poway Group was deposited approximately 55 million years ago during the Eocene epoch of the Tertiary period. The massive conglomerate contains dispersed lenses of fossiliferous cross-bedded sandstone. The fossils include calcareous nanoplankton, mollusks, and foraminifera.

The Friars Formation was deposited approximately 55 million years ago during the Eocene epoch of the Tertiary period. This formation is a nonmarine and lagoonal sandstone that rests on the basement complex and is overlain by sedimentary deposits of Eocene, Pleistocene, and Holocene age.

6.2.2 Watershed Management

The MGFR, commonly known as Admiral Baker Field, is located in the City of San Diego within the *Mission San Diego Hydrologic Subarea* (907.11) of the *Lower San Diego Hydrologic Area* (907.10) of the *San Diego Hydrologic Unit* (907.00). MGRF lies along the San Diego River (see **Figure 6-1**). The majority of the San Diego River has been channelized to protect the golf courses and adjacent off-site urban areas from severe flooding. The golf course area contains several created irrigation/drainage ponds, some of which support southern willow scrub and freshwater marsh vegetation. Most of these ponds are interconnected through pipes, earthen drainage swales, and concrete culverts. Development surrounding the northeastern property boundaries has necessitated the construction and alteration of a few earthen drainage ditches in order to protect the golf course landscaping. MGRF also has been granted riparian rights to the use of San Diego River water by the State Water Resources Control Board (SWRCB) (U.S. Navy 2002a). Water taken under riparian rights may be stored for no more than 30 days. If water is to be stored longer than 30 days, additional documentation is required, including a storage rights permit, license, and NEPA/California Environmental Quality Act (CEQA) documentation.

Commander, Navy Region Southwest has a Statement of Water Diversion and Use on file with the SWRCB for the continued diversion of San Diego River water to the golf course for irrigation purposes. The Navy has been diverting water from the river since 1955 and currently diverts approximately 730 acre-feet (90 hectare-meters) per year in order to irrigate 220 acres (89 hectares) of the golf courses. The water is pumped from one diversion point on the river into holding ponds located on the golf course. From the holding ponds, the water is drawn into the installation's irrigation system.

6.2.2.1 Soils

Soils in San Diego were mapped by the Soil Conservation Service (now the NRCS) in 1973 using established protocols developed by the agency. Soils at MGRF consist of well-drained moderately deep loams, well-drained cobbly loams, to well-drained, undulating to steep, gravelly loams (see **Figure 6-2**) (U.S. Navy 2002a). Soils identified during the 1973 survey include (U.S. Navy 2002a):

Huerhuero loam, 9 to 30 percent slopes, eroded (HrE2). This series consists of moderately well-drained loams that have a clay subsoil. These soils developed in sandy marine sediments. They have slopes of 2 to 30 percent. The surface layer is brown and pale brown, strongly acid, and medium acid loam about 12 inches thick. The subsoil is brown, moderately alkaline clay to mildly alkaline clay loam and sandy loam.

Olivenhain cobbly loam, 30 to 50 percent slopes (OhF). These soils consist of well-drained, moderately deep to deep cobbly loams that have very cobbly clay subsoil. These soils formed in old gravelly and cobbly alluvium. They are on dissected marine terraces and have slopes of 2 to 50 percent. The surface layer is a brown and reddish brown medium acid cobbly loam about 10 inches thick. The subsoil is reddish brown, red, and pink, strongly acid very cobbly clay and clay loam about 32 inches thick. The substratum is strongly acid cobbly loam.

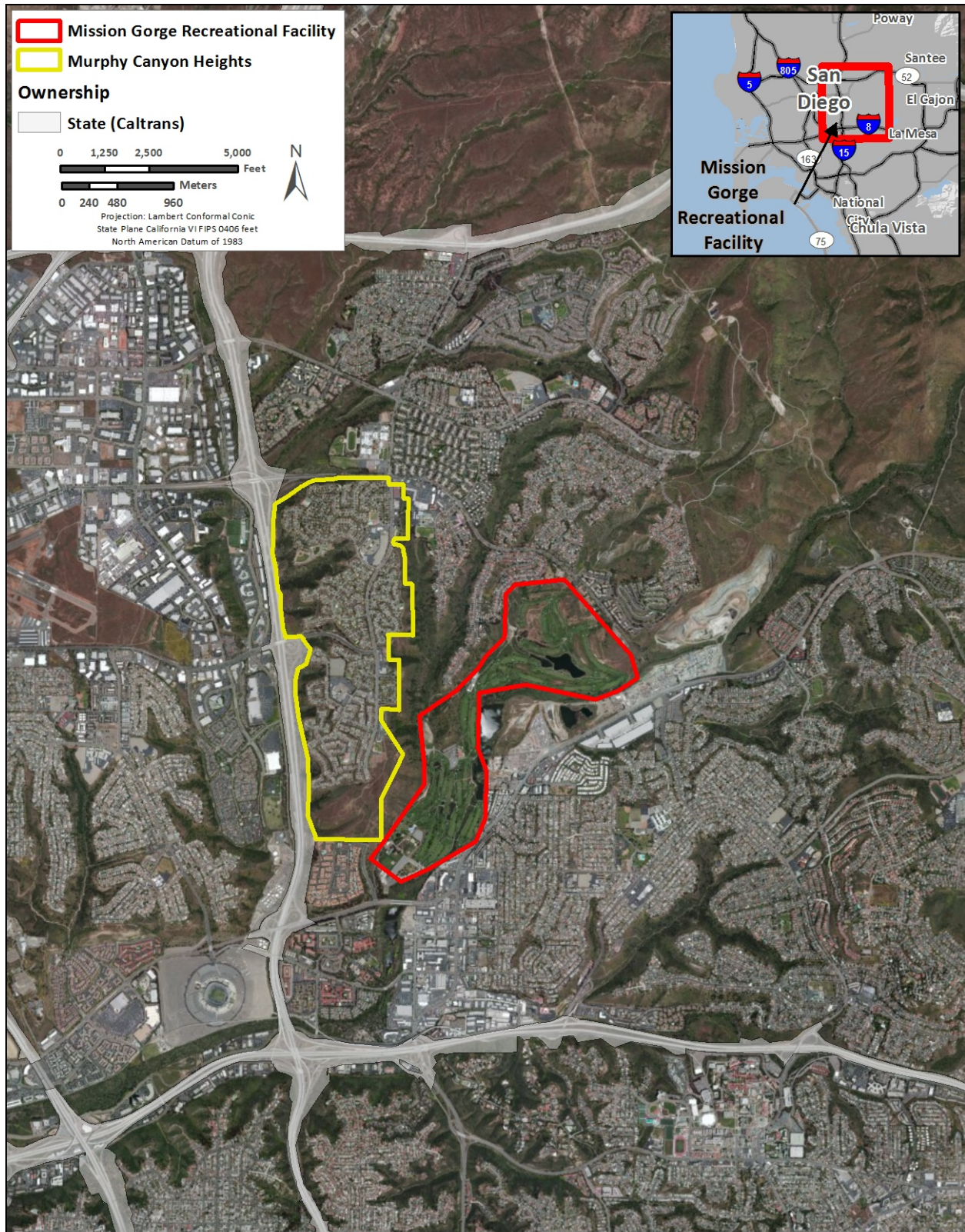
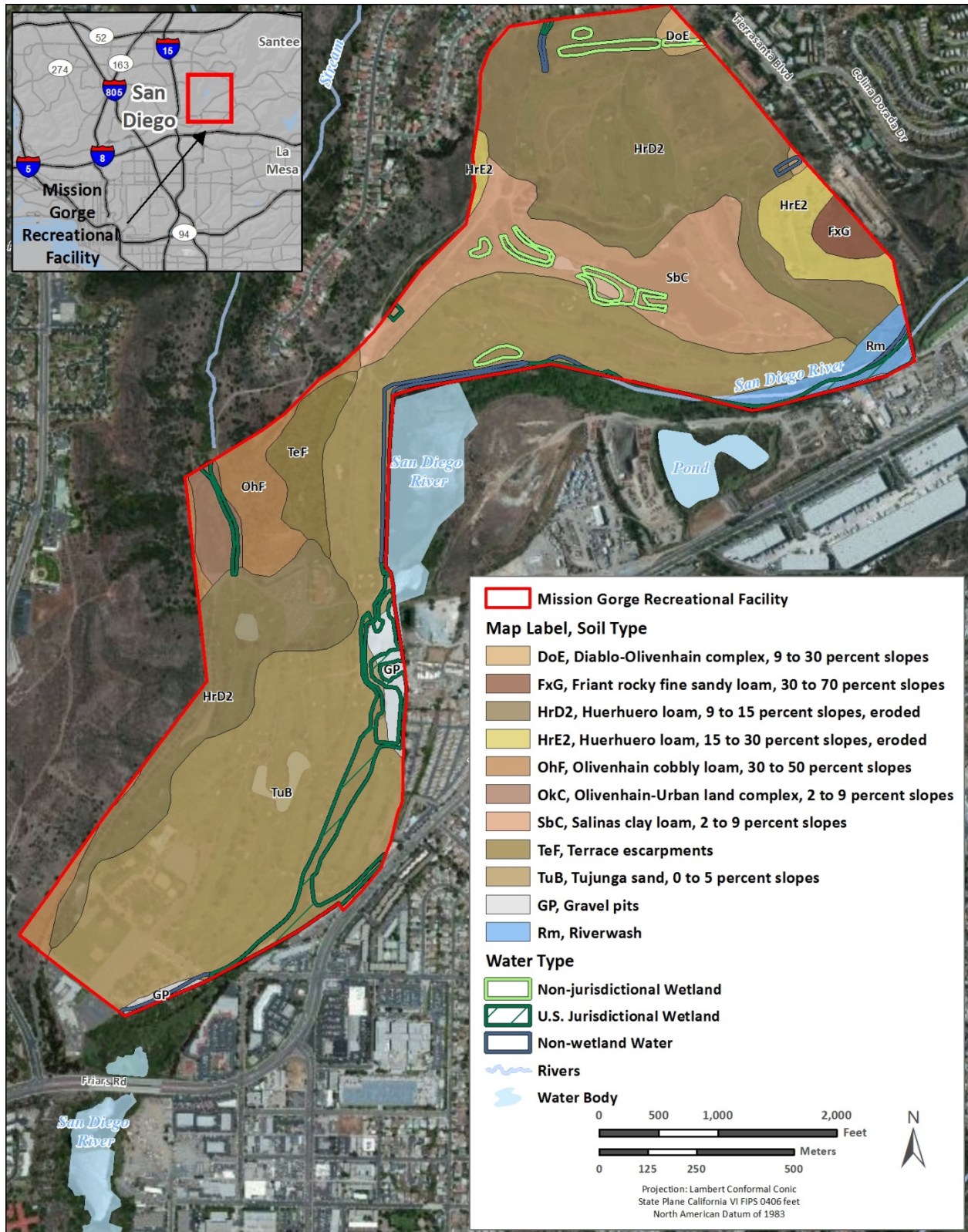


Figure 6-1: Mission Gorge Recreational Facility Location



Source: ESRI StreetMap USA 2007, Bing Maps 2010 - Hybrid, U.S. Navy 2010b
 Disclaimer: Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 6-2: Mission Gorge Recreational Facility Soils and Water Resources

Olivenhain-Urban land complex, 2 to 9 percent slopes (OkC). This complex occurs on marine terraces, at elevations of 100 to 600 feet (30 to 183 meters). The landscape has been altered through cut and fill operations and leveling for building sites. The material exposed in the cuts is cobbly loamy alluvium. The material in the fills consists of cobbly loam and cobbly clay loam.

Riverwash (Rm). This soil generally occurs in intermittent stream channels. The material is typically sandy, gravelly, or cobbly. It is excessively drained and rapidly permeable.

Salinas clay loam, 2 to 9 percent slopes (SbC). This soil series consists of well-drained and moderately well-drained clay loams that formed in sediments washed from Diablo, Linne, Las Flores, Huerhuero, and Olivenhain soils. The surface layer is dark grayish brown, neutral, and mildly alkaline clay loam about 22 inches thick. The subsoils are very dark grayish brown, mildly alkaline and moderately alkaline, calcareous clay loam, to moderately alkaline, calcareous clay loam and loam.

Terrace escarpment (TeF). Terrace escarpments consist of steep to very steep escarpments and escarpment-like landscapes. The terrace escarpments occur on the nearly even fronts of terraces or alluvial fans. The escarpment-like landscapes occur between narrow floodplains and adjoining uplands and the very steep sides of drainage ways that are entrenching into fairly level uplands. They consist of loamy or gravelly soil over soft marine sandstone, shale, or gravelly sediments.

Tujung sand, 0 to 5 percent slopes (TuB). The Tujung series consists of very deep, excessively drained sands derived from granitic alluvium. These soils are on alluvial fans and floodplains and have slopes of 0 to 5 percent. The surface layer is brown, neutral sand about 14 inches thick. The next layers are pale brown, neutral sand, and coarse sand. This material extends to a depth of more than 60 inches.

Healthy, soils are the foundation of a healthy ecosystem. As soils lose their structure and begin to erode, other systems also begin to fail. Vegetation and wildlife decline in numbers and diversity, and the quality of surface water declines as it becomes loaded with eroded sediments. Some soil types, such as those found at MGRF, took centuries to develop and are not easily replaced or repaired if lost or damaged. Inherent in the structure of MGRF's soils is a risk of significant erosion when vegetation is removed or, soil structures are disturbed. The fragile nature of these soils make the protection of MGRF's soils vital for maintaining many of the functional systems that make up a healthy ecosystem.

Specific Concerns

- Fire.
- Development/anthropogenic disturbances.

Current Management

OPNAVINST 5090.1D requires that installation sources of dust, runoff, silt, and erosion debris be controlled to prevent damage to land, water resources, equipment, and facilities, including adjacent properties. An erosion-and-sediment-control plan must be implemented where appropriate. Maintenance of vegetative cover is consistent with ecosystem management goals expressed earlier. Other materials can be used including gravel, fabrics, riprap, and recycled concrete and pavement that are environmentally safe and compatible with the site. However, bioengineered stabilization should be considered prior to hard structures. Placing fill materials into waters of the U.S., including wetlands is a regulated activity and using bioengineered bank stabilization could mean an easier permitting process (CWA 404/401) and/or potentially no mitigation requirements. Where bare ground is necessary, other measures for dust, sedimentation, and erosion control should be implemented (e.g., check dams,

windbreaks, diversions). To minimize land maintenance expenditures and help ensure environmental compliance, physically intensive activities should be located on those areas least susceptible to erosion. The erosion potential of a site and adjacent water resources need to be identified and analyzed in preparing development, training, and land use plans.

Management Objective and Strategy

Objective: Protect soils by maintaining soils and reducing runoff, erosion, and gully formation and implement appropriate BMPs.

Strategies:

1. Monitor and rehabilitate degraded soil resources. Soil resources will be monitored, evaluated, and rehabilitated. Survey results will be analyzed to assist with identification of degraded soil or eroded areas.
2. Develop and include an Erosion Control Plan.
3. Develop and disseminate informational materials and a short seminar on the erosion control BMPs and watershed protection issues.
4. Educate personnel who are likely to impact the watersheds on regulatory requirements including timing and necessity of applicable approval processes by various resource agencies, erosion and sedimentation BMPs and watershed protection issues.
5. Develop and use an erosion and sedimentation questionnaire designed to gauge the effectiveness of the informational materials and short seminar.
6. Periodically (approximately every 2 years) review erosion control BMPs to ensure that they are still adequate to control adverse erosion and sedimentation on MGRF. Conduct surveys to determine whether activities on MGRF are adversely impacting soil and water resources as a result of erosion and sedimentation.
7. Maintain accurate, usable, and informative GIS data for ease in management planning and documentation.
8. Tailor land uses to appropriate soil types.
9. Continue to implement plans for eroded site rehabilitation.
10. Identify additional sites for land rehabilitation planning.
11. Survey areas where soil erosion and compaction might occur to ensure that BMPs within the erosion control plan are implemented and are effective.

6.2.2.2 Water and Sediment Quality

Watershed management is important to natural resources management because it directly affects both surface water and groundwater quality and is critical to maintain valuable aquatic habitats. Surface waters are vulnerable to damage associated with development, storm water runoff and erosion and sedimentation.

Specific Concerns

- Erosion and sedimentation.
- Development/anthropogenic disturbances.

Current Management

Storm water discharges from the MGRF are considered to be non-industrial and are therefore not subject to Industrial Storm Water Permit Standards (State or local). The MGRF is, however, subject to regulation by the Phase II municipal storm water regulations.

Management Objective and Strategy

Objective: Stay abreast of MS4 requirements as they are developed within the State of California, and outlined in the NBSD NPDES permit. Review all land use actions and provide BMPs and adaptive management recommendations to prevent destabilization of stream banks and reduce stormwater runoff.

Strategies:

1. Conduct surveys of all streams within the installation to identify erosion, sediment accumulations, or other threats to stream stability.
2. Develop actions specific to each unstable stream reach that can be undertaken to assist with stream recovery. Support stream stability by managing activities that affect riparian buffers and water entering streams.
3. As funding allows, undertake natural channel design principles to restore stream reaches with highly unstable conditions.
4. Annually evaluate streams to ensure that streams are not adversely impacted by installation activities.

6.2.3 Habitat Management

6.2.3.1 Vegetation and Wildlife Habitat

For a complete listing of terrestrial floral species observed on MGRF, see **Appendix G**.

Terrestrial vegetation on MGRF includes ornamental trees and shrubs typically found in urbanized landscaped areas and grasses commonly found in recreational areas (e.g., pampas grass, and Bermuda grass) (U.S. Navy 2010b).

Aquatic floral species within the San Diego River or the ponds on MGRF were not inventoried during the 2008 assessment of MGRF.

Patterns of vegetation community distribution are influenced by a number of physical, biological, and human induced forces, such as climate, slope, aspect, soil, water availability, nutrient availability, and human development and land use. The majority of vegetative habitats for wildlife on MGRF consist of landscaped grounds associated with the Admiral Baker Golf Course and other recreational facilities at the site (U.S. Navy 2002b).

A natural resources inventory report was conducted at MGRF from November 2006 to January 2008. **Table 6-1** summarizes the vegetative communities (alliance level) and associated acreage observed during the survey (U.S. Navy 2010b).

Table 6-1: Mission Gorge Recreational Facility Vegetation Communities and Land Cover Types

Vegetation Community / Land Cover Type	Acres
Uplands	
California Encelia Series	2.8
California Encelia – San Diego County Viguiera Series	4.4
California Sagebrush Series	51.1
California Sagebrush Black Sage Series	1.0
Coast Goldenbush–Coyote Bush Series	18.1
Eucalyptus Series	7.8
Eucalyptus Series–Removed	0.2
Wild Oat Series	2.1
Riparian/Wetland	
Cottonwood – Willow Series	28.6
Bulrush Series	1.7
Mule Fat Series	0.8
Open Water Series	14.5
Urban/Disturbed	
Giant Reed Series	5.1
Ruderal Habitat	20.9
Russian Thistle Series	9.3
Urban/Developed Land	279.5
Total	447.9

(Sawyer and Keeler-Wolf 1995)

Source: U.S. Navy 2010b

The following provides a brief description of each vegetative community as described in the 2008 survey report (see **Figures 6-3a** and **6-3b**) (U.S. Navy 2010b). The vegetation classification system used in this INRMP meets the standards of the National Vegetation Classification System as required by the Federal Geographic Data Committee. This vegetation classification system differs from the NatureServe habitat classification detailed on the Navy Conservation Website because the NatureServe database is incomplete for California.

California Encelia Series. California encelia (*Encelia californica*) dominates two of the three hills that appear to have been part of a revegetation project. The two hills parallel the San Diego River and are surrounded by the golf course. These hills are sparsely vegetated and contain areas of open grasslands and weeds. Where shrubs occur, California encelia dominates or exists alone. Other native shrubs scattered on these hills include mule fat (*Baccharis salicifolia*) and California sagebrush (*Artemisia californica*). This vegetation community is classified as Diegan coastal sage scrub (revegetated) according to Holland 1986.

California Encelia–San Diego County Viguiera Series. The largest hill on the east side of the Admiral Baker Field Golf Course has been revegetated. Low growing (generally 1 to 2-foot-high [0.3 to 0.6 meter]) California encelia and San Diego County viguiera (*Viguiera laciniata*) dominate this hill. This vegetation community is classified as Diegan coastal sage scrub (revegetated) according to Holland 1986.

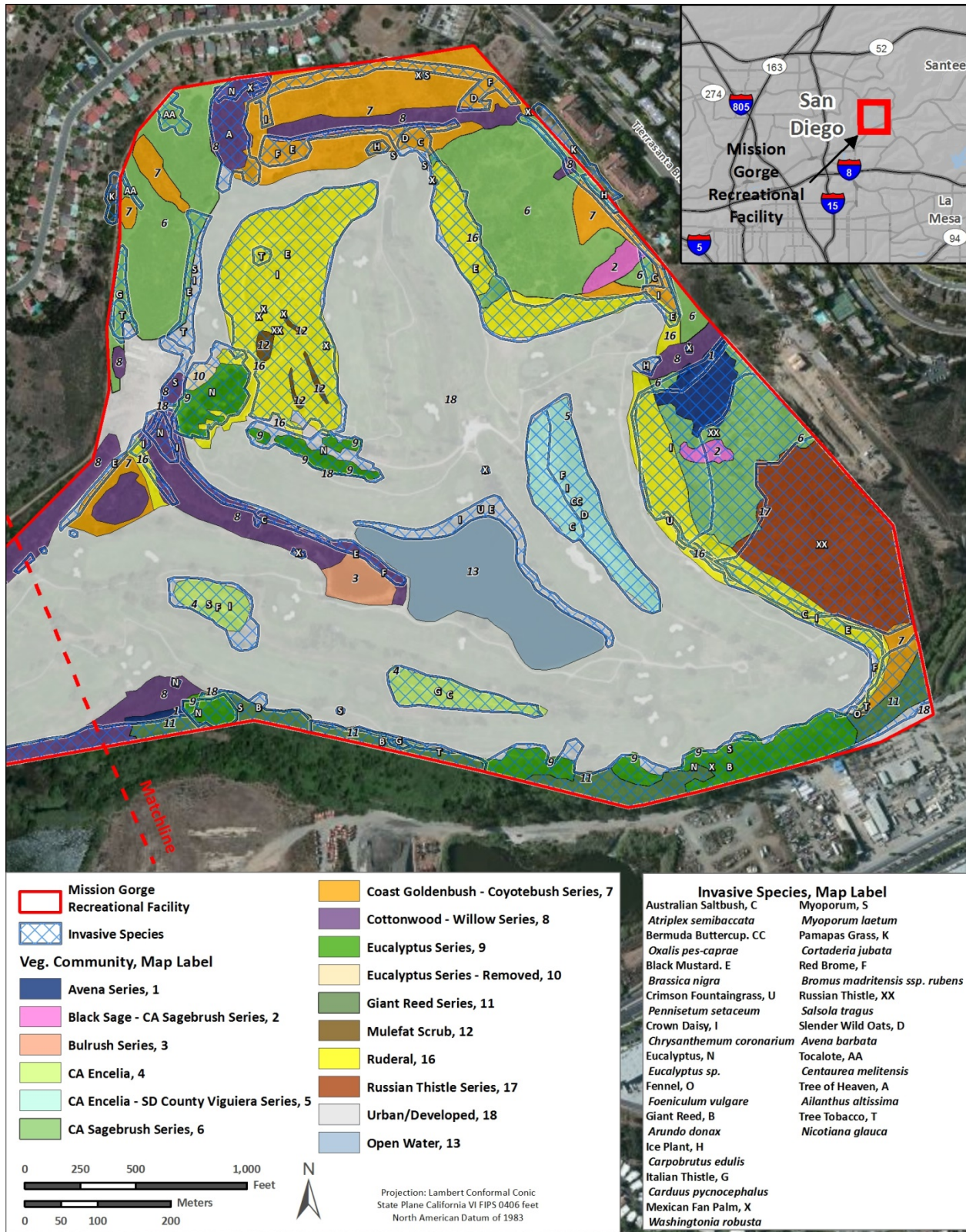


Figure 6-3a: Mission Gorge Recreational Facility Vegetation and Invasive Species

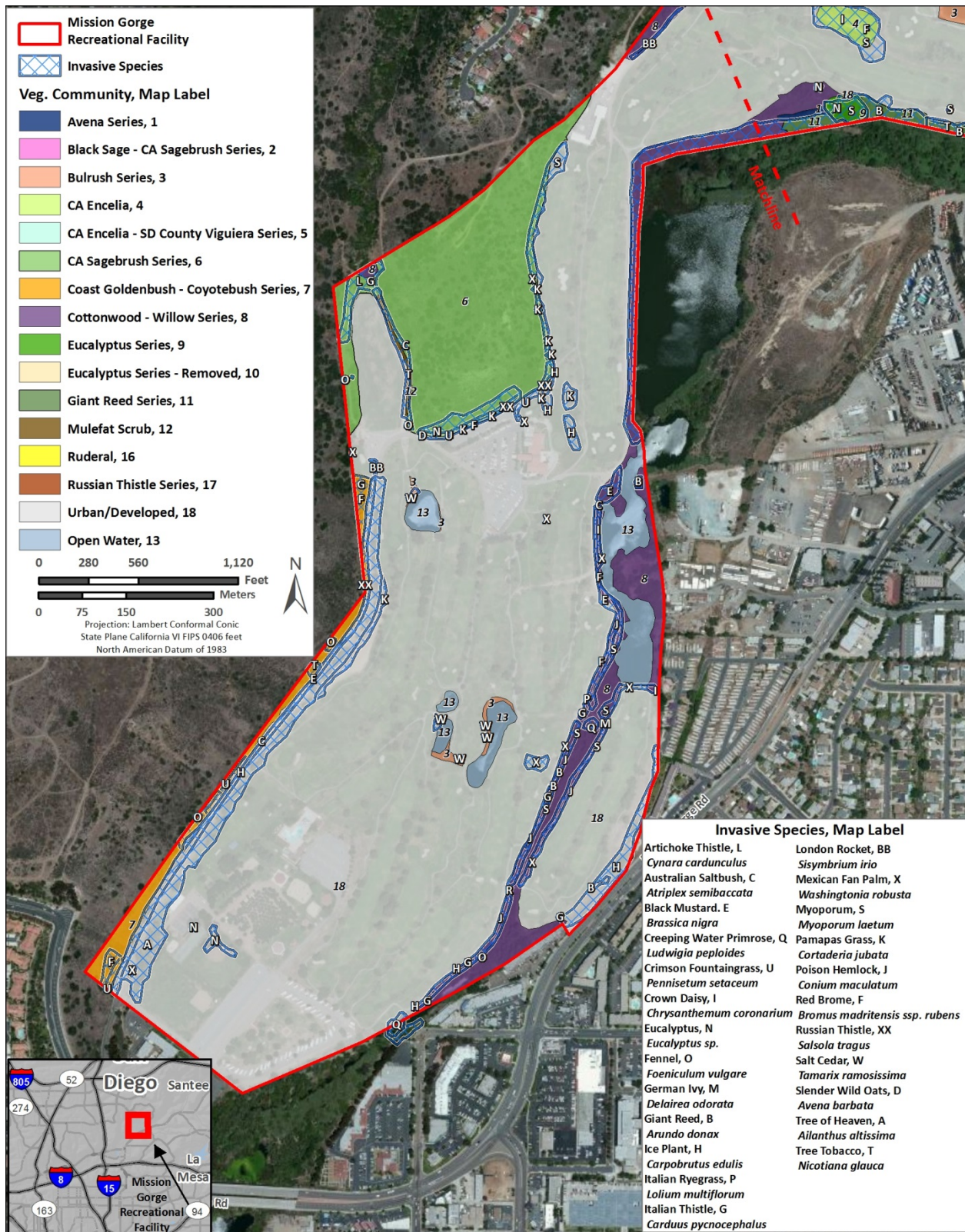


Figure 6-3b: Mission Gorge Recreational Facility Vegetation and Invasive Species

California Sagebrush Series. The majority of good quality upland habitat surrounding the golf course is mapped as California sagebrush series. This form of coastal sage scrub is dominated by California sagebrush and supports a diverse assemblage of other native shrubs, such as California buckwheat (*Eriogonum fasciculatum*), California encelia, black sage (*Salvia mellifera*), lemonadeberry (*Rhus integrifolia*), toyon (*Heteromeles arbutifolia*), and laurel sumac (*Malosma laurina*).

California Sagebrush–Black Sage Series. Two patches of California sagebrush - black sage series vegetation occur on the easternmost slopes of MGRF. This series represents pockets of vegetation within the larger California sagebrush series that contain dense patches of black sage. While black sage occurs throughout the California sagebrush series, it is unusually dense at these sites. A nesting pair of Coastal California Gnatcatchers occupied the southernmost patch of California sagebrush–black sage series.

Coast Goldenbush–Coyote Bush Series. Coast goldenbush (*Isocoma menziesii*) and coyote bush (*Baccharis sarothroides*) are the dominant species in this vegetation series. Two forms of this vegetation series occur on-site. Two patches of re-vegetated coastal sage scrub habitat, characterized by dense coast goldenbush and coast goldenbush shrubs approximately 3 to 4 feet (0.9 to 1.2 meters) high, are located on the northeast portion of MGRF surrounded by California sagebrush series vegetation.

Vegetation typical of a disturbed coastal sage scrub habitat has also been included in the coast goldenbush–coyote bush series. These areas consist of coast goldenbush, coyote bush, and a variety of native and non-native shrubs. The habitat is generally open and supports non-native grasses in the herbaceous layer.

Eucalyptus Series. Eucalyptus trees are not native and are considered invasive species because of their rapid growth rate, broad cover, and all elopathic chemicals contained in their leaf litter that prevent understory species from growing. Once established, eucalyptus groves often form dense canopies that displace native habitats over time. Eucalyptus series vegetation is associated with the San Diego River on the eastern portion of the property where non-native vegetation has dominated the native riparian habitats. A large cluster of eucalyptus trees also occurs to the north.

Eucalyptus Series–Removed. Mature eucalyptus trees were removed in 2007; likely due to interference with nearby power lines. This area has been mapped as eucalyptus series–removed.

Wild Oat Series. Wild oat (*Avena* spp.) series vegetation occurs in a few locations at MGRF. Wild oats form dense single species grassland. This habitat is regularly mowed to reduce the potential for fires. Smaller patches of this degraded habitat occur onsite.

Cottonwood-Willow Series. Fremont cottonwood (*Populus fremonti*) and black willow (*Salix gooddingii*) are the dominant species in this riparian vegetation community. The composition of shrub and herbaceous cover within this community on-site includes varying amounts of mule fat and arroyo willow (*Salix lasiolepis*). Other species include western ragweed (*Ambrosia psilostachya*) and salt marsh fleabane (*Pluchea odorata*) and the emergent cattail (*Typha* spp.) and bulrush (*Scirpus* spp.).

Bulrush Series. Bulrush series vegetation occurs as the freshwater marsh habitat around a few of the golf course ponds and in the detention basin leading to the largest pond on the east side of the golf course. This habitat is routinely cut back as part of regular golf course maintenance. Larger shrubs and trees are removed from the habitat leaving fairly uniform stands of bulrush.

Mule Fat Series. A few small patches of mule fat series vegetation occur at the MGRF. An open concrete culvert is vegetated with a thin band of mule fat. In addition, small patches of mule fat grow within the ruderal vegetation in a disturbed area on the eastern portion of the property.

Open Water Series. The golf course ponds and large inundated areas of the San Diego River are classified as open water.

Giant Reed Series. Both banks of the San Diego River are dominated by giant reed on the eastern half of the MGRF site. An aggressive invasive species, the giant reed forms dense clumps on the riverbanks directly upstream of the site and this species continues to choke out native riparian habitat within the MGRF boundary.

Ruderal Habitat. Ruderal habitat occurs at the edge of habitat adjacent to the easternmost portion of the Admiral Baker Field Golf Course. This habitat comprises bare patches of soil and patches of non-native annual grasses and herbaceous plants. Species such as filaree (*Erodium* sp.), wild oats, and Bermuda grass (*Cynodon dactylon*) are common in the ruderal habitat. Ornamental species, such as olive (*Olea europaea*) trees and Mexican fan palms (*Washingtonia robusta*) also occur here.

Russian Thistle Series. Russian thistle (*Salsola tragus*) is the dominant plant species found in a large patch of what was once likely good-to-moderate-quality coastal sage scrub. This hillside burned a few years ago. A few emerging native shrubs (California sagebrush and California buckwheat) are apparent, but the site is now dominated by Russian thistle and other weeds.

Urban/Developed Land. Urban/developed lands at MGRF include the clubhouse, golf course, recreational facilities, paved roads, and parking lots.

Specific Concerns

- Invasive species.
- Altered fire regime.
- Development/anthropogenic influence.
- Erosion and sedimentation.
- Climate change (e.g., changes in temperature or sea level rise).
- Fuel reduction near neighboring properties.

Current Management

Management of native habitats at MGRF includes their enhancement by the removal of invasive exotic plant species and planting of native species, as well as habitat restoration of sorely disturbed areas. Removing invasive exotic plants, planting native species, and restoring habitat activities are conducted through coordination with the NAVFAC SW biologist.

Management Objective and Strategy

Objective: Develop and implement a program for natural land and habitat restoration and rehabilitation.

Strategies:

1. Conduct long-term resource monitoring to detect changes caused by military activities.
2. Continue invasive and noxious weed identification and control as necessary.
3. Complete evaluation and prioritization of active erosion sites.

4. Update vegetation mapping.
5. Ensure that natural resources staff responsible for plant community conservation update training regarding management of these resources on a military installation on an annual basis.
6. Develop specifications and standards for reseeding/revegetation of disturbed sites for use in contracts, maintenance, and other projects.
7. Annually review management to ensure it still meets ecosystem management goals.

6.2.3.2 Wetlands and Floodplains

Wetlands, as defined by the EPA and the USACE, are “areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas” (USACE 1987).

Waters of the U.S. generally include all waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; all interstate waters, including interstate "wetlands"; and all other waters such as interstate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce.

Wetlands and non-wetland waters of the U.S., as defined by USACE, were delineated on MGRF during the 2006 and 2008 natural resources survey for MGRF. As shown in **Table 6-2**, a total of 22.3 acres (9 hectares) of wetlands and 6.8 acres (2 hectares) of other USACE regulated waters of the U.S. were identified on MGRF (see **Figure 6-2**) (U.S. Navy 2010b).

Table 6-2: Mission Gorge Recreational Facility Jurisdictional Waters

Jurisdictional Waters on MGRF	Acres
Wetland	22.3
Non-wetland waters of the U.S.	6.8
Total	29.1

Source: U.S. Navy 2010b

Note: As stated in 33 CFR Part 328, areas excavated from uplands—which include golf course ponds—are not USACE jurisdictional. At MGRF, an additional 12.5 acres (5.1 hectares) of resources are likely exempt from USACE jurisdiction, including 4.3 acres (1.7 hectares) of wetlands and 8.2 acres (3.3 hectares) of non-wetland waters. To date, USACE has not confirmed delineation results.

The Federal no net loss policy for wetlands is the principle by which counties, agencies, and governments strive to balance unavoidable habitat, environmental and resource losses with replacement of those items on a project-by-project basis so that further reductions to resources may be prevented. Avoidance, minimization, or compensatory mitigation may be required through the permitting process to offset any impacts to waters of the U. S., including wetlands.

Wetland management strategies vary depending primarily on the wetland classification, which is determined by the value of a particular wetland area. A wetland’s value is decided by the quality of the functions and services it provides or has the potential to provide, including its biomass production, habitat, erosion control, storm water storage, water quality protection, aquifer recharge potential, and low

flow augmentation. Some of the factors used to measure the quality of these functions are the wetland's size, its location in the watershed, the amount of development in the watershed, vegetative structure and composition, rate of water flow through the wetland, the size of natural buffers, and surrounding land uses. Regardless of the habitat value, wetland areas are almost always poor choices for building sites or for most activities, other than providing non-consumptive enjoyment of the outdoors. Installation natural resources staff will ensure during the program/project review processes that program/project managers are aware of the laws and regulations and permitting process regarding the protection of wetlands and non-wetland waters of the U.S.

Specific Concerns

- Development/anthropogenic disturbances.
- Invasive species encroaching into wetland habitat.
- Climate change.
- Erosion and sedimentation from either anthropogenic or natural causes.
- Pollution.

Current Management

Jurisdictional delineations for waters of the U. S., including wetlands are conducted as needed on MGRF based on mission and development initiatives. As long as delineations are conducted, and associated Jurisdictional Determinations are obtained on MGRF on a regular basis, and information from the delineations is maintained in the GIS database, management of wetlands should not pose an issue at MGRF.

Management Objective and Strategy

Objective: Avoid impacts to wetlands and non-wetland waters located on NBSD to the maximum extent practicable while maintaining the existing functions and services of these resources.

Strategies:

1. Update the water resource inventory data, including wetland distribution and categories.
2. Conduct Environmental Review for activities that could affect wetlands.
3. Plan development and training activities to avoid waters of the U.S., including wetland impacts to the maximum extent possible and mitigate unavoidable impacts on waters of the U.S., including wetland functions, size, and services.
4. Prevent stormwater runoff and erosion to protect waters of the U.S., including wetlands, from pollutants and excessive sedimentation.
5. Remain in compliance with the CWA and implement procedures to manage for a no net loss of wetland and floodplain acreage, functions, and services.
6. Reduce habitat fragmentation and control the spread of invasive species.
7. Annually review the natural resources management program and implement adaptive management techniques to ensure that management actions do not adversely impact wetlands.
8. Implement erosion control BMPs to avoid adverse environmental impacts to wetlands.

6.2.3.3 Marine Habitats

Not applicable to MGRF due to inland location.

6.2.3.4 Wildland Fire

Federal wildland fire policy requires that all Federal lands with burnable vegetation have a fire plan and resources to safely mitigate losses. This policy was adopted by the DoD Wildland Fire Policy Working Group in 1996. DoD fire policy was developed by DoD Instruction 6055.06 Fire and Emergency Services Program.

Specific Concerns

- Loss of habitat due to uncontrolled fire, species include the spiny redberry (*Rhamnus crocea*; host plant for the Hermes copper butterfly [*Hermelycaena hermes*]), and habitat for the Coastal California Gnatcatcher and Least Bell's Vireo (*Vireo bellii pusillus*).
- Inadequate communication, coordination, and reporting with adjacent fire departments.

Current Management

A Wildland Fire Management Plan was developed for MGRF, Murphy Canyon Housing Area, and Chollas Heights Housing Area in August of 2010. The purpose of the Fire Management Plan (FMP) is to reduce wildfire potential, protect Navy assets, protect and enhance natural resources, and implement goals and objectives for the wildland fire management program. The FMP describes fire attributes and fuels for lands on and surrounding MGRF, and guidance for managing fire at MGRF. Specific provisions within the plan for management include the following:

- Removal of leaves, twigs and other combustible debris from roofs and gutters.
- Keeping access roads clear of fallen debris.

Management Objective and Strategy

Objective: Support a Wildland Fire Management Program to protect high-value natural resources areas from catastrophic wildfire while conserving resources and military operational flexibility.

Strategies:

1. Implement the FMP for MGRF. The purpose of the FMP is to reduce wildfire potential, protect Navy assets, protect and enhance natural resources, and implement goals and objectives for the wildland fire management program. The FMP should also describe fire attributes and fuels for lands on and surrounding MGRF, and guidance for managing fire at MGRF.
2. Educate the MGRF community about wildland fire. This can be accomplished through posting fire prevention signs around MGRF, and developing fire prevention messages and handouts for Navy personnel.
3. Educate the surrounding MGRF community about wildland fire through participation on local fire-wise councils, posting signage around the facility, and developing and distributing educational materials to recreational users of MGRF concerning wildland fire.

4. Once developed, annually review the MGRF FMP and update the plan according to DoD Instruction 6055.06.

6.2.3.5 Critical Habitat

Critical habitat has not been designated on MGRF by USFWS for the two federally listed species that occur, the Coastal California Gnatcatcher and the Least Bell's Vireo. Critical habitat for San Diego fairy shrimp (*Branchinecta sandiegonensis*) and Coastal California Gnatcatcher has been designated within 2 miles of MGRF. **Appendix E** discusses the specific benefits for Coastal California Gnatcatcher and Least Bell's Vireo that are derived from the management recommendations in this INRMP.

6.2.3.6 Other Regulatory or Habitat Planning Designation

The CDFW NDDDB has designated a number of communities as rare, including the mule fat scrub that occurs on MGRF Creek (U.S. Navy 2002a). The CDFW defines rare communities as “those communities that are of highly limited distribution... [that] may or may not contain rare, threatened, or endangered species” (CDFG 2000).

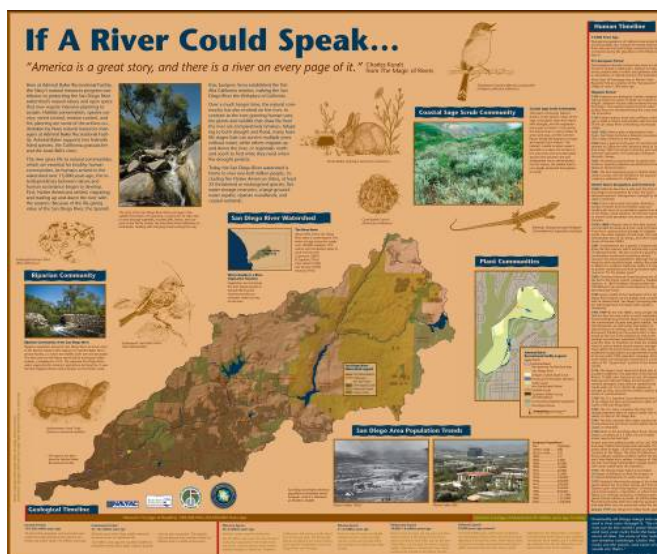
In addition, the Admiral Baker Golf Course attained the Audubon Cooperative Sanctuary Program (ACSP) Golf Course Certification in 2009. The ACSP for golf courses is a cooperative program between Audubon International and the U.S. Golf Association (USGA) that “promotes ecologically sound land management and the conservation of natural resources” (USGA 2009). To obtain certification, golf courses work toward certificates of recognition in six categories that include (Audubon International 2009):

- Environmental Planning
- Wildlife and Habitat Management
- Outreach and Education;
- Chemical Use Reduction and Safety
- Water Conservation
- Water Quality Management.



The Admiral Baker Golf Course is the second DoD golf course, but the first Naval golf course, to obtain the ACSP Certification. Listed below are just a few of the steps taken towards course certification:

- Removing exotic invasive plants
- Engaging in restoration projects to connect species habitat
- Planting native species in landscaped areas to maintain native vegetation ecological succession
- Developing interpretive signs for placement along the San Diego River
- Developing and strategically placing “Environmental Sensitive Zones”



Interpretive sign along San Diego River

signs around federally endangered Coastal California Gnatcatcher and Least Bell's Vireo nesting and foraging sites

- Ensuring that landscaping activities do not impact endangered species habitat by marking off nesting and foraging sites during the nesting season.

6.2.4 Fish and Wildlife Management

6.2.4.1 Invertebrates and Pollinators

Invertebrates

For a complete listing of invertebrate species observed on MGRF, see **Appendix G**.

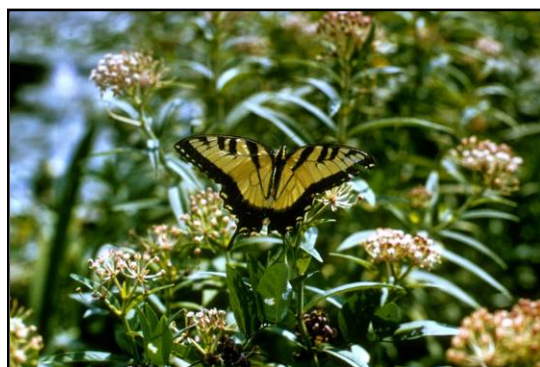
Invertebrate species diversity on MGRF is moderate due to habitat fragmentation (U.S. Navy 2010b).

Pollinators

General information on pollinators is provided in **Section 4.1.3.2**.

Specific Concerns

- Improper use of pesticides.
- Development/anthropogenic disturbances.
- Invasive species (flora and fauna).
- Habitat loss and/or changes.
- Erosion and sedimentation.
- Climate change.
- Fire.



Tiger swallowtail butterfly

Credit: U.S. Fish and Wildlife Service

Current Management

Natural resources managers are not currently managing for pollinator species at MGRF.

Management Objective and Strategy

Objectives: Maintain and enhance pollinator populations and their habitat when not in conflict with health and safety, or the military mission.

Strategies:

1. Inventory and monitor populations of pollinators.
2. Develop BMPs to ensure that pollinator species are not adversely impacted by MGRF activities.
3. Identify and develop pollinator friendly landscapes.
4. Develop and distribute outreach and education materials on pollinators.
5. Revegetate with native species contained on the NAVFAC SW recommended plant list.

6. Control the spread of invasive species.
7. Review existing literature on pollinators.
8. Develop and implement a management program that supports bee relocation as opposed to bee eradication.

6.2.4.2 Fish

Only one fish, mosquitofish (*Gambusia affinis*) was detected during the 2010 inventory of MGRF.

6.2.4.3 Reptiles and Amphibians

For a complete listing of herpetofaunal species observed on MGRF, see **Appendix G**. More information on the Partners in Amphibian and Reptile Conservation (PARC) is available in **Section 8.5.2.5**.

6.2.4.4 Birds and Migratory Bird Management

For a complete listing of avian species observed on MGRF, see **Appendix G**.

MGRF contains quality nesting habitat for several avian species, particularly within and around the Admiral Baker Golf Course. MGRF supports tall riparian habitat along the San Diego River and in patches in the northeastern portion of the site as well as eucalyptus groves and other tall ornamental trees associated with the golf course. Each of these areas can potentially support nesting raptors. The undisturbed habitat around the Admiral Baker golf course provides good quality foraging sites for raptor species (U.S. Navy 2010b).



Tree Swallow

Credit: U.S. Fish and Wildlife Service

For additional information on MBTA, see **Section 2.4** and **Appendix F**.

Specific Concerns

- Development/anthropogenic disturbances.
- Invasive species (flora and fauna).
- Habitat loss and/or changes.
- Erosion and sedimentation.
- Climate change.
- Fire.
- Predation.

Current Management

Regular surveys are conducted of bird populations that may forage or nest on MGRF. Migratory birds on MGRF are managed according to the provisions in the 2006 MOU between DoD and the USFWS.

Management Objective and Strategy

Objective: Maintain and enhance populations, and nesting and foraging habitats of migratory birds on MGRF.

Strategies:

1. Assess the effects of all projects on migratory birds during the NEPA process. Ensure compliance with the MOU between the USFWS and DoD on the Conservation of Migratory Birds and the “Migratory Bird Rule.”
2. Conduct activities outside of nesting areas or outside of the general migratory bird-nesting season that extends from mid-February through the end of August to help avoid direct impacts.
3. Identify any actions that require an MBTA permit and, if necessary, obtain appropriate permit for intentional take of migratory birds.
4. Develop effective management for minimizing the unintentional take of migratory birds.
5. Conduct regular surveys (e.g., every 5 years when the baseline inventories are scheduled to be repeated) to determine what species of migratory birds may have potential to be on MGRF.
6. Once finalized, implement monitoring protocols contained within the DoD Coordinated Bird Monitoring Plan. Contribute data to the Coordinated Bird Monitoring Database.
7. Continue monitoring listed species as described in this INRMP and adapt monitoring and management actions as needed.
8. Develop migratory bird specific BMPs and ensure these BMPs are included in project plans (e.g., plan all tree trimming during the non-nesting season).
9. Develop and enhance partnerships.
10. Develop and distribute outreach and education materials on migratory birds.
11. Revegetate with native species contained on the NAVFAC SW recommended plant list.
12. Control the spread of invasive species,
13. Participate in the DoD Partners in Flight initiative.

6.2.4.5 Bird/Wildlife Aircraft Strike Hazard

Not applicable to MGRF due to a lack of flight operations.

6.2.4.6 Mammals

For a complete listing of mammal species observed, or detected, at MGRF, see **Appendix G**.

MGRF contains fragmented habitat for small mammal species adapted to an urbanized environment. In addition, several bat species were detected in the San Diego River region and have the potential to occur on MGRF (see **Table 6-4**) (U.S. Navy 2010b).

6.2.4.7 General Management for Fish and Wildlife

Habitat loss has a direct correlation to a decline or loss of fish and wildlife populations. Installation INRMPs are meant to be used as tools in operational, training, and construction planning endeavors to

minimize or prevent loss of habitat, thus preserving species diversity and populations at respective installations.

For the purposes of this INRMP, wildlife management is defined as manipulation of the environment and wildlife populations to produce desired objectives. The primary goal of wildlife management at MGRF is to maintain wildlife populations at levels compatible with land use objectives while promoting the existence, importance, and benefits of nongame species.

The basis of managing a rich assemblage of nongame wildlife is to provide a mosaic of habitats that are structurally and biologically diverse. In managing for a diversity of habitats and diversity within those habitats, the potential exists for numerous species to be found. MGRF should employ these basic techniques for managing wildlife.

Monitoring Wildlife. Creating, monitoring, and updating GIS data on wildlife species will allow MGRF to store, retrieve, present, and analyze the data to make informed management decisions.

Managing for Migratory Birds. The MBTA provides for a year-round closed season for nongame birds and prohibits the taking of migratory birds, nests, and eggs, except as permitted by the USFWS. Impacts on birds protected under the MBTA will be avoided through surveying for nesting birds in areas proposed for disturbance and, if necessary, waiting until the nesting and fledging process is complete. Alternatively, the USFWS recommends that conducting activities outside of nesting areas or outside of the general migratory bird-nesting season can help avoid direct impacts.

Protecting Sensitive Areas. MGRF should maintain biological diversity by protecting, to the extent practicable, sensitive areas that provide unique habitat niches. Protection measures might include restricting vehicle movement, and protecting habitats of exceptional biological value by establishing protective buffers and maintaining healthy and diverse ecosystems.

Specific Concerns

- Improper use of pesticides.
- Habitat loss.
- Invasive species.
- Climate change.
- Predation.
- Fire.



California ground squirrel
Credit: U.S. National Park Service

Current Management

Opportunities for the management of fish and wildlife species on MGRF are primarily accomplished by managing habitats. MGRF natural resources personnel coordinate with CDFW and USFWS to identify, prioritize and implement habitat enhancement projects targeted for particular species or groups of species (e.g., birds). Projects to manage wildlife habitat include invasive plant control, enhancing and protecting wetlands, and conducting surveys (e.g., migratory nesting bird survey).

Management Objective and Strategy

Objective: Employ a systematic approach to managing wildlife resources, using a process that includes inventory, monitoring, modeling, management, assessment, and evaluation.

Strategies:

1. Ensure that the natural resources staff members responsible for wildlife management and conservation obtain focused training regarding management of these resources as related to conservation on a military installation on an annual basis.
2. Continue documenting nongame species that are incidentally observed during surveys.
3. Annually review the monitoring program to make certain it still meets ecosystem management goals.
4. Survey for and monitor herpetofauna populations using guidelines recommended by PARC.
5. Once finalized, implement DoD PARC Strategic Plan.
6. Install bird and bat boxes.
7. Revegetate areas on MGRF with native species using species on the NAVFAC SW recommended plant list.
8. Control the spread of invasive species.
9. Maintain and promote partnerships with agencies and groups involved in wildlife management.
10. Maintain accurate, usable, and informative GIS data for ease in management planning and documentation.

6.2.5 Special Status Species Management

Special status species include those species that are federally listed endangered, threatened, or candidate; state listed endangered, threatened, candidate or species of special concern; birds on the Federal Birds of Conservation Concern list; and plants identified by the CNPS as having a California Rare Plant Rank. **Figure B-2 in Appendix B** provides an illustration of the hierarchy for special status species as used in this INRMP.

Table 6-3 includes species either observed on MGRF during the 2005 natural resources survey, or species with the potential to occur on the installation.

6.2.5.1 Federal Listed Species

Two federally listed species have been observed on MGRF, the Least Bell's Vireo and the Coastal California Gnatcatcher (see **Figures 6-4**). Other special status species, including several avian species and Belding's orange-throated whiptail (*Aspidoscelis hyperythrus beldingi*), that were observed on MGRF are shown in **Figure 6-5**.

Least Bell's Vireo

The Least Bell's Vireo is a Federal and state listed endangered species. Least Bell's Vireo is a small, nondescript Vireo, with generally gray plumage, rounded wings with pale white wing bars and narrow white eye rings. Juveniles are distinguished from adults by whiter plumage and more distinct wing bars. This species has a distinctive song and is most easily located through its vocalizations. Least Bell's Vireo is a migratory songbird that winters in Baja California, Mexico, arriving in California from mid-March to April and departing for Baja California again in September. Breeding season generally ranges from March through July. Males establish breeding territories that range in size from 0.5 to 4 acres (0.2 to 1.6 hectares). Nests are commonly located on branches approximately 1.5 to 5 feet (0.5 to 1.5 meters) above the ground. Most pairs produce only one brood per season but have been documented to produce up to four in one season. Least Bell's Vireo is parasitized throughout its breeding range by Brown-headed Cowbirds (*Molothrus ater*), which are the cause of a substantial proportion of nest failures.

Table 6-3: Special Status Species Observed or with the Potential to Occur on Mission Gorge Recreational Facility

Common Name	Scientific Name	Federal Status	State Status	NBSD Presence
Plants				
San Diego barrel cactus	<i>Ferocactus viridescens</i>	---	CNPS Rank 2.1	Known to occur and observed during 2009 surveys.
Palmer's grappling hook	<i>Harpagonella palmeri</i>	---	CNPS Rank 4.2	Known to occur, not observed during 2009 surveys.
Spiny rush	<i>Juncus acutus</i> ssp. <i>leopoldii</i>	---	CNPS Rank 4.2	Known to occur and observed during 2009 surveys.
California box-thorn	<i>Lycium californicum</i>	---	CNPS Rank 4.2	Known to occur and observed during 2009 surveys.
San Diego County viguiera	<i>Viguiera laciniata</i>	---	CNPS Rank 4.2	Known to occur and observed during 2009 surveys.
Birds				
Cooper's Hawk	<i>Accipiter cooperii</i>	---	WL	Observed in riparian habitat along San Diego River, although no nests were observed, there is the potential to nest on-site.
Southern California Rufous-crowned Sparrow	<i>Aimophila ruficeps canescens</i>	---	WL	Detected in the California sagebrush habitat at MGRF and is expected to breed on-site.
Sharp shinned Hawk	<i>Accipiter striatus velox</i>	---	SSC	Detected at MGRF during the 1995/1996 surveys. This species has the potential to forage on-site, but would not be expected to nest on-site.
Yellow Warbler	<i>Dendroica petechia</i>	BCC	SSC	Detected in cottonwood-willow series vegetation at MGRF. Breeds on-site and occupies the majority of available suitable habitat on-site.
White-tailed Kite	<i>Elanus leucurus</i>	---	FP	No nests were observed, this species has the potential to nest in the trees on-site.

Common Name	Scientific Name	Federal Status	State Status	NBSD Presence
Birds (continued)				
Yellow-breasted Chat	<i>Icteria virens auricollis</i>	---	SSC	Detected in the cottonwood-willow series vegetation at MGRF. This migratory species is expected to breed on-site.
American White Pelican	<i>Pelecanus erythrorhynchos</i>	---	SSC	Observed resting on the open water within the San Diego River at MGRF.
Double-crested Cormorant	<i>Phalacrocorax auritus albociliatus</i>	---	WL	Species is expected to forage along the San Diego River, but is not expected to breed on-site.
Coastal California Gnatcatcher	<i>Polioptila californica californica</i>	FT	SSC	Observed during focused surveys on MGRF and known to breed in coastal sage scrub at MGRF.
Least Bell's Vireo	<i>Vireo bellii pusillus</i>	FE	SE	Observed during focused surveys nesting along San Diego River at MGRF.
Reptiles and Amphibians				
Belding's orange-throated whiptail	<i>Aspidoscelis hyperythrus beldingi</i>	---	SSC	Observed throughout the coastal sage habitat.
Mammals				
Western red bat	<i>Lasiurus blossevillii</i>	---	SSC	Detected east of MGRF along the San Diego River; moderate potential to occur.
San Diego black-tailed jackrabbit	<i>Lepus californicus bennettii</i>	---	SSC	Last observed in 1995.
San Diego desert woodrat	<i>Neotoma lepida intermedia</i>	---	SSC	Observed during trapping studies at MGRF.
Pocketed free-tailed bat	<i>Nyctinomops femorosaccus</i>	---	SSC	Last observed in 2002.
Big free-tailed bat	<i>Nyctinomops macrotis</i>	---	SSC	Known to occur on San Diego River at MTRP. Moderate potential for this species to occur.
Invertebrates				
Hermes copper butterfly	<i>Hermelycaena [Lycaena] hermes</i>	FC	---	Not documented on site, but host plant is present.

Source: U.S. Navy 2010b, CDFG 2011a

Key:

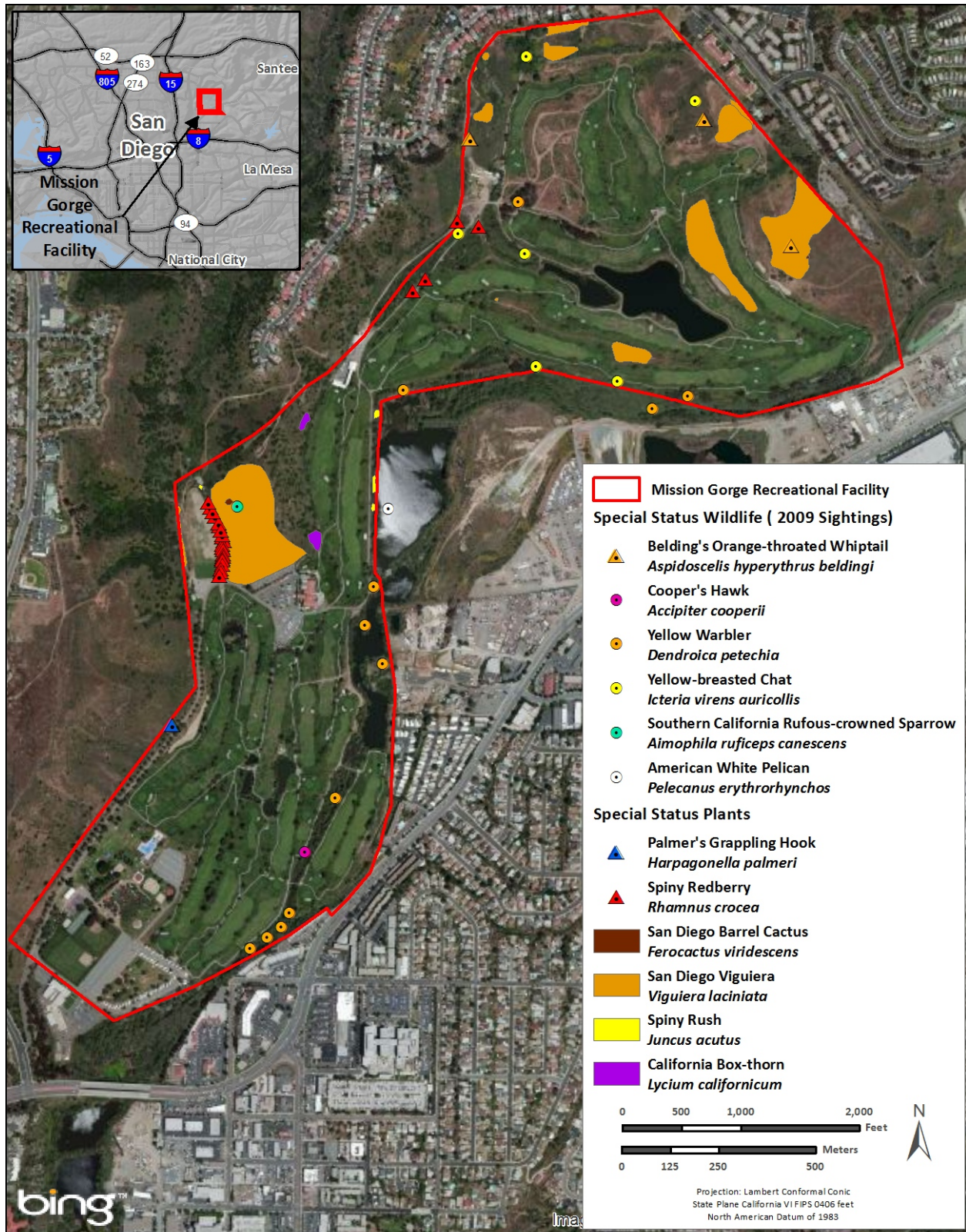
Federal Status: FE = Federal Endangered, FT = Federal Threatened, FC = Federal Candidate, BCC = Birds of Conservation Concern

State Status: SE = State Endangered, ST = State Threatened, SSC = Species of Special Concern, WL = Watch List, FP = Fully Protected, CNPS = California Native Plant Society, List 4.2 = Limited distribution (Watch list). 0.2: Moderately threatened in California, CNPS List 2.1 = List 2: Rare, threatened, or endangered in California, but more common elsewhere. 0.1: Seriously threatened in California.



Source: ESRI StreetMap USA 2007, Bing Maps - Aerial, U.S. Navy 2010b, In-House Survey Data 2011
 Disclaimer: Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 6-4: Mission Gorge Recreational Facility Federally Listed Species



Source: Microsoft Bing Maps 2009, U.S. Navy 2010b
Disclaimer: Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 6-5: Mission Gorge Recreational Facility Other Special Status Species

These birds are restricted to dense riparian habitats that usually have a canopy of willows and an understory comprised of mule fat, wild rose (*Rosa californica*), and other riparian species. Least Bell's Vireos select riparian areas with dense shrub cover and a well-developed understory for nesting. Degradation of riparian habitat due to invasion by exotic plants, grazing practices, and other causes have decreased the amount of available habitat for Least Bell's Vireo.

Four Least Bell's Vireo territories were detected during the 2007 surveys at MGRF (see **Figure 6-4**). The three territories on the south side of the river within close proximity to each other were observed during the majority of the surveys, and fledglings were positively observed with one of these pairs.

During the U.S. Navy's 1995 focused Least Bell's Vireo surveys, four territories were also confirmed on-site, but occurred at different locations along the property. The habitat occupied by Least Bell's Vireo at MGRF has been severely degraded as giant reed is becoming the dominant species at the upstream end of the site. As giant reed chokes out the native habitat along the San Diego River, Least Bell's Vireo may discontinue use of the site as a breeding site.



Least Bell's Vireo

Credit: U.S. Fish and Wildlife Service

Brown-headed Cowbirds, which were documented at MGRF during the 2007 natural resources surveys, are known to parasitize the nests of Least Bell's Vireo, and are ubiquitous within the cottonwood-willow series vegetation on-site. This is another stressor to a continued Least Bell's Vireo presence at MGRF (U.S. Navy 2010a).

For additional information on Least Bell's Vireo at MGRF, refer to **Appendix E**.

Management Objective and Strategy

Objective: Maintain and enhance populations of Least Bell's Vireo on MGRF.

Strategies:

1. Establish an education program for Navy personnel who might have contact with the Least Bell's Vireo, their habitat, or nests.
2. Perform invasive species control in Least Bell's Vireo nesting and foraging sites and enhance habitat through revegetation projects.
3. Conduct regular (approximately every 2 years) surveys for Least Bell's Vireo individuals, or nests, that may be present on MGRF. Once surveys are completed, incorporate survey data into this INRMP.
4. Based on survey results, monitor occurrences of Brown-headed Cowbird, document evidence of parasitism, and implement a control program if warranted.
5. Perform a vulnerability assessment to assess threats to existing populations.
6. Implement the NEPA Site Approval Process to avoid/minimize adverse impacts (e.g., threats) to species foraging or nesting habitat.

Coastal California Gnatcatcher

The Coastal California Gnatcatcher is a federally threatened species and a CDFW species of special concern. The Coastal California Gnatcatcher is a small, slate colored bird with a long, black tail that is edged and tipped with white, which it flicks erratically as it perches. The bird has a distinct kitten-like mewing call, which distinguishes the Coastal California Gnatcatcher from the Black-tailed Gnatcatcher (*Poliophtila melanura*). During the breeding season, the male develops a black cap that distinguishes it from the female. The Coastal California Gnatcatcher is a non-migratory songbird found on the coastal slopes of southern California. It ranges from Ventura County south to northwest Baja California, Mexico. The breeding season of the Coastal California Gnatcatcher extends from late February through August with the peak of nesting occurring from mid-March through mid-May. The breeding territory size of the Coastal California Gnatcatcher ranges from 2 to 14 acres (0.8 to 5.7 hectares), with home ranges expanding from 13 to 39 acres (5.3 to 15.8 hectares) during the non-breeding season. Nest parasitism by Brown-Headed Cowbirds has been documented. Typically, there is a high rate of nest failure each breeding season. This is offset by rapid and persistent re-nesting efforts; a breeding pair may attempt to nest as many as ten times in a year, producing up to three successful broods in a season. There is evidence that this bird is also susceptible to nest predation by various animals such as snakes, coyotes (*Canis latrans*), fox, rodents, and other birds, such as Western Scrub-Jays (*Aphelocoma californica*).



Coastal California Gnatcatcher

Credit: U.S. Fish and Wildlife Service

The Coastal California Gnatcatcher is strongly associated with coastal sage scrub habitats below 820 feet (250 meters) in coastal areas and between 820 and 1,640 feet (250 and 500 meters) in inland areas; however, not all types of coastal sage scrub communities are used or preferred. This bird appears to be most abundant in areas dominated by California sagebrush and California buckwheat. The bird's numbers are generally low in coastal habitats dominated by black sage, white sage, or lemonadeberry; in inland areas, habitats dominated by black sage may be used more regularly. Coastal sage scrub vegetation occurs on the gentle coastal slopes and mesas of southern California, which are prime locations for agriculture and development. Overall, it is estimated that between 1945 and 1990, 58 to 61 percent of the coastal sage scrub habitat within the geographic range of the Coastal California Gnatcatcher had been lost to development.

The population of Coastal California Gnatcatchers has remained since surveys were first conducted on-site in 1995. In 1995, the U.S. Navy conducted focused surveys and detected Coastal California Gnatcatchers at five locations, at least three of which were considered paired. In 2007, five pairs of Coastal California Gnatcatchers were observed on MGRF, and fledglings were observed with three of the five pairs. In 2011, in-house surveys detected approximately eleven use areas (see **Figure 6-4**).

For additional information on Coastal California Gnatcatcher at MGRF, refer to **Appendix E**.

Management Objective and Strategy

Objective: Maintain and enhance populations of Coastal California Gnatcatcher on MGRF.

Strategies:

1. Establish an education program for all MGRF personnel who might have contact with the Coastal

California Gnatcatcher, their habitat, or nests.

2. Perform invasive species control in Coastal California Gnatcatcher nesting and foraging sites and enhance habitat through revegetation projects.
3. Conduct regular (approximately every 2 years) surveys for Coastal California Gnatcatcher individuals, or nests, that may be present on MGRF. Once surveys are completed, incorporated survey data into this INRMP.
4. Perform a vulnerability assessment to assess threats to existing populations.
5. Implement the NEPA/SAR process to avoid/minimize adverse impacts (e.g., threats) to species foraging or nesting habitat.

6.2.5.2 Other Special Status Species

Rare Plants

Five rare plant species, as listed by the CNPS were observed during the surveys at MGRF, including: San Diego barrel cactus (*Ferocactus viridescens*), Palmer's grapplinghook (*Harpagonella palmeri*), southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*), California box-thorn, and San Diego County viguiera. **Figure 6-5** illustrates where these species are located on MGRF.

CNPS Rank 2 species includes plants that are rare, threatened, or endangered in California, but not beyond the boundaries of California. From the Federal perspective, plants common in other states or countries are not eligible for consideration under the provisions of the ESA. Until 1979, a similar policy was followed in California. However, after the passage of the Native Plant Protection Act, plants were considered for protection without regard to their distribution outside the state (CNPS 2011).

CNPS Rank 4 is considered a watch list for plant species that have limited distribution or are infrequent throughout a broader area in California, and their vulnerability or susceptibility to threat appears relatively low at this time. While these plants are not "rare" from a statewide perspective, they are uncommon enough that their status should be monitored regularly. Very few of the plants constituting Rank 4 meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Secs. 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and few, if any, are eligible for state listing (CNPS 2011).

Hermes Copper Butterfly

The Hermes copper butterfly has not been identified at MGRF, however it is currently found in about 15 locations in San Diego County. The host plant for the Hermes copper butterfly, the spiny redberry, is found on MGRF (U.S. Navy 2010b).

The Hermes copper butterfly (*Hermelycaena hermes*) is an imperiled species endemic to San Diego County and northern Baja California, west of the Peninsular mountain ranges. In 2011 the butterfly was added to the list of candidates for ESA protection, and its status will be reviewed by USFWS annually until either a proposal to list the species as endangered or threatened is undertaken, or a change in status is warranted.

Although there were numerous extant colonies of Hermes copper butterflies in San Diego County, this species occupies less than half of its former range. Because continued development in San Diego County threatens to eliminate additional colonies of this insect, it is considered highly sensitive and vulnerable to extirpation. Excessive, human induced fire poses a significant threat to the survival of the species, even

on lands otherwise protected from development. Urban development, prescribed fire, global climate change, and delayed Federal protection pose significant threats to Hermes copper butterfly populations. Even though the host plant for the Hermes copper butterfly is found on MGRF, the species has not been observed.

The historic range and population of this species is difficult to determine because relatively little biological information about this species has been published in the peer-reviewed literature. The most comprehensive description of the biology of this species comes from Thorne (1963). Although Thorne's work is based on decades of collection and observation, the paper gives very little quantitative information on the density and historic distribution of the species. The early published works have been updated in several unpublished technical reports (Murphy 1990; Brown 1991; Faulkner and Klein 2004). As with older publications, information from these sources is generally descriptive and includes little or no quantitative information (NAVFAC SW 2010).

While a majority of MGRF is developed, significant stands of natural habitat still exist. There are approximately 69 acres (28 hectares) of Diegan coastal sage scrub, 28 acres (11 hectares) of southern willow scrub, 5 acres (2 hectares) of mule fat scrub, and 3 acres (1.2 hectares) of freshwater marsh on MGRF (U.S. Navy 2002a). The 69 acres of coastal sage scrub on MGRF is suitable habitat for the Hermes copper butterfly. A variety of nectar sources for the adult butterfly, including its preferred nectar and basking plant, California buckwheat are also found on MGRF. The nearest location where a Hermes copper butterfly population is known to exist is at Mission Trails Regional Park (MTRP). A mostly contiguous band of natural habitat exists between MGRF and MTRP. The presence of suitable habitat between MGRF and MTRP is unknown, and due to the sedentary nature of Hermes copper butterfly, dispersal from MTRP to MGRF is also unknown.

Additional information on the Hermes copper butterfly is available in **Appendix E**.

Management Objective and Strategy

Objective: Determine whether Hermes copper butterfly utilizes available habitat at MGRF. Once use is determined actively manage for the species.

Strategies:

1. Establish an education program for Navy personnel on the Hermes copper butterfly.
2. Perform invasive species control in Hermes copper butterfly habitat.
3. Conduct a survey to determine species presence on MGRF. If surveys determine species presence, include data into this INRMP, update GIS, and develop and implement management strategies for maintaining and enhancing the species population (e.g., conduct surveys of species and population every 2 years).
4. Implement the NEPA/SAR process to avoid/minimize adverse impacts (e.g., threats) to species foraging or nesting habitat.
5. Implement erosion control BMPs in known Hermes copper butterfly habitat to reduce habitat degradation.
6. Enhance habitat through revegetation projects.

6.2.5.3 General Management for Special Status Species

An installation's overall ecosystem management strategy must provide for protection and recovery of special status species. Under the ESA, an "endangered species" is defined as any species that is in danger of extinction throughout all or a significant portion of its range. A "threatened species" is defined as any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The USFWS also has available an updated list of species that are regarded as candidates for possible listing under the ESA. Although candidate species receive no statutory protection under the ESA, the USFWS believes it is important to advise government agencies, industry, and the public that these species are at risk and could warrant protection under the ESA.

Specific Concerns

- Habitat loss resulting from urban development and habitat fragmentation.
- Invasive species encroaching on native species habitats.
- Habitat loss due to either anthropogenic or natural causes.
- Erosion and sedimentation from either anthropogenic or natural causes.
- Fire.
- Climate change.
- Predation.

Current Management

Management needs of threatened and endangered species or other special status species and their habitats are based on results contained within surveys performed from 2006 and 2008 for MGRF. Listed species that occur on MGRF include Least Bell's Vireo and the Coastal California Gnatcatcher. Natural resources managers will continue to conduct species surveys at MGRF as deemed necessary and subject to available funding. Management strategies will be developed or revised based on the recommendations of those surveys.

Management needs for special status species and their habitats are based on results contained within surveys performed from 2006 to 2008 for MGRF. MGRF will continue to conduct species surveys as deemed necessary and subject to available funding. Management strategies will be developed or revised based on the recommendations of those surveys.

Management Objective and Strategy

Objective: Minimize the potential for adverse effects on special status species and their associated ecosystems while protecting the operational functionality of the installation mission by using an ecosystem based management approach.

Strategies:

1. Investigate the need for implementing research projects to understand ecological requirements of special status species.
2. Continue use of the established Environmental Review process to identify actions that result in adverse effects on special status species or their habitats.

3. Coordinate with the proponent to ensure NEPA and other regulatory requirements are met.
4. Review and update species lists to reflect presence of threatened, endangered, and other special status species.
5. Conduct regular surveys for special status species that may be present on MGRF.
6. Continue monitoring special status species as described in this INRMP and adapt monitoring and management actions as needed. Use monitoring information and other information to guide adaptive management.
7. Work with stakeholders to develop appropriate habitat goals and management actions to achieve those goals and establish success criteria and reporting requirements.
8. Augment education programs currently conducted at MGRF for military personnel who might have contact with sensitive species or their habitats.
9. Initiate habitat improvement projects to conserve biodiversity and protect plant and animal habitats, as funding is available and when such projects will not adversely affect the military mission (e.g., noxious weeds, or invasive species removal; habitat disturbance where such disturbance will promote native plant growth; preventing habitat disturbance when this will promote nonnative plant growth; and revegetation with native plants).
10. Implement erosion control BMPs to avoid adverse environmental impacts to special status species habitat.
11. Revegetate with native species included on the NAVFAC SW recommended plant list. Include sensitive plant species in the NAVFAC SW recommended plant list.
12. Annually review the natural resources management program to make certain that management actions do not adversely impact special status species habitat.
13. Maintain accurate, usable, and informative GIS data for ease in management planning and documentation.

6.2.5.4 ESA Consultation and Mission Requirements

Management Objective and Strategy

Objective: Maximize effectiveness and efficiency of the MGRF Endangered Species Program to achieve the best conservation possible while maintaining and improving training activities at the desired level.

Strategies:

1. Prioritize management issues within and between species, and within the overall natural resources program to guide management actions and funding expenditures.
2. Coordinate with the USFWS to identify any actions that may adversely impact mission capabilities, and identify activities that could adversely affect listed species. Adapt measures as warranted and consult with the USFWS to receive incidental take coverage where appropriate.
3. Ensure that MGRF remains in compliance with the ESA.
4. Annually review the natural resources management program to make certain that management actions do not adversely impact threatened and endangered species.
5. Promote species recovery and ensure essential habitat is conserved by providing proper funding, providing a benefit to the species, and ensuring effectiveness of management strategies employed. Maintain accurate, usable, and informative GIS data for ease in management planning and documentation.

6.2.6 Exotic and Invasive Species Management

In 2006, the Cal-IPC updated the 1999 *Exotic Pest Plants of Greatest Ecological Concern in California* inventory list (Cal-IPC 2006). The updated Cal-IPC inventory ranks invasive species using a *High, Moderate, Limited, or Evaluated but not listed* scale based on ecological impact of the species. Invasive species were ranked based on four criteria that included (1) ecological impact of the species on native California ecosystems, (2) potential for species to either be or become invasive, (3) species distribution, and (4) documented levels of the species within a region or ecosystem. Refer to **Section 3.1.5** and **4.2.6** for additional information on invasive species concerns, programs in the state of California, and a description of each Cal-IPC ranking level.

Invasive species, with a Cal-IPC ranking, observed on MGRF are presented in **Table 6-4** and locations of several of the species present on MGRF are illustrated in **Figures 6-3a** and **6-3b**. Details in invasive species are included in the Vegetation Management Plan for Mission Gorge Recreational Facility (see **Appendix C**).

Specific Concerns

- Anthropogenic disturbances (e.g., foot traffic).
- Landscaping on and off base.
- Rapid spread of invasive non-native plants that displace native species and degrade habitat for native floral and faunal species.
- Climate change.

Current Management

Natural resources managers at MGRF have developed a program to monitor and control the spread of existing infestations of invasive species, and to determine if new species populations have become established. Assessments of invasive species populations are conducted annually during the rainy season to determine extent of invasive species populations on MGRF. Once assessed, species are prioritized for treatment based on the extent of the infestation, and where the populations are located (e.g., next to listed species habitat).

Management Objective and Strategy

Reduce Spread of Invasive and Exotic Species

Objective: Minimize nonnative species encroachment in areas where severe to moderate encroachment occurs, and in new areas of encroachment where infestation might be spreading but is not yet severe.

Strategies:

1. Annually review and update NAVFAC SW recommended plant list.
2. Develop and implement a Vegetation Management Plan to control the spread of invasive species on MGRF. The plan should include specific prescriptions to evaluate individual invasive species, to identify targeted species, to control further spread of targeted species, and to develop and implement a program to monitor species abundance.
3. Conduct annual surveys to determine whether controls on existing infestations of species have been effective, and whether new populations have become established.

Table 6-4: Invasive Species Observed on Mission Gorge Recreational Facility

Common Name	Scientific Name	Cal-IPC Rank
Giant reed	<i>Arundo donax</i>	High
Australian saltbush	<i>Atriplex semibaccata</i>	Moderate
Slender wild oat	<i>Avena barbata</i>	Moderate
Black mustard	<i>Brassica nigra</i>	Moderate
Red brome	<i>Bromus madritensis ssp.rubens</i>	High
Italian thistle	<i>Carduus pycnocephalus</i>	Moderate
Highway iceplant	<i>Carpobrotus edulis</i>	High
Tocolote	<i>Centaurea melitensis</i>	Moderate
Garland chrysanthemum	<i>Glebionis coronarium</i>	Moderate
Poison hemlock	<i>Conium maculatum</i>	Moderate
Pampas grass	<i>Cortaderia sp.</i>	High
Artichoke thistle	<i>Cynara cardunculus</i>	Moderate
Bermuda grass	<i>Cynodon dactylon</i>	Moderate
German ivy	<i>Delairea odorata</i>	High
Broadleaf filaree	<i>Erodium botrys</i>	Evaluated, Not Listed
Red filaree	<i>Erodium cicutarium</i>	Limited
Eucalyptus	<i>Eucalyptus spp.</i>	Limited – Moderate
Fennel	<i>Foeniculum vulgare</i>	High
Italian ryegrass	<i>Lolium multiflorum</i>	Moderate
Horehound	<i>Marrubium vulgare</i>	Limited
Crystalline iceplant	<i>Mesembryanthemum crystallinum</i>	Moderate
Myoporum	<i>Myoporum laetum</i>	Moderate
Oleander	<i>Nerium oleander</i>	Evaluated, Not Listed
Tree tobacco	<i>Nicotiana glauca</i>	Moderate
Olive	<i>Olea europaea</i>	Limited
Bermuda buttercup	<i>Oxalis pes-caprae</i>	Moderate
Crimson fountain grass	<i>Pennisetum setaceum</i>	Moderate
Canary Island date palm	<i>Phoenix canariensis</i>	Limited
Bristly ox-tongue	<i>Picris echioides</i>	Limited
Annual beard grass	<i>Polypogon monspeliensis</i>	Limited
Wild radish	<i>Raphanus sativus</i>	Limited
Castor bean	<i>Ricinus communis</i>	Limited
Curly dock	<i>Rumex crispus</i>	Limited
Russian thistle	<i>Salsola tragus</i>	Limited
Peruvian pepper tree	<i>Schinus molle</i>	Limited
Brazilian pepper tree	<i>Schinus terebinthifolius</i>	Limited
London rocket	<i>Sisymbrium irio</i>	Moderate
Salt cedar	<i>Tamarix sp.</i>	High
Mexican fan palm	<i>Washingtonia robusta</i>	Moderate

Source: U.S. Navy 2010b

4. Develop and implement a review process for all projects that include a landscaping component to ensure nonnative species are not introduced.
5. Coordinate with the Natural History Museum to identify unknown species that may be invasive.
6. Develop outreach and education materials for distribution within the MGRF community.

Early Detection and Rapid Response

Objective: Enhance current early detection and rapid response management capabilities.

Strategies:

1. Ensure the IPMP and IAP plans establish early detection protocol and rapid response options, to include the following:
 - a. Establish adequate monitoring locations to detect invasive species introduction and spread.
 - b. Develop a communication network as a rapid response tool to quarantine specific invaders and identify the pathway.
 - c. Support rapid response by determining funding sources, contract vehicles, and cooperative mechanisms that can be accessed quickly.
 - d. Prepare Instructions that includes measures to prevent the introduction of invasive non-native species, detect early and respond rapidly to new introductions, and control and monitor established populations.
2. Prepare educational materials for MGRF military and civilian employees, contractors, and other visitors as a tool in early detection of non-native terrestrial species.

Project Planning

Objective: Include control and management of invasive species in project planning and maintenance projects.

Strategies:

1. Address non-native species in NEPA and other ground disturbing project plans.
 - a. Ensure funding is secured for non-native removal during all phases (including post-project), if applicable.
 - b. Monitor projects to ensure personnel are following BMPs, conservation measures, and other guidelines and requirements.
2. Manage roads, access routes, and new construction sites to minimize the spread of invasive non-native species.
 - a. Require that maintenance or repair of existing roads stay within established footprints.
 - b. Clean roadside mowing equipment of adhering dirt and vegetation between mowing cycles.
 - c. Schedule roadside mowing to minimize weedy species seed distribution.
3. Investigate including clause in contracts that requires project proponents to fund restoration projects to compensate for development of habitat.

4. Check project to make sure personnel are following guidelines.

Coordination with Regional Agencies

Objective: Promote cooperative interagency efforts to collect and analyze comprehensive monitoring data, including shared funding and staffing.

Strategies:

1. Coordinate with regional and local agencies on efforts undertaken by MGRF to control the spread of invasive and exotic species.

6.2.7 Grounds and Landscape Maintenance

Environmentally and economically beneficial landscaping practices can reduce maintenance costs while also providing wildlife habitat. Planting windbreaks around buildings and parking areas, establishing wildflower areas, and reducing mowing are all ways to spend dollars more wisely, educate the public about the benefits of reduced maintenance, and become better stewards of the environment. In managing natural resources in the cantonment area, MGRF acknowledges its responsibilities as listed in the White House Memorandum, *Environmentally and Economically Beneficial Practices on Federal Landscaped Grounds* (1994). The memorandum's requirements include the following:

- Using regionally native plants for landscaping
- Using construction practices that minimize adverse effects on the natural habitat
- Reduce pollution by reducing the use of fertilizer and pesticides, using integrated pest management, recycling green waste, and minimizing runoff
- Implementing water efficient practices
- Creating demonstrations of these practices to promote their use elsewhere.

Specific Concerns

- Water use conservation requirements.

Current Management

The installation's representative biologist and NAVFAC SW landscape architect monitor landscaping and grounds projects to ensure that all projects follow the guidance contained in the NAVFAC SW recommended plant list (see **Appendix I**). This guidance includes:

1. Ensuring that landscape designs and plant lists are reviewed and approved by the installation biologist and the NAVFAC SW landscape architect during the planning phase of the project.
2. Ensuring that projects include California native species from the approved plant list shall constitute a minimum of 60 percent of the plant material within each stratum (herb, shrub, and tree). Other drought tolerant species from this list shall constitute the remainder of the plant material (a maximum of 40 percent in each stratum) for each project. A higher proportion of natives may be required for projects within or adjacent to natural areas. The determination of whether cultivars are considered native or exotic will be made on a project-by-project basis.

3. Allowing for use of additional native species in landscaping designs contingent upon approval by the installation biologist or NAVFAC SW landscape architect.
4. Ensuring that project designers coordinate with the installation's representative biologist and NAVFAC SW landscape architect early in the planning process to determine site-specific needs and constraints. In addition, it should be noted that not all species on this list are appropriate for all settings.

In addition, the NBSD Installation Appearance Plan (IAP) is the official direction for designing, developing and reviewing all installation construction and renovation projects at NBSD. The executive summary for the plan states that the IAP has a two-fold purpose: 1) to provide aesthetic and functional direction for new development and renovation efforts, and 2) to protect and preserve the installation's natural and historic resources. Though preservation of resources must be a high priority, the guidelines must be flexible enough to allow for renovation, expansion or demolition of inadequate facilities that may need to be removed to make room for other mission essential facilities (U.S. Navy 2008b). Specific guidelines for grounds and landscape maintenance include (U.S. Navy 2008b):

1. Employ basic principles of landscape design in the planning and execution of all new and renovated landscapes. Comply with UFC 4-010-01 *DOD Minimum Antiterrorism Standards for Buildings*.
2. Preserve all healthy, mature trees unless doing so poses safety or significant design problems or involves prohibitive cost. Preserve healthy, mature shrubs if they are on the plant list approved for the installation and they are used appropriately.
3. Preserve healthy, mature shrubs if they are on the plant list approved for the Base, and they are used in an appropriate location.
4. To protect wildlife and possible nesting habitat, existing mature trees shall not be removed without prior consultation with and approval from the Installation biologist.
5. No plants shall have significant disease, root or maintenance problems. All plants, with minor exceptions, shall maintain an acceptable natural form with no pruning at their mature size, and, as appropriate for the designated space/use.
6. Group plants with similar environmental characteristics, such as sun exposure and water requirements. Adjust plant palettes to accommodate micro-climates.
7. All plants for new and replacement planting shall be selected from the recommended plant list. Planting design shall conform to and be reviewed in accordance with the plant list "Conditions of Use."
8. New and renovation construction will not use turf except for recreational purposes as approved by the Public Works Officer. Minimize existing turf whenever possible to reduce water, maintenance and costs.
9. In coordination with the wildlife biologist, select trees that do not encourage birds to roost or nest over vehicles, tables, benches, etc.

Management Objective and Strategy

Objectives: Maintain an aesthetically pleasing landscape on MGRF that preserves natural ecosystem functions, conserves water in landscaped areas, and promotes pollinator species.

Strategies:

1. Provide professional advice to assist the grounds landscaping and maintenance program in the use of native species as identified in the NAVFAC SW recommended plant list.
2. Maintain and annually update the list of recommended plants that can be used in landscaping.
3. Develop and implement BMPs for grounds maintenance at MGRF (e.g., water conservation). Annually review the IAP to ensure plan BMPs still meet installation needs.
4. Develop monitoring metrics, and set targets to ensure management strategies are meeting goals and objectives.

6.2.8 Pest Management

Authority for pest management activities on MGRF is directed under the Federal Insecticide, Fungicide and Rodenticide Act as amended (7 U.S.C. 136r-1), DoD Instruction 4150.07, SDMAI IPMP, December 2009, and OPNAVINST 6250.4B, Pest Management Programs. IPM is a sustainable approach that incorporates the use of multiple techniques to prevent or suppress pests in a given situation. Although IPM emphasizes the use of nonchemical strategies, chemical control might be an option used in conjunction with other methods. IPM strategies depend on surveillance to establish the need for control and to monitor the effectiveness of management efforts. For additional information on the requirements of DoD Instruction 4150.07 and OPNAVINST 6250.4B, refer to **Section 4.2.8**.

Specific Concerns

- Water use conservation requirements.
- Overuse of fertilizers and pesticides.

Current Management

The 2009 IPMP for SDMAI, which includes MGRF, describes pest management requirements, identifies pests for SDMAI, outlines roles and responsibility for IPM at each SDMAI, outlines procedures for pest control at each facility, and describes the administrative, safety, and environmental requirements of the program. Specific aspects of the program include pest identification, pesticide management (includes storage, transportation, and use and disposal), environmental health and safety, emergency pest management, and available program resources (U.S. Navy 2009). All installation pest management activity is coordinated by the installation IPM Coordinator. Pesticides to be applied on the installation must be approved by the regional NAVFAC pest management consultant and included in the installation pesticide authorized use list. All pesticides that are to be applied to natural areas should also be reviewed and approved by the natural resources manager.

Threatened, endangered, or candidate species can be directly or indirectly affected by pest control activities. The following pest management operations require natural resource manager review:

- Weed and outdoor pest control in endangered/threatened species habitats and natural areas
- Outdoor large area insecticide fogging
- Pesticide applications to, over or adjacent to water bodies, waterways, or wetlands
- Installation of bird barriers, exclusion devices, or repelling devices
- Wildlife and feral animal control

- Invasive species control.

Natural resources managers will obtain any necessary approvals, consultations, or permits. No pest management activities will violate the practices described for threatened, endangered, or candidate species by the California Department of Pesticide Regulation. MGRF will use the California Department of Pesticide Regulation Endangered Species Project web site (<http://www.cdpr.ca.gov/docs/es/index.htm>) to determine the best chemicals to control pest species and their use limitation.

In addition, management of feral animals is a component of pest management at MGRF. Feral animals, especially feral cats and dogs, pose a potential threat to public health and safety. They also pose a threat to wildlife, especially federally listed species and migratory birds. Existing Navy policy included in SECNAVINST 6401.1A of August 16, 1994 regarding veterinary health services prohibits dogs, cats, and other privately owned or stray animals from running free on military installations. The CNO issued a policy letter on January 10, 2002 that clarifies the application of SECNAVINST 6401-1A. An objective of the existing policy is to control feral animals in a humane manner to prevent injury or disease to Navy personnel and eliminate adverse impacts on native wildlife. The instruction requires Navy commands to institute proactive pet management procedures in order to prevent establishment of free-roaming cat and dog populations.

Management Objective and Strategy

Implementation of the Pest Management Plan

Objective: Ensure compliance with environmental legislation, regulations, and guidelines.

Strategies:

1. Update the SDMAI IPMP as necessary to ensure that the plan reflects changes in pest populations and current management issues. Incremental updates to the plan will be conducted annually.
2. Implement pest management controls from the SDMAI IPMP and other pest-related guidance and plans.
3. Conduct surveys of pests that pose a potential health risk to humans or natural resources.
4. Implement the control of wildlife and the effective elimination of concentrated and diseased populations.
5. Monitor pest and invasive species populations. Track usage of active ingredients and man-hours spent controlling pest and invasive species during implementation to ensure that the management strategies are sufficient.

Management of Feral Animals

Objective: Control populations of feral animals on MGRF as required by SECNAVINST 6401.1A.

Strategies:

1. Develop and implement a program to control populations of feral animals on MGRF.
2. Conduct surveys to determine impact of feral animals on native species on MGRF.

6.2.9 Outdoor Recreation and Public Access

Specific Concerns

- Overuse of recreational areas on MGRF.
- Erosion and sedimentation.

Current Management

MGRF is entirely a recreational facility for military personnel consisting of the 36-hole Admiral Baker Golf Course, a driving range, picnic and camping areas, and various other support facilities (e.g., tennis and volleyball courts, baseball fields, and a recreational vehicle camping area) geared towards recreation and well-being of military personnel and their dependents. In addition, recreational access is compliant with the requirements associated with the provisions of the American with Disabilities Act of 1990 as amended and the Disabled Sportsman Access Act as amended.

In addition to maintaining the Audubon ACSP Golf Course Certification, the MGRF may adopt the principles contained with the Environmental Guidebook for Military Golf Courses, or The Green Book. The Green Book was developed by the Center for Resource Management through a DoD Legacy project to assist military golf course superintendents and installation golf course managers to develop environmental plans for golf courses that improve golf course management efficiency, save money, and enhance environmental stewardship. The Green Book was designed to assist golf course managers with development of the environmental plan, and provides information on how to obtain DoD golf course certification. Environmental plan elements include environmental planning; safety, training and awareness; pollution prevention; plant protection and nutrition; wildlife management; water management; conservation and waste management; and education and outreach. The Green Book is available on the DENIX web portal at <http://www.denix.osd.mil/nr/OtherConservationTopicsAH/HabitatRestoration.cfm>.

Management Objective and Strategy

Objective: Provide quality outdoor recreation experiences while sustaining ecosystem integrity, and not conflicting with mission priorities.

Strategies:

1. Develop an outdoor recreation plan for MGRF. Seek opportunities for natural resources-based passive recreation for Navy personnel (e.g., interpretive signs around San Diego River), allow close partnership with the local community where appropriate, and improve knowledge of the natural world and the Navy's stewardship of natural resources.
2. Develop and distribute outreach and education materials for recreational users of MGRF.

6.2.10 Law Enforcement of Natural Resources Laws and Regulations

Natural resources managers at NBSD have established the following objectives for enforcement: (1) Enforce laws and regulations pertaining to the implementation of the natural resources program; (2) Integrate natural resources enforcement into the overall natural resources program; and (3) Use enforcement personnel to enhance the natural resources program at MGRF.

Specific Concerns

- Unauthorized access or activities in natural areas, or areas used by nesting birds may disrupt and limit the viability of native populations or habitats.

Current Management

There are no game wardens stationed at MGRF. The DoD police have the authority of the Commander (exclusive jurisdiction) and of the Sikes Act to enforce all Federal laws relating to the management of natural resources at MGRF, including the ESA and MBTA.

Management Objective and Strategy

Objective: Ensure compliance with state and Federal natural resources laws and regulations.

Strategies:

1. Provide training to personnel responsible for enforcement of applicable laws and regulations.
2. Continue to protect threatened, endangered, and other special status species and the natural communities.
3. Cooperate with other agencies, particularly the USFWS and CDFW, to ensure that natural resources laws are adequately enforced.
4. Annually review Federal and state laws and regulations to ensure natural resources laws and regulations are adequately enforced.

6.2.11 Environmental Awareness

Conservation awareness is instrumental in creating conditions needed to manage natural resources. The Navy approach to awareness stresses education. It provides military personnel and the public with insights into installation natural environments and conservation challenges. The more people know about the unique and valuable natural resources on the installation, the more responsibly they act toward using them.

Education also promotes awareness of critical environmental projects and the rationale behind them. Activities such as fish stocking, land rehabilitation, and wildfire suppression can be accomplished with little conservation awareness effort since installation personnel, recreationists, and the general public support these easily understood efforts. However, such issues as protection of sensitive areas for little known plant and wildlife species, prescribed burning, and permit fees and their uses require effective conservation communication to get positive support and, perhaps more importantly, to avoid adverse reactions from various users. A conservation awareness program must be directed to both installation and external interests if it is to be effective.

Specific Concerns

- Installation personnel and the public are unfamiliar with existing natural resources and related environmental conservation techniques and regulations.

Current Management

The Sikes Act requires each military service to support environmental education for personnel and for the public where and when it is compatible with military safety and security needs.

Conservation awareness on NBSD is conveyed through interpretive signs. The conservation effort on site will continue to expand as this INRMP and subsequent natural resource management programs are undertaken to ensure efficient and thorough management of the natural resources on base. Educational brochures and training videos are being planned. Conservation efforts at NBSD address energy, water resources, recycling, pollution prevention, and public outreach and education

Natural resources personnel work with volunteers, whenever feasible, to use their skills and build their interest in the installation natural resources program.

Management Objective and Strategy

Objective: Provide people on the installation and in the surrounding community with an understanding of the MGRF natural resources program.

Strategies:

1. Increase signage for recreationists to learn more about Federal and state protected species and to support Audubon certification renewal.
2. Increase communication, coordination, and reporting with adjacent fire departments.
3. Establish contacts with the San Diego River Conservancy to support removal of nonnative species along the San Diego River portion of MGRF.
4. Provide decision makers with the information they need to make educated decisions about installation natural resources.
5. Annually review outreach and education materials to ensure that each is still current and meeting goals of outreach and education program.
6. Reach out to local community groups for volunteers.
7. Establish a watchable wildlife program.
8. Educate the local community, as well as installation personnel and tenants about the installation natural resources program. Develop and distribute educational materials about the MGRF natural resources program to stakeholders near MGRF (e.g., neighborhoods, county, etc.).

6.2.12 Geographic Information Systems Management, Data Integration, Access and Reporting

GIS is a computer system for capturing, storing, checking, integrating, manipulating, analyzing, and displaying data related to positions on the Earth's surface. GIS is used to create information layers used to develop and manipulate maps. GIS data are represented as different layers each containing data on a particular kind of feature (e.g., soils, wetlands, roads). Each feature is linked to a position on the graphical image of a map. The data layers are organized to create maps and to perform statistical analysis.

GIS will also provide support for the entire environmental program and the training community. MGRF will use GIS for complex analyses such as project siting, data interpolations, and risk assessments.

GIS software enables installation staff to capture, store, update, manipulate, analyze, and display all forms of geographically referenced data and tabular information about MGRF. The training of the MGRF Environmental, Facilities Management, and Training staff and the allocation of their time to data entry, mapmaking, analysis of data, and interpretation of the results will determine the success of the installation GIS.

Once fully developed, the installation GIS databases can be used for projects such as the following:

- Providing maps
- Selecting suitable areas for construction activities
- Planning land rehabilitation projects
- Providing special maps for Environmental Awareness materials
- Ensuring avoidance of cultural resources during ground disturbing projects
- Ensuring avoidance of rare species habitats and other areas of special concern during construction projects
- Identifying site options for use during NEPA evaluation of alternative sites
- Calculating drainages and water flows
- Determining Neotropical bird habitat preferences.

Specific Concerns

- GIS maps and shapefiles may not have appropriate metadata that identifies who, when, and for what purposes the data were collected.
- Natural resource management decisions could be delayed if there are information gaps in the natural resources database, or if the database is not kept current.

Current Management

Currently, there is no central repository for GIS data and reports, research, and other documentation. GIS data is submitted to Navy Assessment Management or the GIS contractor. CNIC and NAVFAC guidance on metadata is being developed, but has not yet been finalized.

Management Objective and Strategy

Objective: Collect, store, develop, and maintain data about historical conditions, trends, and current status for critical indicators of ecological integrity and sustainability.

Strategies:

1. Use GIS information as benchmarks for developing future natural resources management goals and objectives.
2. Ensure that GIS information is available to biologists, planners, contractors, and others in a quick and timely manner.

3. Annually review GIS data to advise resource managers of needs to update data sets during budget planning and programming.
4. Develop specific language that will be included in all contracts to ensure all spatial data produced are fully compatible with the installation GIS database.
5. Develop a standardized system for installation natural resources manager to record and map significant resource observations (e.g., plants, wildlife, erosion, damage) when incidentally encountered.
6. Provide annual funding for one person to be responsible for updating and maintaining the GIS database. This should include the necessary hardware, software, and training for the use of GIS.

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7. Naval Base San Diego Housing Areas

7.1 Purpose, Approach and Rationale

For portions of NBSD housing areas that aren't included in the SDFH Ground Lease areas, natural resources management strives to integrate conservation of biodiversity and an ecosystem based approach into an adaptive management framework. Management projects and plans often consist of multiple program elements with several different resource experts collaborating together. A number of items have been identified in subject areas that affect the natural resources present on and immediately adjacent to NBSD housing areas. The purpose of this section is to identify objectives and strategies for natural resources management on NBSD. Specific objectives and strategies were developed to meet the overriding goal listed below for natural resources managed on NBSD within the Navy-retained portions of the housing areas.

The NBSD INRMP goal is to provide an adaptive ecosystem based conservation program that will support the NBSD mission and provide for the sustainability of natural resources.

The strategies, or projects, were developed to implement the objectives and to assist natural resources personnel with gauging the effectiveness of the NBSD natural resources management program. These strategies are consecutively numbered for each resource. A summary of the strategies as well as the estimated time frame for completion is presented in **Appendix D, Table D-4**.

Some of the actions described in this section will be accomplished through interactive partnerships with other Federal, state, and local organizations. Natural resources staff at NBSD will initiate partnerships based on the benefits to the regional ecosystem and the local environment.

The NBSD PPV neighborhoods covered in the SDFH Ground Lease (Bayview Hills, Bonita Bluffs, Chollas Heights, Eucalyptus Ridge, Hilleary Park, Home Terrace, Howard Gilmore, La Mesa Park Townhouses, Murphy Canyon Heights (Murphy Canyon), Paradise Gardens, Pomerado Terrace, Prospect View, Ramona Vista Apartments, Riverplace, Terrace View Villas, and Woodlake) are addressed below.

Based on key provisions in the SDFH Ground Lease, the Lessee has several important responsibilities for the NBSD PPV neighborhoods listed above, pertaining to natural resources. First, it is important to note that per SDFH Ground Lease Section 1.1, the Lessee has "exclusive use and possession" of the leased land, which includes all of the above-listed NBSD PPV neighborhoods. The Lessee's key responsibilities with regard to this leased land include the following: Lessee shall comply with all applicable Environmental Laws (SDFH Ground Lease Section 11.1); Lessee is to use all reasonable means available to protect the environment and natural resources in accordance with applicable Environmental Laws (SDFH Ground Lease Section 11.18); Lessee shall be liable for a violation of applicable Environmental Laws, for damage caused by Lessee and arising from Lessee's activities (in accordance with the Lease terms) (SDFH Ground Lease Section 11.18); with regard to natural resource protection, Lessee shall adhere to all applicable Federal and State Laws (including, but not limited to, the Endangered Species Act and the Migratory Bird Treaty Act) (SDFH Ground Lease Section 11.31); Lessee is subject to certain restrictions with regard to specified PPV neighborhoods, including the NBSD PPV neighborhoods of Chollas Heights and Eucalyptus Ridge (SDFH Ground Lease Section 11.31); Lessee shall, at all times during the lease term and at no expense to the Government, protect, preserve, maintain and repair the premises, and keep them in good order and condition (reasonable wear and tear and damage by casualty excepted) (SDFH Ground Lease Section 12.1); and on or before expiration of the lease term, Lessee shall surrender possession of the premises to the Government in good, clean order and repair (ordinary wear and tear excepted) (SDFH Ground Lease Section 10.2).

Accordingly, for the NBSD PPV neighborhoods listed above, the Lessee has exclusive use and possession of the leased land, and has these important responsibilities with regard to natural resources issues. Lessee will retain these responsibilities until termination of the ground lease (lease termination date is July 31, 2051), at which time the Lessee is to surrender the leased premises to the Government (Navy) in good, clean order and repair. Thus, for natural resources issues that may arise for the NBSD PPV neighborhoods listed above, questions should be directed to the Lessee, SDFH, in accord with the Lessee's exclusive use and possession of the leased land, and per the Lessee's responsibilities as set forth above. If appropriate, the Government will work with the Lessee, and any regulatory agency, for natural resources issues that may arise with respect to the leased land.

As set forth in the SDFH Ground Lease, Lessee shall not materially modify the overall use or character of the Premises and the Development without the prior approval of the Government and each Leasehold Mortgagee. Moreover, except as specifically set forth in the Lease, Lessee shall not perform the following activities without the Government's prior written consent. Such consent is provided in the form of a "Site Approval Request" or "SAR" (SDFH Ground Lease 2007):

(1) Activities that generate excessive noise, pollution, or other nuisances within or adjacent to a designated natural area or preserve that could reasonably be expected to adversely impact the plant or wildlife species in a designated natural area or preserve;

(2) The addition, replacement, or alteration of transformers, storage tanks and associated piping that contain (or to the knowledge of Lessee previously contained) a material amount of hazardous chemicals or wastes;

(3) Major land disturbing activities on the Premises (e.g., major excavation, trenching, grading, and drilling; addition of a material amount of soil; removal of a material amount of pavement; and activities that create excessive dust);

(4) Major alteration or removal of plants or trees; and

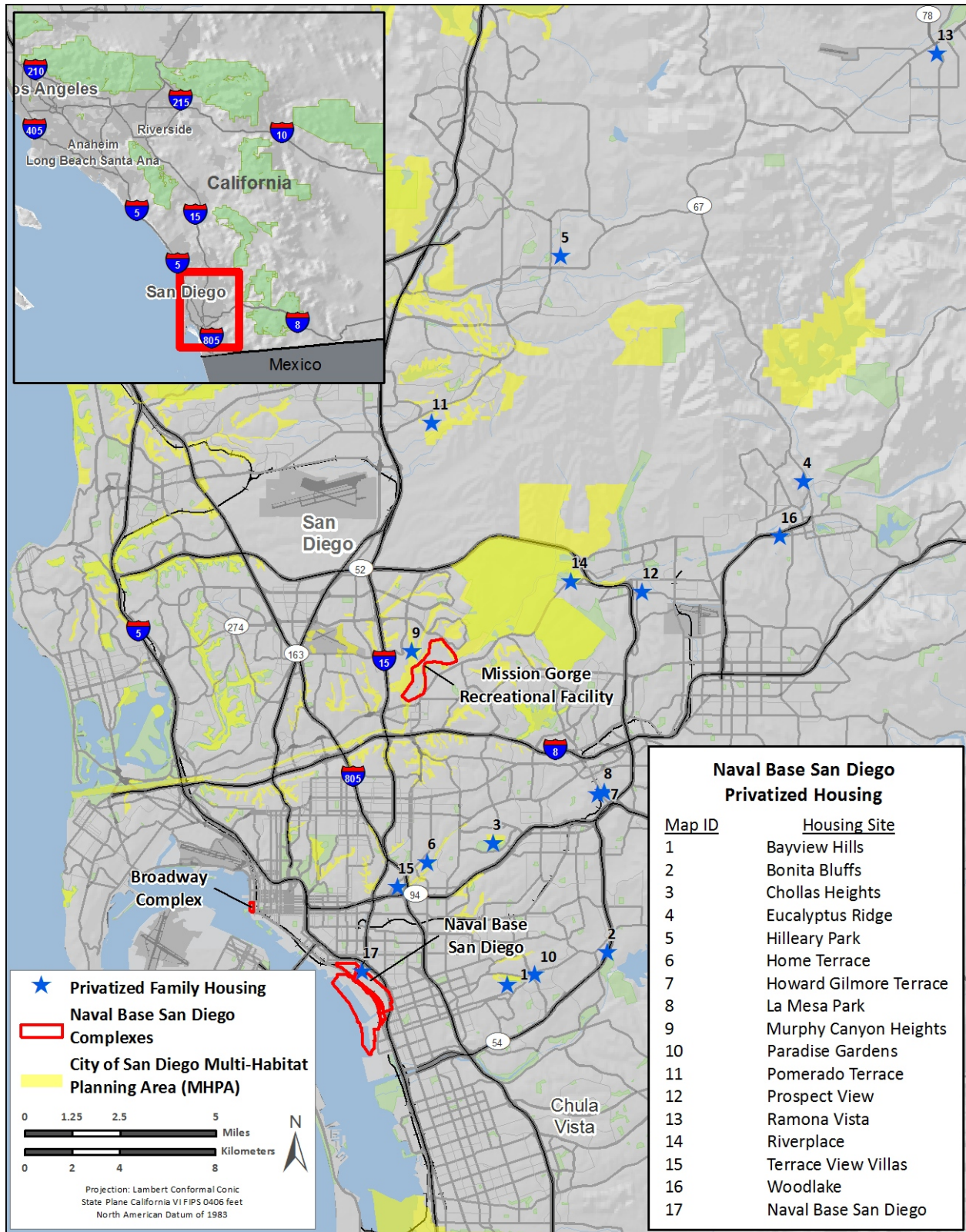
(5) Any work that will cover or shade the surface of a vernal pool.

Further, the Government intends to conduct ongoing informal communication with the Lessee regarding natural resources issues that arise during the lease term. Site specific stipulations of the PPV ground leases are found within the site specific chapters, where appropriate.

7.2 Natural Resources Current Conditions

The following sections describe the current conditions of resources at each of the 17 housing areas managed by NBSD, which include Bayview Hills, Bonita Bluffs, Chollas Heights, Eucalyptus Ridge, Hilleary Park, Home Terrace, Howard Gilmore Terrace, La Mesa Park Townhomes, Murphy Canyon Heights, Paradise Gardens, Pomerado Terrace, Prospect View, Ramona Vista Apartments, Riverplace, Terrace View Villas, Woodlake, and Naval Base San Diego (see **Figure 7-1**). All of the housing areas are located off-base with the exception of Naval Base San Diego. Eight of the 17 housing areas support open space area totaling 381.3 acres (154.3 hectares) (U.S. Navy 2011).

Table 7-1 provides the number of units in each of the housing areas and the year(s) that they were built.



Source: ESRI StreetMap USA 2007, U.S. Navy 2010b, U.S. Navy 2011, SanGIS 2003.
 Disclaimer: Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 7-1: Naval Base San Diego Housing Area Locations

Table 7-1: Naval Base San Diego Military Housing Areas

Housing Area	Number of Units	Year Built
Bayview Hills	723	1997 – 1998
Bonita Bluffs	75	1991
Chollas Heights	419	1997
Eucalyptus Ridge	290	1997
Hilleary Park	37	1982
Home Terrace	85	1982 – 1984
Howard Gilmore Terrace	244	1992
La Mesa Park Townhomes	56	1991
Murphy Canyon Heights	2319	1973 – 1975
Paradise Gardens	46	1992
Pomerado Terrace	120	1984
Prospect View	84	1995
Ramona Vista Apartments	88	1991
Riverplace	78	1995
Terrace View Villas	236	1990
Woodlake	48	1984
Naval Base San Diego	2	1947
Pacific Beacon (Palmer Hall)	683 (258)	2009 (2004)

Source: U.S. Navy 2011

7.2.1 Bayview Hills Housing Area

7.2.1.1 Watershed Management

Soils

The NRCS mapped seven soil types on Bayview Hills (see **Figure 7-2**) (NRCS 2011):

Diablo clay (DaD). Approximately less than 1 percent of Bayview Hills housing area is comprised of Diablo clay soils. Diablo soils consist of well drained soils that are formed in residuum weathered from shale, sandstone, and consolidated sediments. Diablo soils are found on complex undulating, rolling steep uplands with slopes of 5 to 50 percent at elevations of 25 to 3,000 feet (NRCS 2011).

Gaviota fine sandy loam (GaE). Approximately 4 percent of Bayview Hills housing area is comprised of Gaviota fine sandy loam soils. Gaviota soils consist of shallow, well-drained soils formed in material weathered from hard sandstone or meta-sandstone. Gaviota soils are found on hills and mountains with slopes of 2 to 100 percent at elevations of 200 to 4,400 feet (NRCS 2011).

Huerhuero-Urban land complex (HuC). Approximately 59 percent of Bayview Hills housing are is comprised of Huerhuero-Urban land complex with 2 to 9 percent slopes. This soil complex occurs in marine terraces at elevations between 0 to 400 feet. Between the leveled sites are moderately steep escarpments that are easily eroded (U.S. Navy 2011).



Source: (c) 2009 Microsoft Corporation and its data suppliers, U.S. Navy 2011
Disclaimer: Maps do not represent legal boundaries. Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 7-2: Bayview Hills Housing Area Soils and Water Resources*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.

Huerhuero-Urban land complex (HuE). Approximately 17 percent of Bayview Hills housing is comprised of Huerhuero-Urban land complex with 9 to 30 percent slopes (NRCS 2010).

Line clay loam (LSF). Approximately 55 percent of Bayview Hills housing area is composed of line clay loam. Line soils consist of moderately deep, well drained soils that are formed from fairly soft shale and sandstone. Line soils are found on hills with slopes of 5 to 75 percent (NRCS 2010).

Made land (Md). Approximately less than 1 percent of Bayview Hills is composed of made land. Made land consists of smooth, level areas that have been filled with excavated and transported soil material, paving material, and soil material dredged from lagoons, bays, and harbors (NRCS 2010).

Olivenhain-Urban land complex (OkE). Approximately 3 percent of Bayview Hills is composed of Olivenhain-Urban land complex, with 9 to 30 percent slopes. OkE consists of well-drained; slow or medium runoff, or very slow permeability. Olivenhain-Urban land complex occurs on marine terraces at elevations between 100 to 600 feet. The material exposed in the cuts is cobbly loam alluvium and the fill material consists of cobbly loam and/or cobbly clay loam (USDA 1973).

Water Quality

All water used by Bayview Hills housing is supplied by the City of San Diego. San Diego relies mostly upon imported water from Northern California and the Colorado River. The city currently purchases up to 90 percent of its water from the San Diego County Water Authority, a wholesale agency who, in turn, purchases water from the Metropolitan Water District of Southern California.

7.2.1.2 Habitat Management

Vegetation and Wildlife Habitat

For a complete listing of terrestrial floral species observed on Bayview Hills, see **Appendix G**. Bayview Hills supports ornamental vegetation typical of residential landscaping. In addition, there are numerous native and non-native species located within the open space.

The Bayview Hills housing contains approximately 30 acres of open space located on the northern side of the housing development (U.S. Navy 2011). The vegetation communities documented within the open space areas include coastal sage scrub, riparian vegetation, native grassland and non-native vegetation (see **Figure 7-3**); coastal sage scrub is the predominant vegetation community (U.S. Navy 2011). Eighty-two species of plants were documented within the Bayview Hills housing area during the 2009 natural resources inventory; of those, 46 plant species are native (U.S. Navy 2011).

Coastal sage scrub was documented throughout the majority of open space areas on Bayview Hills. Within Bayview Hills this vegetation community is dominated by California sagebrush and California buckwheat, with a considerable amount of lemonadeberry (U.S. Navy 2011). In addition; the open space area east of Munda Road and south of the Paradise Valley Road transitions from coastal sage scrub into a native grassland dominated by needlegrass (*Nassella* spp.) (U.S. Navy 2011). Adjacent to Paradise Valley Road is a western flowing drainage that supports riparian vegetation that is dominated by willow, olive, lemonadeberry, and Brazilian peppertree (*Schinus terebinthifolius*) (U.S. Navy 2011). In general the non-native vegetation consists of hottentot fig (*Carpobrotus edulis*) and follows the housing boundary and Munda Road. However; a single patch of non-native grassland was documented along Paradise Valley Road (U.S. Navy 2011).



Source: ESRI ArcGIS Online and data partners, U.S. Navy 2011
 Disclaimer: Maps do not represent legal boundaries. Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 7-3: Bayview Hills Housing Area Vegetation and Invasive Species*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.

Wetlands and Floodplains

Wetlands and non-wetland jurisdictional waters of the U.S., including wetlands, were delineated at the Bayview Hills housing area. A total of 0.02 acres of wetlands and 0.33 acres of non-wetland jurisdictional waters of the U.S. were delineated within the housing area (see **Figure 7-2**) (U.S. Navy 2011). This site supports a series of urban drainages and unnamed tributaries that lead to Paradise Creek (U.S. Navy 2011). In addition, a large culvert occurs on the east side of Munda Road that drains runoff from the surrounding natural habitat through non-wetland water and into an unnamed drainage that runs parallel to Paradise Valley Road (U.S. Navy 2011).

Marine Habitats

The Bayview Hills housing area contains mostly upland habitat with 0.35 acres of wetland and non-jurisdictional waters of the U.S.. The housing facility is inland and therefore, no marine habitats (habitats within and adjacent to the San Diego Bay) occur within the housing area.

Critical Habitat

There is no designated critical habitat for any listed species in the Bayview Hills housing area.

Other Regulatory or Habitat Planning Designation

The Bayview Hills housing area falls within the bounds of the Multiple Species Conservation Program (MSCP) Multi-Habitat Planning Area (MHPA). There are no other regulatory or habitat planning designations within the Bayview Hills housing area.

7.2.1.3 Fish and Wildlife Management

For a complete listing of terrestrial faunal species observed on Bayview Hills, see **Appendix G**.

Invertebrate species observed within the Bayview Hills a housing area during the 2009 natural resources inventory include jumping spiders, fiery skipper, and the honey bee (*Apis mellifera*) (U.S. Navy 2011).

Reptilian and amphibian species observed within the Bayview Hills housing areas during the 2009 natural resources inventory include the western fence lizard, common side-blotched lizard (*Uta stansburiana elegans*), and the California kingsnake (*Lampropeltis getula californiae*) (U.S. Navy 2011).

Native bird species observed within the Bayview Hills housing area during the 2009 natural resources inventory include Cooper's Hawk (*Accipiter cooperii*), Say's Phoebe (*Sayornis saya*), Bushtit (*Psaltriparus minimus melanurus*), Coastal California Gnatcatcher, and House Finch (*Carpodacus mexicans frontalis*) (U.S. Navy 2011).

Mammalian species observed within the Bayview Hills housing areas include the California ground squirrel (*Spermophilus beecheyi*) and the woodrat (*Neotoma* spp.) (U.S. Navy 2011).

7.2.1.4 Special Status Species Management

The first survey for special status species was conducted during the 2009 natural resources survey of NBSD housing areas (U.S. Navy 2011). Special status species observed at the Bayview Hills housing area during the survey include San Diego viguiera, the Coastal California Gnatcatcher, and the Belding's orange-throated whiptail (see **Figure 7-4**). In addition; one species of host plant, dot-seed plantain (*Plantago erecta*) for Quino checkerspot butterfly was observed during the 2009 natural resource survey.



Figure 7-4: Bayview Hills Housing Area Special Status Species*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.

However, there is a low potential for this species to occur in the area due to isolation and heavily developed surrounding area. -For a life history, management objective, and specific management strategies for the Coastal California Gnatcatcher see **Section 7.3.4.1**. For objectives and strategies for managing other special status species see **Section 7.3.4.2**.

During focused surveys for Coastal California Gnatcatcher, two pairs of gnatcatchers were observed within two distinct locations at Bayview Hills. The first pair was observed using both slopes across Munda Road. The second pair was detected in the southeast edge of the open space on-site. This pair likely uses a larger area that includes the open space adjacent to the Bayview Hills property (U.S Navy 2011). Open areas of coastal sage scrub provide suitable habitat for the Coastal California Gnatcatcher.

7.2.1.5 Exotic and Invasive Species Management

A total of 8 acres of invasive plant cover was observed within the Bayview Hills housing area (see **Figure 7-3**) (U.S. Navy 2011). The majority of the invasive exotic plant species are found along the edges of the open space behind the houses and along Munda Road and Paradise Valley Road. In general, hottentot fig follows the housing boundary edge with the largest concentrations encountered adjacent to house along Sandy Shore Street and Pine Bluff Lane (U.S. Navy 2011).

7.2.2 Bonita Bluffs Housing Area

7.2.2.1 Watershed Management

Soils

Approximately 100 percent of Bonita Bluffs housing area is comprised of San Miguel rocky silt loam soils with slopes of 9 to 30 percent. San Miguel soils consist of well-drained to medium to very rapid runoff to very slow permeability soils formed in residuum weathered from metavolcanic rock. San Miguel soils are found on strongly sloping to very steep and are often in mountainous areas at elevations of 700 to 3,000 feet (NRCS 2011).

Water Quality

All water used by Bonita Bluffs housing is supplied by the Helix Water District.

7.2.2.2 Habitat Management

Vegetation and Wildlife Habitat

Bonita Bluffs housing area supports ornamental vegetation typical of residential landscaping and is mapped as Developed/Ornamental (U.S. Navy 2011) (see **Figure 7-5**).

Wetlands and Floodplains

No wetlands or other waters of the U.S. occur within the Bonita Bluffs housing area (U.S. Navy 2011).

Marine Habitats

The Bonita Bluffs housing area contains only upland habitat and is completely landlocked; therefore, no marine habitat occurs within the housing area.



Source: (c) 2009 Microsoft Corporation and its data suppliers, U.S. Navy 2011
 Disclaimer: Maps do not represent legal boundaries. Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 7-5: Bonita Bluffs Housing Area Location*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.

Critical Habitat

There is no designated critical habitat for any listed species in the Bonita Bluffs housing area.

Other Regulatory or Habitat Planning Designation

There are no other regulatory or habitat planning designations within the Bonita Bluffs housing area.

7.2.2.3 Fish and Wildlife Management

No invertebrate species were documented in the Bonita Bluffs housing area during the 2009 natural resources inventory (U.S. Navy 2011).

No reptiles or amphibians were documented in the Bonita Bluffs housing area during the 2009 natural resources inventory (U.S. Navy 2011).

Native bird species observed within the Bonita Bluffs housing area during the 2009 natural resource inventory include the Lesser Goldfinch (*Carduelis psaltria hesperophilus*) and the American Goldfinch (*Carduelis tristis salicamans*) (U.S. Navy 2011).

No mammalian species were observed on Bonita Bluffs during the 2009 natural resources survey (U.S. Navy 2011).

7.2.2.4 Special Status Species Management

The first survey for special status species was conducted during the 2009 natural resources survey of NBSD housing areas. No special status species were observed at the Bonita Bluffs housing area during the 2009 survey (U.S. Navy 2011). Exotic and Invasive Species Management

7.2.2.5 Exotic and Invasive Species Management

No invasive species were identified at the Bonita Bluffs housing area during the 2009 natural resources inventory (U.S. Navy 2011).

7.2.3 Chollas Heights Housing Areas

Adjacent to the Chollas Heights PPV neighborhood, but not included in the land subject to the SDFH Ground Lease, are natural preserve areas totaling approximately 23.5 acres. These natural preserve areas are managed by the Government (Navy), and are not included in the land that is ground leased to SDFH (Lessee). In light of these adjacent natural reserve areas, the SDFH Ground Lease contains specific language relating to the Chollas Heights PPV neighborhood, which provides as follows: (1) Lessee shall not access the adjacent natural preserve areas except as necessary to comply with the terms of Section 11.31 of the SDFH Ground Lease, or in case of emergency, and any other entry must be coordinated with the Government; (2) Lessee shall maintain the red painted curb (no parking) area located between the Chollas preserve areas No. 1 and 2; (3) Lessee shall ensure that leases for new tenants moving to the Chollas Heights PPV neighborhood contain provisions prohibiting tenants from having domestic pets (but not service animals); (4) Lessee shall not plant trees or vegetation adjacent to the natural preserve areas, if such trees or vegetation will result in shading of the vernal pools; (5) Landscaping on the leased land, adjacent to the Chollas preserve areas, shall be maintained as a "transitional zone," and shall utilize a minimum of 50% drought tolerant natives; and (6) Lessee shall maintain the 29 concrete interpretive monuments along the interpretive trail outside the Chollas preserve areas, and maintain the enamel signs installed on the Chollas preserve areas perimeter fencing. (SDFH Ground Lease 2007).

7.2.3.1 Watershed Management

Soils

The NRCS mapped three soil types on Chollas Heights housing area (see **Figure 7-6**) (NRCS 2011). Soils at Chollas Heights consist of:

Olivenhain cobly loam (OhE). Approximately 3 percent of Chollas Heights housing area is comprised of OhE with slopes of 9 to 30 percent (NRCS 2011).

Olivenhain-Urban land complex (OkE). Approximately less than 1 percent of Chollas Heights housing area is comprised of OhE with slopes of 9 to 30 percent (NRCS 2011).

Redding-Urban land complex (RhC). Approximately 96 percent of Chollas Heights housing area is comprised of RhC with slopes of two to nine percent. Redding soils consist of deep to duripan, well or moderately well drained soils that were formed in alluvium derived from a mix of sources. Redding soils are found on nearly level or dissected and undulating to hilly high terraces (NRCS 2011).

Water Quality

All water used by Chollas Heights housing is supplied by the City of San Diego.

7.2.3.2 Habitat Management

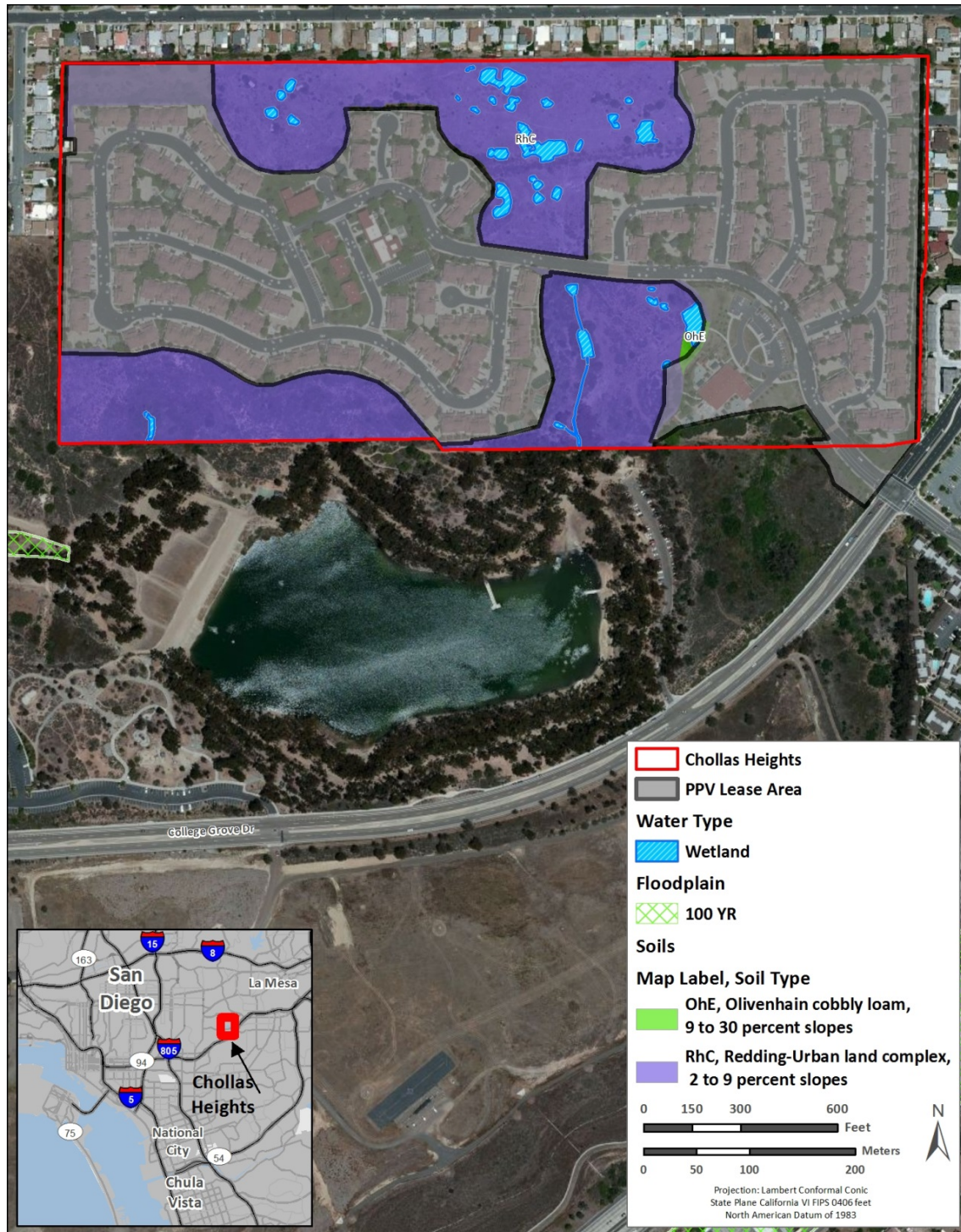
Vegetation and Wildlife Habitat

For a complete listing of terrestrial floral species observed on Chollas Heights, see **Appendix G**.

The Chollas Heights housing area contains approximately 26 acres of open space located to the north, southwest and southeast of the main Chollas Heights housing development (U.S. Navy 2011). The vegetation communities documented within the open space areas include non-native grassland and non-native vegetation, coastal sage scrub, maritime succulent scrub, riparian vegetation and native grassland (see **Figure 7-7**). Forty-six species of plants were documented within the Chollas Heights housing area during the 2009 natural resources inventory; of those, 34 plant species are native (U.S. Navy 2011).

The open space area located to the north of the main Chollas Heights housing area primarily consists of non-native grassland with smaller amounts of native grassland, coastal sage scrub, and non-native vegetation (U.S. Navy 2011). In addition, a number of natural and created vernal pools are present in this area (U.S. Navy 2011). In general the non-native grassland consists of wild oat, bromes (*Bromus* spp.), and filaree, while the native grassland is dominated by needlegrass. In this open space area the coastal sage scrub is dominated by barley (*Hordeum* spp.), golden tarplant (*Dienandra fasciculata*), graceful tarplant (*Holocarpha virgata* ssp. *elongate*), California buckwheat, coast goldenbush, laurel sumac, lemonadeberry, and California sagebrush (U.S. Navy 2011).

The southwestern open space area primarily consists of coastal sage scrub with a component of maritime succulent scrub that is dominated by cactus species (U.S. Navy 2011). In addition a small riparian area that is dominated by willow species occurs at the base of a small canyon along the southern border. In this open space area the coastal sage scrub is dominated by California sagebrush, common encelia (*Encelia californica*), low bush monkey-flower, coastal cholla, broom baccharis, and lemonadeberry (U.S. Navy 2011).



Source: (c) 2009 Microsoft Corporation and its data suppliers, U.S. Navy 2011
 Disclaimer: Maps do not represent legal boundaries. Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 7-6: Chollas Heights Housing Area Soils and Water Resources*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.



Source: ESRI ArcGIS Online and data partners, U.S. Navy 2011
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Figure 7-7: Chollas Heights Housing Area Vegetation and Invasive Species*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.

The southeastern open space area primarily consists of coastal sage scrub with a small patch of riparian vegetation along the western edge. In addition, an area of non-native vegetation dominated by eucalyptus occurs along the southern boundary of the site. In general this open space area is dominated by filaree, California sagebrush, California buckwheat, broom baccharis, laurel sumac, mustards, olive, tocolote (*Centaurea melitensis*), tamarisk (*Tamarix* sp.), and eucalyptus (U.S. Navy 2011).

Wetlands and Floodplains

Wetlands and non-wetland jurisdictional waters of the U.S. were delineated at the Chollas Heights housing area. A total of 0.10 acre of wetlands and 0.05 acre of non-wetland jurisdictional waters of the U. S. were delineated within the housing area (see **Figure 7-5**) (U.S. Navy 2011). In addition, 0.13 acre of isolated wetlands were delineated along the eastern edge of the Chollas Heights housing area.

Vernal pools were mapped during surveys conducted in 1999, but these pools were not delineated again during surveys conducted in 2009 (U.S. Navy 2011). This site consists of mesa tops with seasonal wetlands, a complex of vernal pools and a series of urban drainages connected via culverts (U.S. Navy 2011). The wetlands are located to the south of College Grove Way and the vernal pool complex is primarily located within the open space areas north of College Grove Way (U.S. Navy 2011).

Marine Habitats

The Chollas Heights housing area contains mostly upland habitat with 0.15 acres of wetland and non-jurisdictional waters of the U.S.. The housing facility is inland and therefore, no marine habitats (habitats within and adjacent to the San Diego Bay) occur within the housing area.

Critical Habitat

Critical habitat was designated for the federally endangered San Diego fairy shrimp in December 2007 (72 Federal Register 70648 70714). The designation included vernal pools within Chollas Heights housing area open space (see **Figure 7-8**). Restrictions include a limit on development and redevelopment within the housing area.

For additional information on San Diego fairy shrimp and its critical habitat at Chollas Heights, refer to **Appendix E**.

Other Regulatory or Habitat Planning Designation

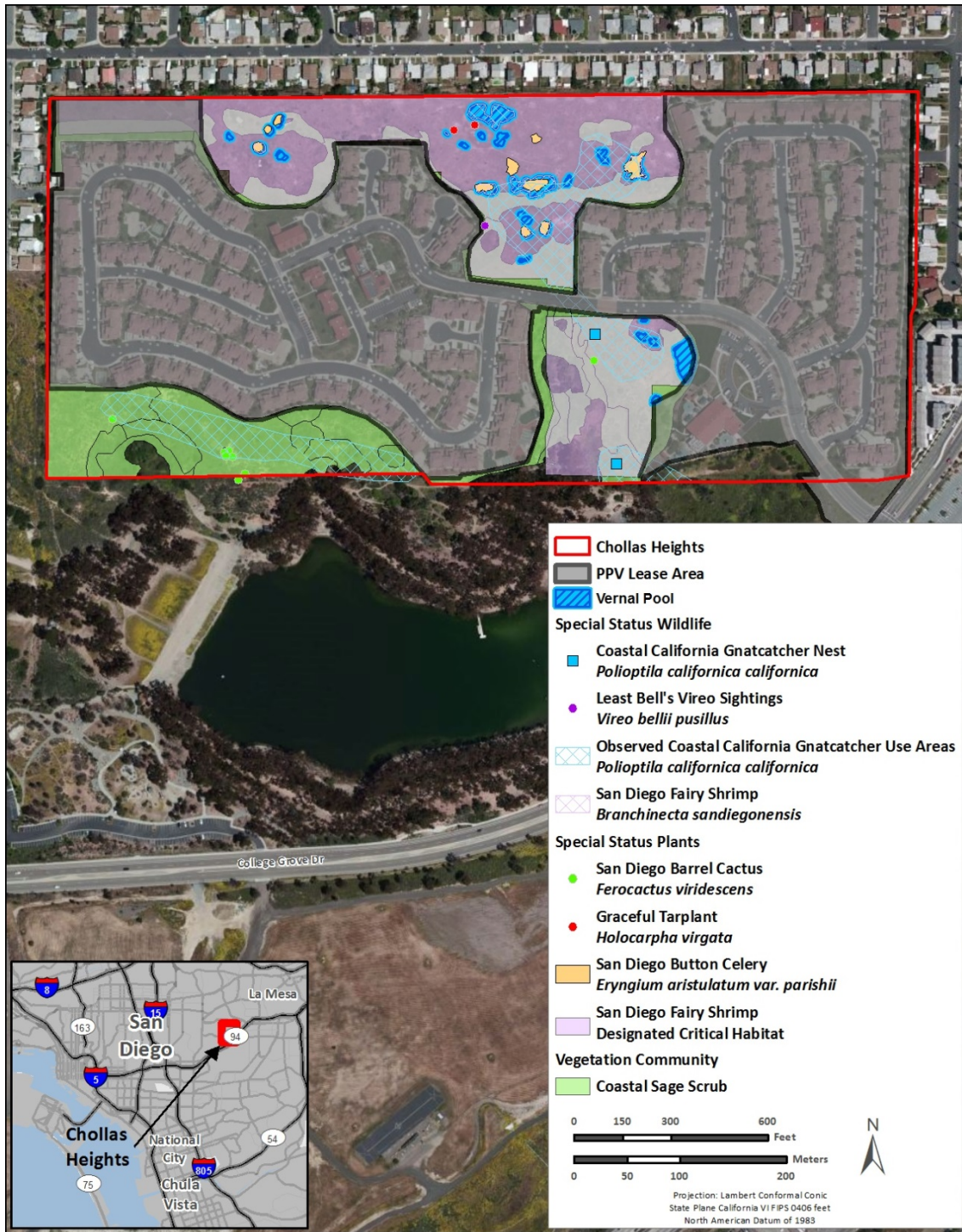
The Chollas Heights housing area falls within the bounds of the Multiple Species Conservation Program (MSCP) Multi-Habitat Planning Area (MHPA). There are no other regulatory or habitat planning designations within the Chollas Heights housing area.

7.2.3.3 Fish and Wildlife Management

For a complete listing of terrestrial faunal species observed on Chollas Heights, see **Appendix G**.

Invertebrate species observed within the Chollas Heights housing area during the 2009 natural resources inventory include San Diego fairy shrimp, shorthorn grasshoppers (family Acrididae), and the honey bee (U.S. Navy 2011).

Reptilian and amphibian species observed within the Chollas Heights housing areas during the 2009 natural resources inventory include the Baja California treefrog (*Pseudacris hypochondriaca hypochondriaca*), western fence lizard, and the California kingsnake (U.S. Navy 2011).



Source: (c) 2009 Microsoft Corporation and its data suppliers, U.S. Navy 2011
Disclaimer: Maps do not represent legal boundaries. Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 7-8: Chollas Heights Housing Area Special Status Species*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.

Native bird species observed within the Chollas Heights housing area during the 2009 natural resource inventory include the Cooper's Hawk, Least Bell's Vireo, and Common Raven (*Corvus corax clarionensis*) (U.S. Navy 2011). The Red-crowned Sparrow (*Amazona viridigenalis*), a non-native species, was also observed to occur within the housing area (U.S. Navy 2011).

Mammalian species observed within the Chollas Heights housing areas during the 2009 natural resources inventory include the desert cottontail (*Sylvilagus audubonii*), California ground squirrel and the striped skunk (*Mephitis mephitis*) (U.S. Navy 2011).

7.2.3.4 Special Status Species Management

The first survey for special status species was conducted during the 2009 natural resources survey of NBSD housing areas. Special status species observed at the Chollas Heights housing area during the survey include San Diego button celery, San Diego barrel cactus, graceful tarplant, San Diego viguiera, the Coastal California Gnatcatcher, Least Bell's Vireo, and the San Diego fairy shrimp (see **Figure 7-8**). For a life history, management objectives, and specific management strategies for San Diego button celery, the Coastal California Gnatcatcher, and San Diego fairy shrimp see **Section 7.3.4.1**. For objectives and strategies for managing other special status species see **Section 7.3.4.2**.

7.2.3.5 Exotic and Invasive Species Management

A total of 10.2 acres of invasive plant cover was observed within the Chollas Heights housing area (see **Figure 7-6**) (U.S. Navy 2011). The dominant invasive plant species throughout all areas of Chollas Heights include wild oat, brome, and tocolote (U.S. Navy 2011). However, fountain grass (*Pennisetum* spp.) was observed in scattered patches in the north and tamarisk, black mustard (*Brassica nigra*), and short pod mustard (*Hirschfeldia incana*) are common within the southeastern open space area (U.S. Navy 2011).

Non-native vegetation within the Chollas Heights open space area includes: Italian ryegrass, wild oats, slender wild oat, ripgut grass, foxtail chess, scarlet pimpernel (*Anagallis arvensis*), pittosporum (*Pittosporum* sp.), pin clover (*Erodium botrys*), common sow thistle (*Sonchus oleraceus*), tocolote and Russian thistle (U.S. Navy 2011).

7.2.4 Eucalyptus Ridge Housing Area

Adjacent to the Eucalyptus Ridge PPV neighborhood homes are two natural areas. The one natural area is centered on a small knoll on the western edge of the neighborhood, and this natural area is not included in the land subject to the SDFH Ground Lease. This western natural area is managed by the Government (Navy). The other natural area is located at the southern boundary of the PPV neighborhood homes, and this southern natural area is included in the SDFH Ground Lease. This southern natural area is also subject to an easement which the Navy had granted to San Diego Gas & Electric (SDG&E), prior to execution of the SDFH Ground Lease. SDG&E maintains this southern natural area in accordance with SDG&E's countywide Natural Community Conservation Plan (NCCP), which is in place for all SDG&E sites in San Diego County. In light of these relevant natural areas, the SDFH Ground Lease contains specific language relating to the Eucalyptus Ridge PPV neighborhood, which basically provides as follows: (1) Lessee shall not access the relevant natural area(s) adjacent to the Eucalyptus Ridge PPV neighborhood except to comply with the terms of Section 11.31 of the SDFH Ground Lease, or in case of emergency, and any other entry must be coordinated with the Government; (2) Lessee shall maintain the fences on the boundary between the leased land and the relevant natural area(s); (3) Lessee shall install "Government Property No Trespassing" signs on the perimeter fencing on the boundary between the leased land and the relevant natural area(s); and (4) before commencing ground disturbing activities

adjacent to the natural areas during the gnatcatcher breeding season, a qualified biologist shall perform a survey of the disturbed area to identify active nests, eggs or chicks of the gnatcatcher, and, if present, Lessee will establish and follow avoidance procedures to reduce or avoid the incidence of take of adults, eggs and chicks. (SDFH Ground Lease 2007).

7.2.4.1 Watershed Management

Soils

The NRCS mapped four soil types on the Eucalyptus Ridge housing area (NRCS 2011). Soils at Eucalyptus Ridge consist of:

Fallbrook-Vista sandy loam (FvD). Approximately 12 percent of the Eucalyptus Ridge housing area is comprised of FvD with slopes of 9 to 15 percent. Fallbrook soils consist of deep, well-drained soils that were formed in material weathered from granite rocks. Fallbrook soils are found on gently rolling to very steep and are on round hills at elevations of 200 to 3,500 feet. Vista soils are moderately deep, well-drained soils that were formed in material weathered from decomposed granitic rocks. Vista soils are found on hilly slopes at elevations of 400 to 3,900 feet (NRCS 2011).

Fallbrook-Vista sandy loam (FvE). Approximately 66 percent of the Eucalyptus Ridge housing area is comprised of FvE with slopes of 15 to 30 percent.

Placentia sandy loam (Pfc). Approximately 15 percent of the Eucalyptus Ridge housing area is comprised of Pfc with slopes of 2 to 9 percent. Placentia soils consist of well or moderately well drained soils. Placentia soils are found on nearly level to moderately sloping on fans and terraces at elevations of 50 to 2,500 feet (NRCS 2011).

Vista rocky coarse sandy (VvE). Approximately 5 percent of the Eucalyptus Ridge housing area is comprised of VvE with slopes of 15 to 30 percent. Vista soils are moderately deep, well-drained soils that were formed in material weathered from decomposed granitic rocks. Vista soils are found on hilly slopes at elevations of 400 to 3,900 feet (NRCS 2011).

Water Quality

All water used by Eucalyptus Ridge is supplied by the Padre Dam Municipal Water District. Padre Dam imports 100 percent of drinking water from the Colorado River, the Sacramento River Delta and local sources. The water is transported here by the State of California, Metropolitan Water District of Southern California and the San Diego County Water Authority (Padre Water District 2010).

7.2.4.2 Habitat Management

Vegetation and Wildlife Habitat

For a complete listing of terrestrial floral species observed on Eucalyptus Ridge, see **Appendix G**.

The Eucalyptus Ridge housing area contains approximately 16 acres of open space located in two sections adjacent to the Eucalyptus Ridge developed housing area (U.S. Navy 2011). The northern most section is located along the western side of the housing area and the southernmost section is located within a power line corridor. The vegetation communities documented within the open space areas include non-native grassland and coastal sage scrub (see **Figure 7-9**). Forty-seven species of plants were documented within the Eucalyptus Ridge housing area during the 2009 natural resources inventory; of those, 24 plant species are native (U.S. Navy 2011).



Source: ESRI ArcGIS Online and data partners, U.S. Navy 2011
 Disclaimer: Maps do not represent legal boundaries. Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 7-9: Eucalyptus Ridge Housing Area Vegetation and Invasive Species*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.

The northernmost open space area primarily consists of coastal sage scrub of variable quality and densities (U.S. Navy 2011). In general the north-facing slope supports a denser canopy while the south-facing slope is more open with a small rock outcrop just below the ridgeline (U.S. Navy 2011). In this open space area the coastal sage scrub is dominated by California sagebrush, California buckwheat and spiny redberry. Additional plant species include laurel sumac, white sage, black mustard, and tocolote (U.S. Navy 2011)

The southernmost open space area primarily consists of non-native vegetation and non-native grasslands with scattered native shrubs including California buckwheat and California sagebrush (U.S. Navy 2011). The dominant plant species include filaree, fountain grass, bromes, wild oat, common sow thistle, short-pod mustard, and tamarisk (U.S. Navy 2011).

Wetlands and Floodplains

No wetlands or other waters of the U.S. occur within the Eucalyptus Ridge housing area (U.S. Navy 2011).

Marine Habitats

The Eucalyptus Ridge housing area contains only upland habitat and is completely landlocked; therefore, no marine habitats occur within the housing area.

Critical Habitat

There is no designated critical habitat for any of the listed species in Eucalyptus Ridge.

Other Regulatory or Habitat Planning Designation

There are no other regulatory or habitat planning designations within the Eucalyptus Ridge housing area.

7.2.4.3 Fish and Wildlife Management

For a complete listing of terrestrial faunal species observed on Eucalyptus Ridge, see **Appendix G**.

Invertebrate species observed within the Eucalyptus Ridge housing area during the 2009 natural resources inventory include crab spiders, Argentine ants, and the honey bee (U.S. Navy 2011).

Belding's orange-throated whiptail was the only reptile species observed within the Eucalyptus Ridge housing area during the 2009 natural resources inventory (U.S. Navy 2011).

Native bird species observed within the Eucalyptus Ridge housing area during the 2009 natural resource inventory include the Red-tailed Hawk (*Buteo jamaicensis*), Spotted Towhee (*Pipilo maculatus*), and the House Finch (U.S. Navy 2011). The House Sparrow (*Passer domesticus*), a non-native species, was also observed to occur within the housing area (U.S. Navy 2011).

Mammalian species observed within the Eucalyptus Ridge housing areas during the 2009 natural resources inventory include the California ground squirrel and the coyote (U.S. Navy 2011).

7.2.4.4 Special Status Species Management

The first survey for special status species was conducted during the 2009 natural resources survey of NBSD housing areas. Special status species observed at the Eucalyptus Ridge housing area during the

survey include the Coastal California Gnatcatcher and the Belding's orange-throated whiptail (see **Figure 7-10**). The Hermes copper butterfly was not observed during 2009 survey, but has the high potential to occur based on the presence of spiny redberry. For a life history, management objectives, and specific management strategies for the Coastal California Gnatcatcher see **Section 7.3.4.1**. For objectives and strategies for managing other special status species see **Section 7.3.4.2**.

7.2.4.5 Exotic and Invasive Species Management

A total of 5.8 acres of invasive plant cover was observed within the Eucalyptus Ridge housing area (see **Figure 7-8**) (U.S. Navy 2011). The invasive species found within the southern open space area include filaree, fountain grass, bromes, wild oat, common sow thistle, short-pod mustard, and tamarisk (U.S. Navy 2011). While black mustard was the dominant invasive species found within the southwestern open space area (U.S. Navy 2011).

7.2.5 Hilleary Park Housing Area

7.2.5.1 Watershed Management

Soils

Approximately 100 percent of the Hilleary Park housing area is comprised of Placentia sandy loam soils with slopes of 2 to 9 percent.

Water Quality

All water used by Hilleary Park is supplied by the City of Poway. The city gets its water from the Colorado River and northern California (U.S. Navy 2011).

7.2.5.2 Habitat Management

Vegetation and Wildlife Habitat

The Hilleary Park housing area supports ornamental vegetation typical of residential landscaping and is mapped as Developed/Ornamental (U.S. Navy 2011).

Wetlands and Floodplains

No wetlands or other waters of the U.S. occur within the Hilleary Park housing area (U.S. Navy 2011).

Marine Habitats

The Hilleary Park housing area contains only upland habitat and is completely landlocked (see **Figure 7-11**); therefore, no marine habitats occur within the housing area.

Critical Habitat

There is no designated critical habitat for any of the listed species in Hilleary Park.

Other Regulatory or Habitat Planning Designation

There are no other regulatory or habitat planning designations within the Hilleary Park housing area.



Figure 7-10: Eucalyptus Ridge Housing Area Special Status Species*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.



Source: (c) 2009 Microsoft Corporation and its data suppliers, U.S. Navy 2011
 Disclaimer: Maps do not represent legal boundaries. Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 7-11: Hilleary Park Housing Area Location*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.

7.2.5.3 Fish and Wildlife Management

No mammalian species were observed on Hilleary Park during the 2009 natural resources survey (U.S. Navy 2011).

Native bird species observed within the Hilleary Park housing area during the 2009 natural resource inventory include the Common Raven, Cliff Swallow, and the House Finch (U.S. Navy 2011).

No reptiles or amphibians were documented in the Hilleary Park housing area during the 2009 natural resources inventory (U.S. Navy 2011).

No invertebrate species were documented in the Hilleary Park housing area during the 2009 natural resources inventory (U.S. Navy 2011).

7.2.5.4 Special Status Species Management

The first survey for special status species was conducted during the 2009 natural resources survey of NBSD housing areas. No special status species were observed on the Hilleary Park housing area during the 2009 survey (U.S. Navy 2011).

7.2.5.5 Exotic and Invasive Species Management

No invasive species were identified at the Hilleary Park housing area during the 2009 natural resources inventory (U.S. Navy 2011).

7.2.6 Home Terrace Housing Area

7.2.6.1 Watershed Management

Soils

The NRCS mapped three soil types on the Home Terrace housing area (NRCS 2011). Soils at Home Terrace consist of:

Made land (Md). Approximately 27 percent of the Home Terrace housing area is comprised of Md.

Olivenhain cobbly loam (OhF). Approximately 26 percent of the Home Terrace housing area is comprised of OhF with slopes of 30 to 50 percent.

Riverwash (Rm). Approximately 45 percent of the Home Terrace housing area is comprised of Rm. Riverwash occurs in intermittent stream channels. The material is generally sandy, gravelly or cobbly. It is excessively drained and rapidly permeable (USDA 1973).

Water Quality

All water used by Home Terrace housing is supplied by the City of San Diego.

7.2.6.2 Habitat Management

Vegetation and Wildlife Habitat

For a complete listing of terrestrial floral species observed on Home Terrace, see **Appendix G**.

The Home Terrace housing area contains approximately 4 acres of open space located on the southern half of the Home Terrace housing area outside of the developed and landscaped areas (U.S. Navy 2011). The vegetation communities documented within the open space areas include non-native vegetation, ornamental landscaping, and coastal sage scrub/chaparral (see **Figure 7-12**) (U.S. Navy 2011). Sixty species of plants were documented within the Home Terrace housing area during the 2009 natural resources inventory; of those, 32 plant species are native (U.S. Navy 2011).

The northernmost open space area primarily consists of non-native vegetation and ornamental landscaping along terraced, irrigated slopes which includes a large patch of pampas grass (*Cortaderia jubata*). The remainder of the open space area consists of coastal sage scrub/chaparral dominated by Nuttall's scrub oak (*Quercus dumosa*), lemonadeberry, and chamise (*Adenostoma fasciculatum*). Additional plant species include tocolote, California buckwheat, golden tarplant, bromes, and hottentot fig (U.S. Navy 2011).

Wetlands and Floodplains

No wetlands or other waters of the U.S. occur within the Home Terrace housing area (U.S. Navy 2011).

Marine Habitats

The Home Terrace housing area contains only upland habitat and is completely landlocked; therefore, no marine habitats occur within the housing area.

Critical Habitat

There is no designated critical habitat for any of the listed species in Home Terrace.

Other Regulatory or Habitat Planning Designation

The Home Terrace housing area falls within the bounds of the Multiple Species Conservation Program (MSCP) Multi-Habitat Planning Area (MHPA). There are no other regulatory or habitat planning designations within the Home Terrace housing area.

7.2.6.3 Fish and Wildlife Management

For a complete listing of terrestrial faunal species observed on Home Terrace, see **Appendix G**.

Invertebrate species observed within the Home Terrace housing area during the 2009 natural resources inventory include ceriths (family Cerithidae), jumping spiders, wolf spiders, funereal duskywing (*Erynnis funeralis*), brown lacewings (family Hemerobiidae), aphids, shorthorn grasshoppers, flesh flies (family Sarcophagidae), Argentine ants, yellow-faced bees, sphecid wasps, bees, and the honey bee (U.S. Navy 2011).



Source: ESRI ArcGIS Online and data partners, U.S. Navy 2011
Disclaimer: Maps do not represent legal boundaries. Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 7-12: Home Terrace Housing Area Vegetation and Invasive Species*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.

Reptilian and amphibian species observed within the Home Terrace housing areas during the 2009 natural resources inventory include the western fence lizard and the common side-blotched lizard (U.S. Navy 2011).

Native bird species observed within the Home Terrace housing area during the 2009 natural resource inventory include the Anna's Hummingbird (*Calypte anna*), Black Phoebe (*Sayornis nigricans semiatra*), Common Raven, House Wren (*Troglodytes aedon parkmanii*), Wrentit (*Chamaea fasciata*), Northern Mockingbird (*Mimus polyglottos polyglottos*), California Towhee (*Pipilo crissalis*), Lesser Goldfinch, and the House Finch (U.S. Navy 2011).

The desert cottontail was the only mammalian species observed within the Home Terrace housing area during the 2009 natural resources inventory (U.S. Navy 2011).

7.2.6.4 Special Status Species Management

The first survey for special status species was conducted during the 2009 natural resources survey of NBSD housing areas. Special status species observed at the Home Terrace housing area during the survey include San Diego barrel cactus, Nuttall's scrub oak, and San Diego viguiera (see **Figure 7-13**). For objectives and strategies for managing special status species see **Section 7.3.4.2**.

7.2.6.5 Exotic and Invasive Species Management

A total of 1.3 acres of invasive plant cover was observed within the Home Terrace housing area (see **Figure 7-12**) (U.S. Navy 2011). The majority of the invasive species are located south of the open space area and on the southwestern side of the landscaped area (U.S. Navy 2011). Within the open space area hottentot fig and brome are the dominant invasive species (U.S. Navy 2011).

7.2.7 Howard Gilmore Terrace Housing Area

7.2.7.1 Watershed Management

Soils

Approximately 100 percent of the soil present on the Howard Gilmore Terrace housing area is comprised of Friant rocky fine sandy loam with slopes of 9 to 30 percent (NRCS 2011). Friant soils consist of shallow, well-drained soils that were formed in material weathered from mica schist, quartz schist and gneiss. Friant soils are found on hilly and mountainous uplands at elevations of 500 to 3,500 feet (NRCS 2011).

Water Quality

All water used by Howard Gilmore Terrace housing is supplied by the Helix Water District. Part of Helix Water District's water is local runoff from winter rain and snow releases from Lake Cuyamaca and natural runoff into El Capitan Reservoir. The rest is a blend of water from the Colorado River and Northern California. This water is purchased from the San Diego County Water Authority, who in turn purchases its water from the Metropolitan Water District of Southern California (U.S. Navy 2011).



Source: (c) 2009 Microsoft Corporation and its data suppliers, U.S. Navy 2011
Disclaimer: Maps do not represent legal boundaries. Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 7-13: Home Terrace Housing Area Special Status Species*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.

7.2.7.2 Habitat Management

Vegetation and Wildlife Habitat

For a complete listing of terrestrial floral species observed on Howard Gilmore Terrace, see **Appendix G**.

The Howard Gilmore Terrace housing area contains approximately 19 acres of open space (U.S. Navy 2011). A small portion of the open space is located within the housing area itself, while the majority occurs approximately 1,000 feet to the southeast along High Street. The vegetation communities documented within the open space areas include non-native vegetation, ornamental landscaping, and coastal sage scrub (see **Figure 7-14**) (U.S. Navy 2011). Fifty-eight species of plants were documented within the Howard Gilmore Terrace housing area during the 2009 natural resources inventory; of those, 32 plant species are native (U.S. Navy 2011).

The majority of the open space areas consist of coastal sage scrub. The coastal sage scrub north of High Street is dominated by California sagebrush, California buckwheat and laurel sumac (U.S. Navy 2011), while the coastal sage scrub south of High Street is dominated by broom baccharis (U.S. Navy 2011). In addition there are several patches of non-native grassland and non-native vegetation that are dominated by a variable mix of common disturbance-relayed species including tocolote, fountain grass, bromes, wild oat, fennel, and short-pod mustard.

Wetlands and Floodplains

No wetlands or other waters of the U.S. occur within the Howard Gilmore Terrace housing area (U.S. Navy 2011).

Marine Habitats

The Howard Gilmore Terrace housing area contains only upland habitat and is completely landlocked; therefore, no marine habitats (habitats within and adjacent to the San Diego Bay) occur within the housing area.

Critical Habitat

There is no designated critical habitat for any of the listed species in Howard Gilmore Terrace.

Other Regulatory or Habitat Planning Designation

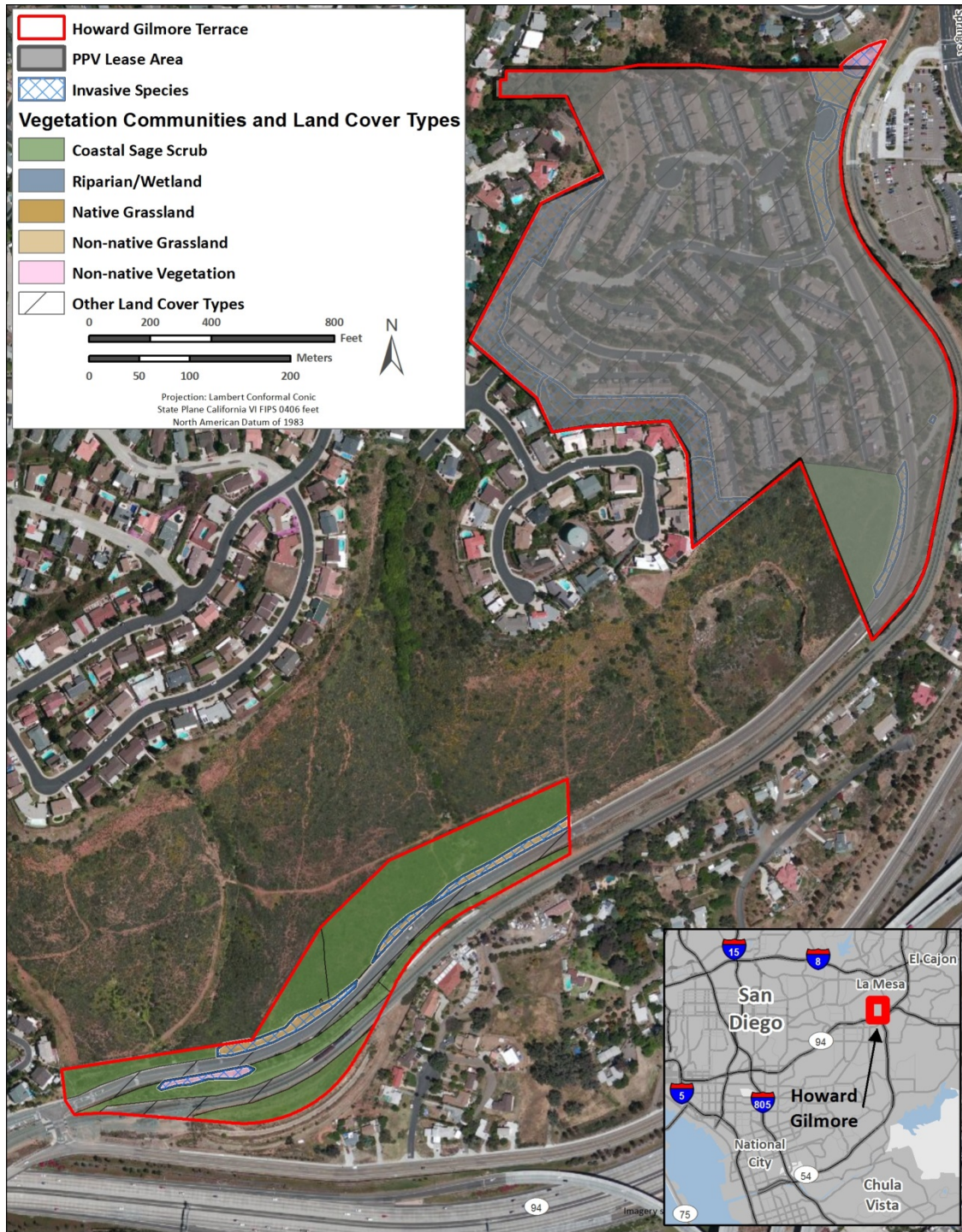
There are no other regulatory or habitat planning designations within the Howard Gilmore Terrace housing area.

7.2.7.3 Fish and Wildlife Management

For a complete listing of terrestrial faunal species observed on Howard Gilmore Terrace, see **Appendix G**.

Invertebrate species observed within the Howard Gilmore housing area during the 2009 natural resources inventory include jumping spiders, scarab beetle, and shorthorn grasshoppers (U.S. Navy 2011).

The western fence lizard was the only reptile species observed within the Howard Gilmore Terrace housing area during the 2009 natural resources inventory (U.S. Navy 2011).



Source: ESRI ArcGIS Online and data partners, U.S. Navy 2011
 Disclaimer: Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 7-14: Howard Gilmore Terrace Housing Area Vegetation and Invasive Species*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.

Native bird species observed within the Howard Gilmore Terrace housing area during the 2009 natural resource inventory include the Red-tailed Hawk, Coastal California Gnatcatcher, and the House Finch (U.S. Navy 2011).

Mammalian species observed within the Howard Gilmore Terrace housing areas during the 2009 natural resources inventory include the desert cottontail and the coyote (U.S. Navy 2011).

7.2.7.4 Special Status Species Management

The first survey for special status species was conducted during the 2009 natural resources survey of NBSD housing areas. Special status species observed at the Howard Gilmore Terrace housing area during the survey include San Diego barrel cactus, San Diego viguiera, the Southern California Rufous-Crowned Sparrow, and the Coastal California Gnatcatcher (see **Figure 7-15**). For a life history, management objectives, and specific management strategies for the Coastal California Gnatcatcher see **Section 7.3.4.1**. For objectives and strategies for managing other special status species see **Section 7.3.4.2**.

7.2.7.5 Exotic and Invasive Species Management

A total of 5.7 acres of invasive plant cover was observed within the Howard Gilmore housing area (see **Figure 7-15**) (U.S. Navy 2011). The majority of invasive species found within the landscaped area adjacent to the eastern and western sides of the main housing area include wild oat, hottentot fig, fountain grass, bromes, and garland (*Glebionis coronarium*) (U.S. Navy 2011). Within the open space area that occurs along the edge of High Street, the invasive species consist of a mix of common roadside or disturbance-related species including tocolote, fountain grass, bromes, wild oat, fennel, and short-pod mustard (U.S. Navy 2011).

7.2.8 La Mesa Park Townhomes Housing Area

7.2.8.1 Watershed Management

Soils

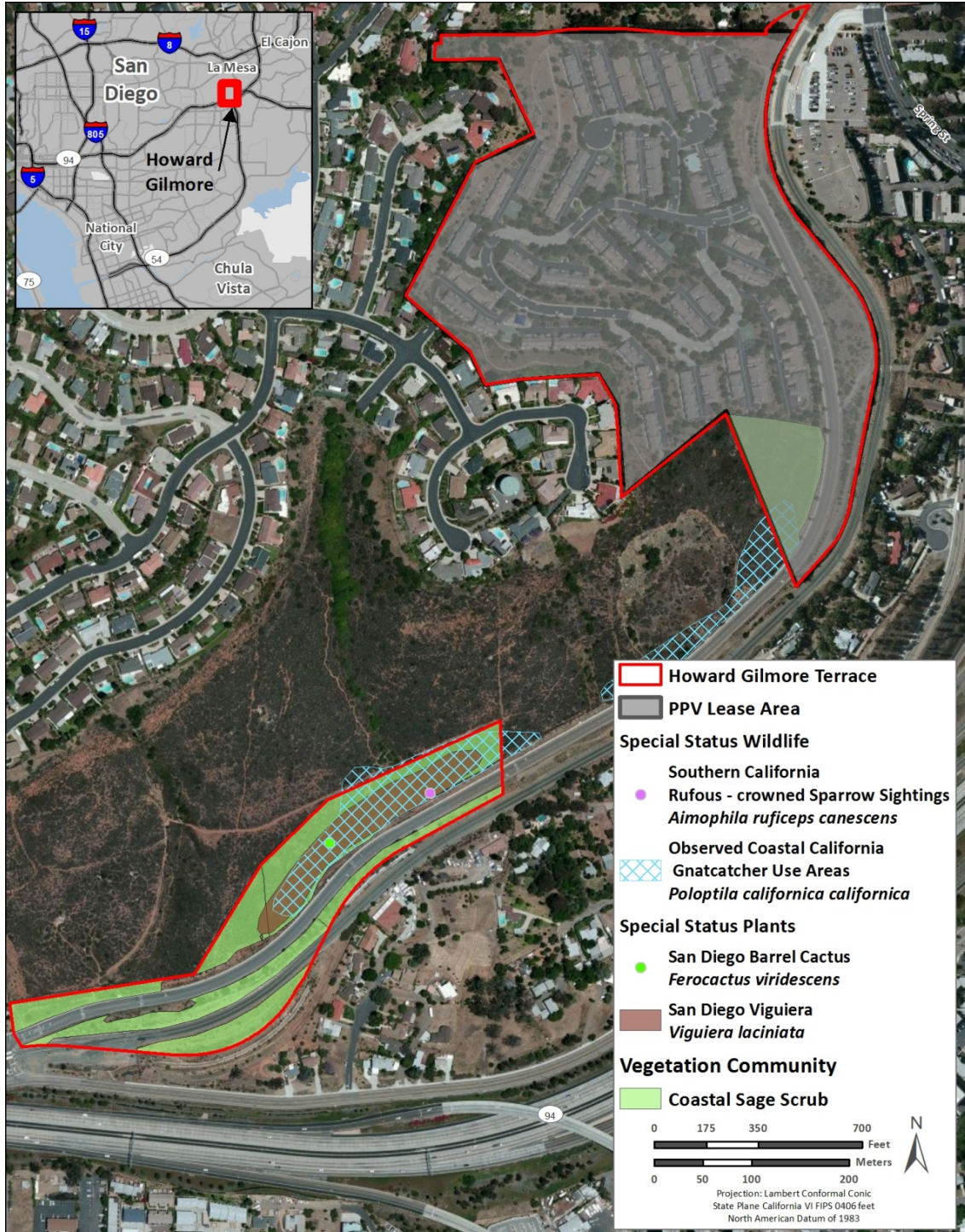
The NRCS mapped two soil types on the La Mesa Park Townhomes housing area (NRCS 2011):

Cieneba coarse sandy loam, eroded (CIE2). Approximately 4.5 percent of the La Mesa Park Townhomes housing area is comprised of CIE2 with slopes of 15 to 30 percent. The Cieneba series consists of very shallow and shallow, somewhat excessively drained soils that formed in material weathered from granitic rock. Cieneba soils are on uplands and have slopes of 9 to 85 percent. These soils are somewhat excessively drained, with low to medium runoff and have moderately rapid permeability in the soil (NRCS 2011).

Huerhuero loam, eroded (HrD2). Approximately 95.5 percent of the La Mesa Park Townhomes housing area is comprised of HrD2 with slopes of 9 to 15 percent. The huerhuero series consists of moderately well drained loams that have a clay subsoil and developed in sandy marine sediment. They have slopes between 2 and 30 percent with elevations between 10 and 400 feet. Permeability is very slow, runoff is slow to medium and erosion is slight to moderate (USDA 1973).

Water Quality

All water used by La Mesa Park Townhomes is supplied by the Helix Water District.



Source: (c) 2009 Microsoft Corporation and its data suppliers, U.S. Navy 2011
Disclaimer: Maps do not represent legal boundaries. Maps should not be reproduced or relied upon without the approval of the Installation biologist for the most current information.

Figure 7-15: Howard Gilmore Terrace Housing Area Special Status Species*

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7.2.8.2 Habitat Management

Vegetation and Wildlife Habitat

The La Mesa Park Townhomes housing area supports ornamental vegetation typical of residential landscaping and is mapped as Developed/Ornamental (U.S. Navy 2011) (see **Figure 7-16**).

Wetlands and Floodplains

No wetlands or other waters of the U. S. occur within the La Mesa Park Townhomes housing area (U.S. Navy 2011).

7.2.8.3 Marine Habitats

The La Mesa Park Townhomes housing area contains only upland habitat and is completely landlocked; therefore, no marine habitats occur within the housing area.

Critical Habitat

There is no designated critical habitat for any of the listed species in La Mesa Park Townhomes.

Other Regulatory or Habitat Planning Designation

There are no other regulatory or habitat planning designations within the La Mesa Park Townhomes housing area.

7.2.8.4 Fish and Wildlife Management

No invertebrate species were documented in the La Mesa Park Townhomes housing area during the 2009 natural resources inventory (U.S. Navy 2011).

No reptiles or amphibians were documented in the La Mesa Townhomes housing area during the 2009 natural resources inventory (U.S. Navy 2011).

No bird species were documented in the La Mesa Park Townhomes housing area during the 2009 natural resources inventory (U.S. Navy 2011).

No mammalian species were observed on La Mesa Park Townhomes during the 2009 natural resources survey (U.S. Navy 2011).

7.2.8.5 Special Status Species Management

The first survey for special status species was conducted during the 2009 natural resources survey of NBSD housing areas. No special status species were observed on the La Mesa Park Townhomes housing area during the 2009 survey (U.S. Navy 2011).

7.2.8.6 Exotic and Invasive Species Management

No invasive species were identified at the La Mesa Park Townhomes housing area during the 2009 natural resources inventory (U.S. Navy 2011).



Figure 7-16: La Mesa Park Townhouse Housing Area Location*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.

7.2.9 Murphy Canyon Heights Housing Area

The Murphy Canyon neighborhood is unique in that there are three types of natural areas located within the boundaries of the leased land. These three types of natural areas include (1) natural habitats; (2) disturbed areas; and (3) eucalyptus groves. These areas are together referred to as the “Natural Areas.” Murphy Canyon was a “Phase II” property, meaning that it was originally ground leased to SDFH in 2003, along with several other Phase II PPV properties. In connection with the ground leasing of the Phase II properties, a San Diego Family Housing, LLC Management Plan was executed, dated May 1, 2003. This 2003 Management Plan contains a section entitled “Natural Area Guidelines,” which sets forth certain responsibilities for the Lessee and the Property Manager for the Murphy Canyon Natural Areas. These responsibilities include the following: Property Manager is to maintain the Natural Areas in accordance with the terms of the Natural Guidelines, and the cost of such maintenance is an Approved Operating Expense under the PPV’s Operating Agreement; Property Manager is to maintain firebreaks; no dumping is permitted into natural habitats; certain maintenance is recommended for eucalyptus trees; Property Manager is to maintain certain signage and fencing; and certain restrictions are placed on any ground disturbing activities.

7.2.9.1 Watershed Management

Soils

The NRCS mapped nine soil types on the Murphy Canyon Heights housing area (see **Figure 7-17**) (NRCS 2011). Soils at Murphy Canyon Heights consist of:

Altamont clay (AtC). Approximately 5 percent of the Murphy Canyon Heights housing area is comprised of AtC with slopes of 5 to 9 percent. Altamont soils consist of shallow, well-drained soils that were formed in material weathered from mica schist, quartz schist and gneiss. Altamont soils are found on hilly and mountainous uplands at elevations of 500 to 3,500 feet (NRCS 2011).

Altamont clay (AtC). Approximately less than 1 percent of the Murphy Canyon Heights housing area is comprised of AtC with slopes of 9 to 15 percent.

Diablo-Olivenhain complex (DoE). Approximately less than 1 percent of the Murphy Canyon Heights housing area is comprised of DoE with slopes of 9 to 30 percent.

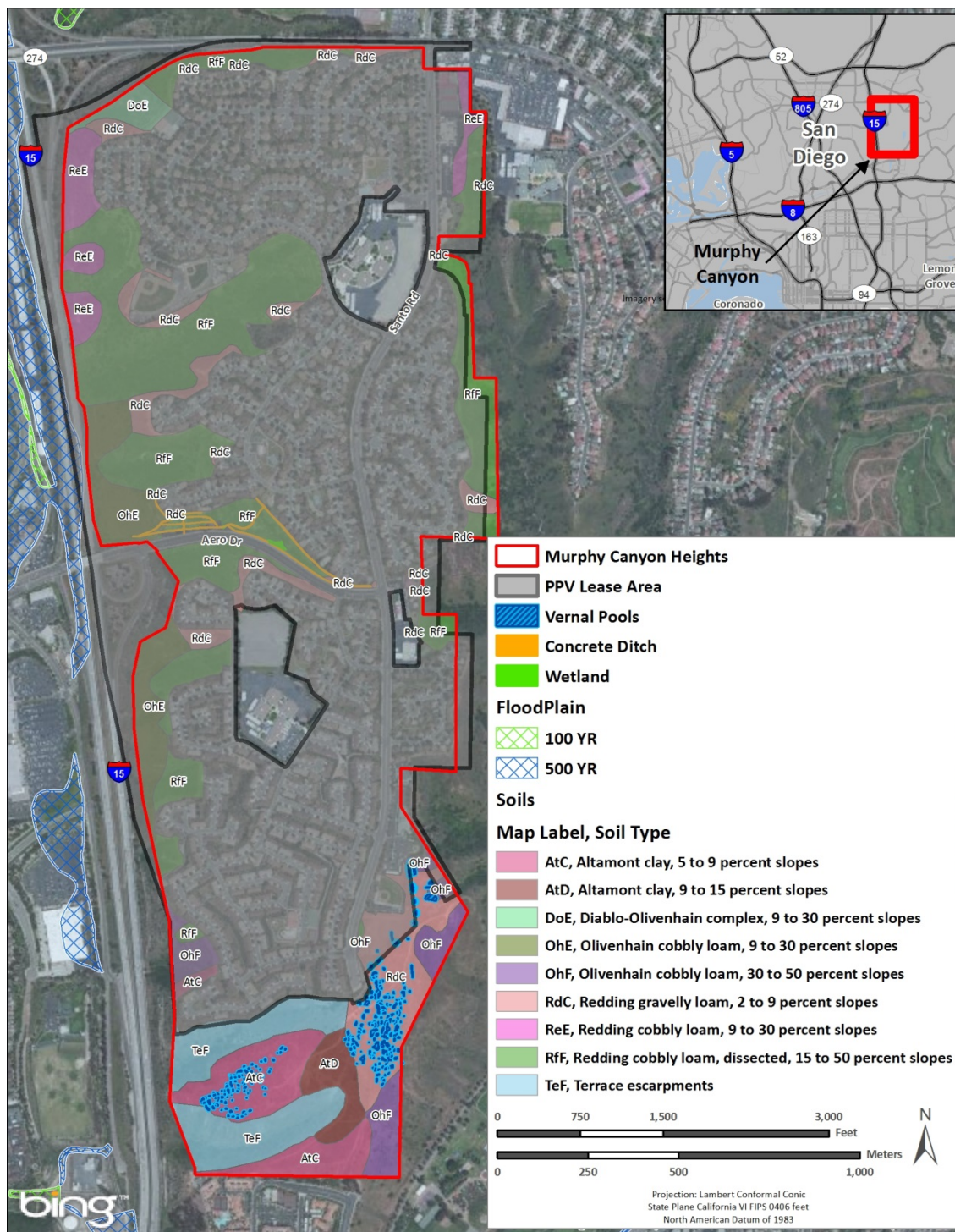
Olivenhain cobbly loam (OhE). Approximately 2 percent of the Murphy Canyon Heights housing area is comprised of OhE with slopes of 9 to 30 percent.

Olivenhain cobbly loam (OhE). Approximately 2 percent of the Murphy Canyon Heights housing area is comprised of OhE with slopes of 30 to 50 percent.

Redding gravelly loam (RdC). Approximately 46 percent of the Murphy Canyon Heights housing area is comprised of RdC with slopes of 2 to 9 percent.

Redding gravelly loam (RdC). Approximately 2 percent of the Murphy Canyon Heights housing area is comprised of RdC with slopes of 9 to 30 percent.

Redding gravelly loam (RdC). Approximately 34 percent of the Murphy Canyon Heights housing area is comprised of RdC with slopes of 15 to 50 percent.



Source: (c) 2009 Microsoft Corporation and its data suppliers, U.S. Navy 2011
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Figure 7-17: Murphy Canyon Heights Housing Area Soils and Water Resources*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.

Terrace escarpments (TeF). Approximately 46 percent of the Murphy Canyon Heights housing area is comprised of TeF with slopes of 2 to 9 percent. Terrace escarpments consist of steep to very steep escarpments, and occur on the nearly even fronts of terraces or alluvial fans. In most places there is 4 to 10 inches of loamy or gravelly soil over soft marine sandstone, shale or gravelly sediments (USDA 1973).

Water Quality

All water used by Murphy Canyon Heights housing is supplied by the City of San Diego.

7.2.9.2 Habitat Management

Vegetation and Wildlife Habitat

For a complete listing of terrestrial floral species observed on Murphy Canyon Heights, see **Appendix G**.

The Murphy Canyon Heights housing area contains approximately 252 acres of open space located adjacent to the housing area separated by a fence or wall (U.S. Navy 2011). A firebreak buffer is actively maintained throughout the site that surrounds the edge of the housing boundary adjacent to the fence or wall (U.S. Navy 2011). Within the open space area there are 12 westerly draining side canyons adjacent to Highway 15 on the western side of the housing boundary (U.S. Navy 2011). In addition there is a south-draining canyon on the eastern side of the housing boundary that consists of a variety of side canyons, and a set of east- and west-draining mesas that make up the Murphy Canyon Vernal Pool preserve (U.S. Navy 2011). The vegetation communities documented within the open space areas include coastal sage scrub and non-native vegetation (see **Figures 7-18a** and **7-18b**) (U.S. Navy 2011). One-hundred and sixteen species of plants were documented within the Murphy Canyon Heights housing area during the 2009 natural resources inventory; of those, 70 plant species are native (U.S. Navy 2011).

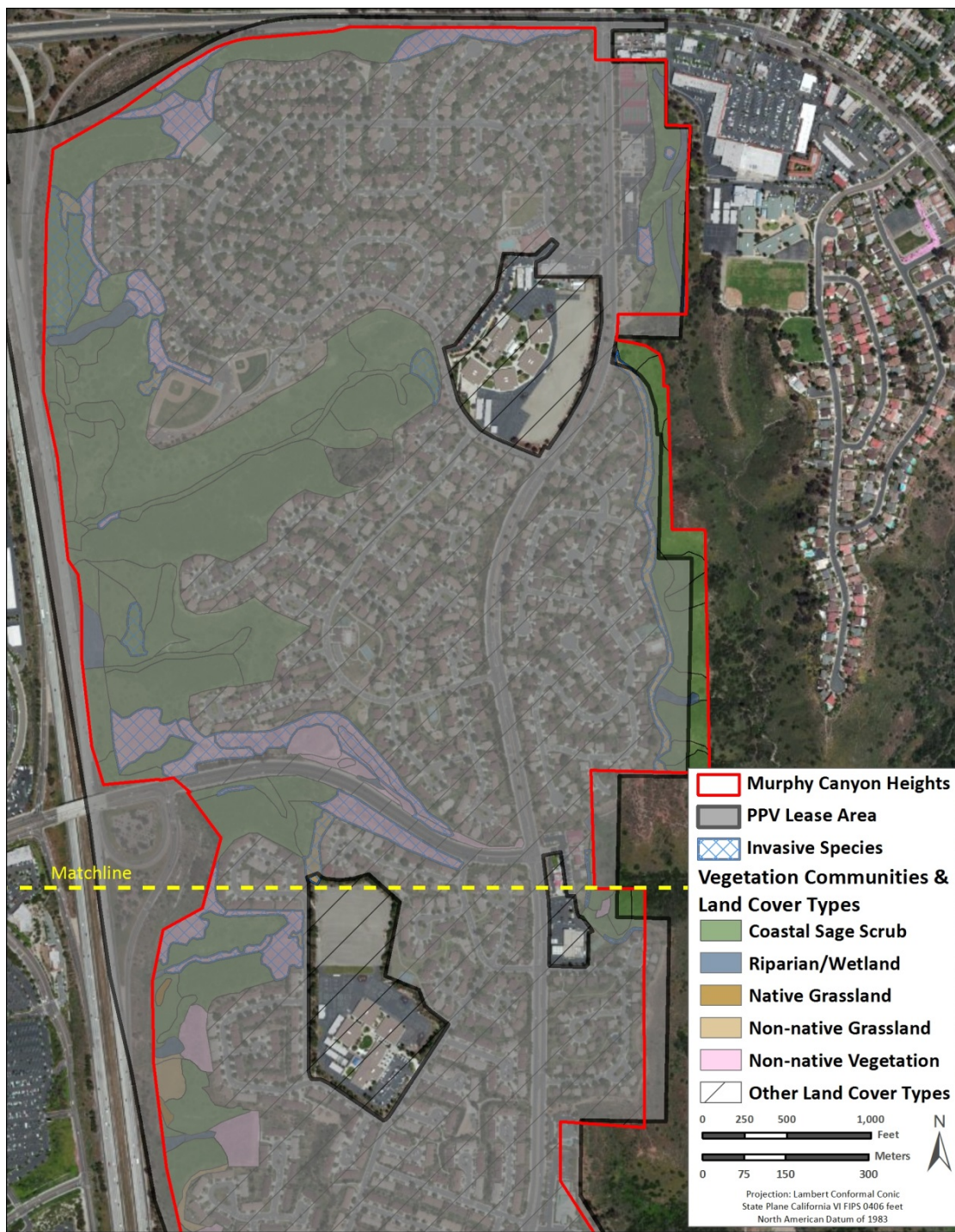
The majority of the open space areas consist of coastal sage scrub of varying quality, structure, and species composition (U.S. Navy 2011). The north-facing canyon slopes are dominated by thick canopies of lemonadeberry, Nuttall's scrub oak, toyon, California sagebrush, low bush monkey-flower, black sage, and laurel sumac (U.S. Navy 2011). While the south-facing slopes are dominated by black sage, California sagebrush, broom baccharis, California buckwheat, eucalyptus, fountain grass, and San Diego County viguiera. In addition, the east-facing slopes are dominated by chamise, California sagebrush, California buckwheat, lemonadeberry, broom baccharis, and eucalyptus (U.S. Navy 2011). Within the drainages along the canyon bottoms the dominant species include broom baccharis, mule fat, pampas grass, willow (*Salix* spp.), cattail, pepper tree, bulrush (*Scirpus* spp.), and fountain grass (U.S. Navy 2011).

The non-native vegetation found within the firebreak and adjacent to road edges consists of common disturbance-related species including fountain grass, brome, mustard, wild oat, and tocolote (U.S. Navy 2011).

Wetlands and Floodplains

Wetlands and non-wetland jurisdictional waters of the U.S. were delineated at the Murphy Canyon Heights housing area. A total of 0.10 acres of wetlands and 0.25 acres of concrete ditches were delineated within the housing area (see **Figure 7-17**) (U.S. Navy 2011).

An expansive complex of vernal pools were mapped during surveys conducted in 1999 but were not delineated during surveys conducted in 2009 (U.S. Navy 2011). A single blue-line stream was delineated and is located just north of Aero Drive, immediately south of the housing area (U.S. Navy 2011). In addition, Murphy Canyon Creek has been identified by the USGS as being a blue-line stream within the housing area but was not delineated during the 2009 survey (U.S. Navy 2011).

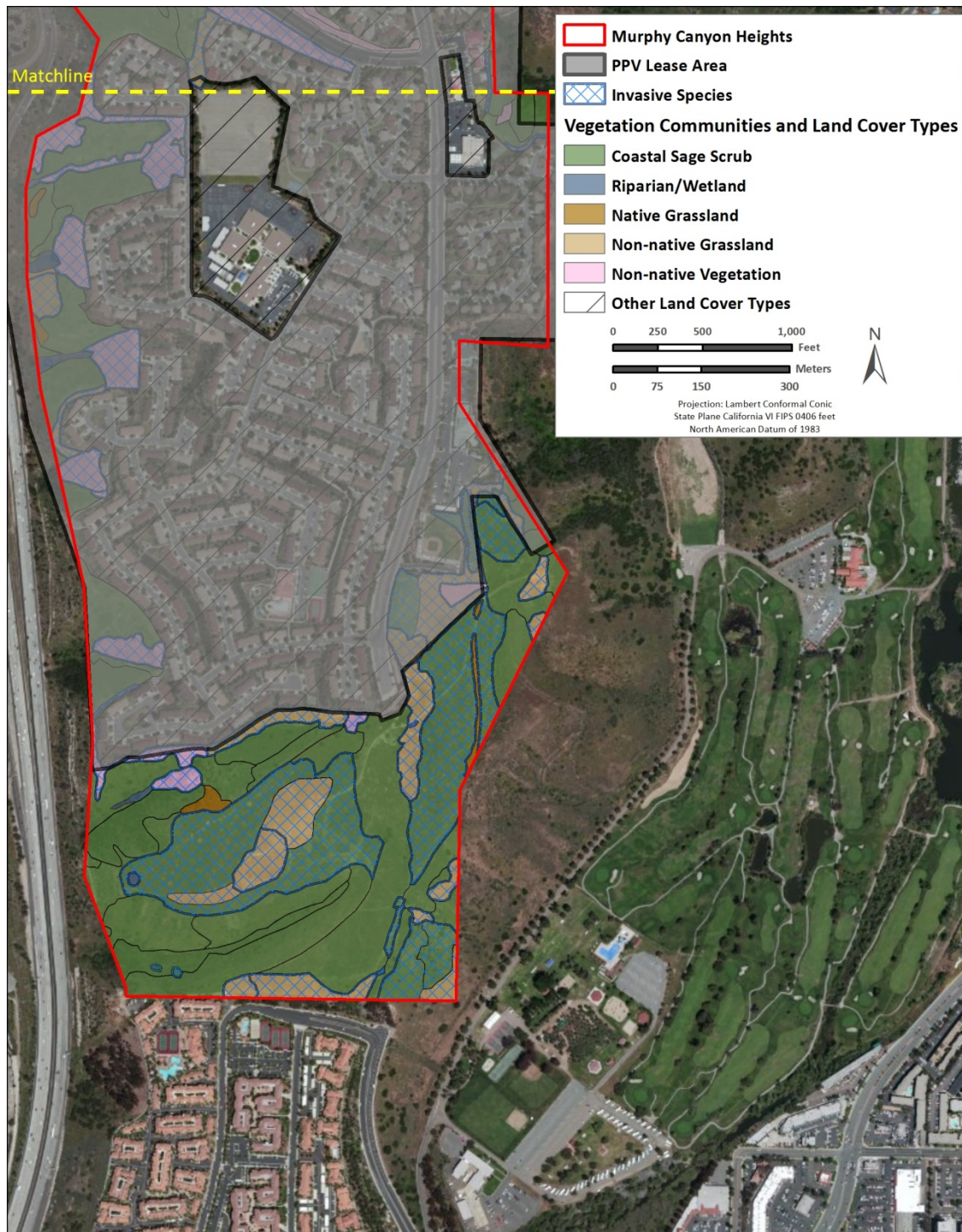


Source: ESRI ArcGIS Online and data partners, U.S. Navy 2011

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Figure 7-18a: Murphy Canyon Heights Housing Area Vegetation and Invasive Species (Northern End)*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.



Source: ESRI ArcGIS Online and data partners, U.S. Navy 2011
 Disclaimer: Maps do not represent legal boundaries. Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 7-18b: Murphy Canyon Heights Housing Area Vegetation and Invasive Species (Southern End)*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.

Marine Habitats

The Murphy Canyon Heights housing area contains mostly upland habitat with 0.35 acres of wetland and non-jurisdictional waters of the U.S. The housing facility is inland and therefore, no marine habitats (habitats within and adjacent to the San Diego Bay) occur within the housing area.

Critical Habitat

Critical habitat was designated for the federally endangered San Diego fairy shrimp in December 2007 (72 Federal Register 70648 70714). The designation included vernal pools within the Murphy Canyon Heights housing area open space (see **Figures 7-19a** and **7-19b**). Restrictions include a limit on development and redevelopment within the housing area.

For additional information on San Diego fairy shrimp and its critical habitat at Murphy Canyon, refer to **Appendix E**.

Other Regulatory or Habitat Planning Designation

The Murphy Canyon housing area falls within the bounds of the Multiple Species Conservation Program (MSCP) Multi-Habitat Planning Area (MHPA). There are no other regulatory or habitat planning designations within the Murphy Canyon Heights housing area.

7.2.9.3 Fish and Wildlife Management

For a complete listing of terrestrial faunal species observed on Murphy Canyon Heights, see **Appendix G**.

Invertebrate species observed within the Murphy Canyon Heights housing area during the 2009 natural resources inventory include San Diego fairy shrimp, bee flies, and bees (U.S. Navy 2011).

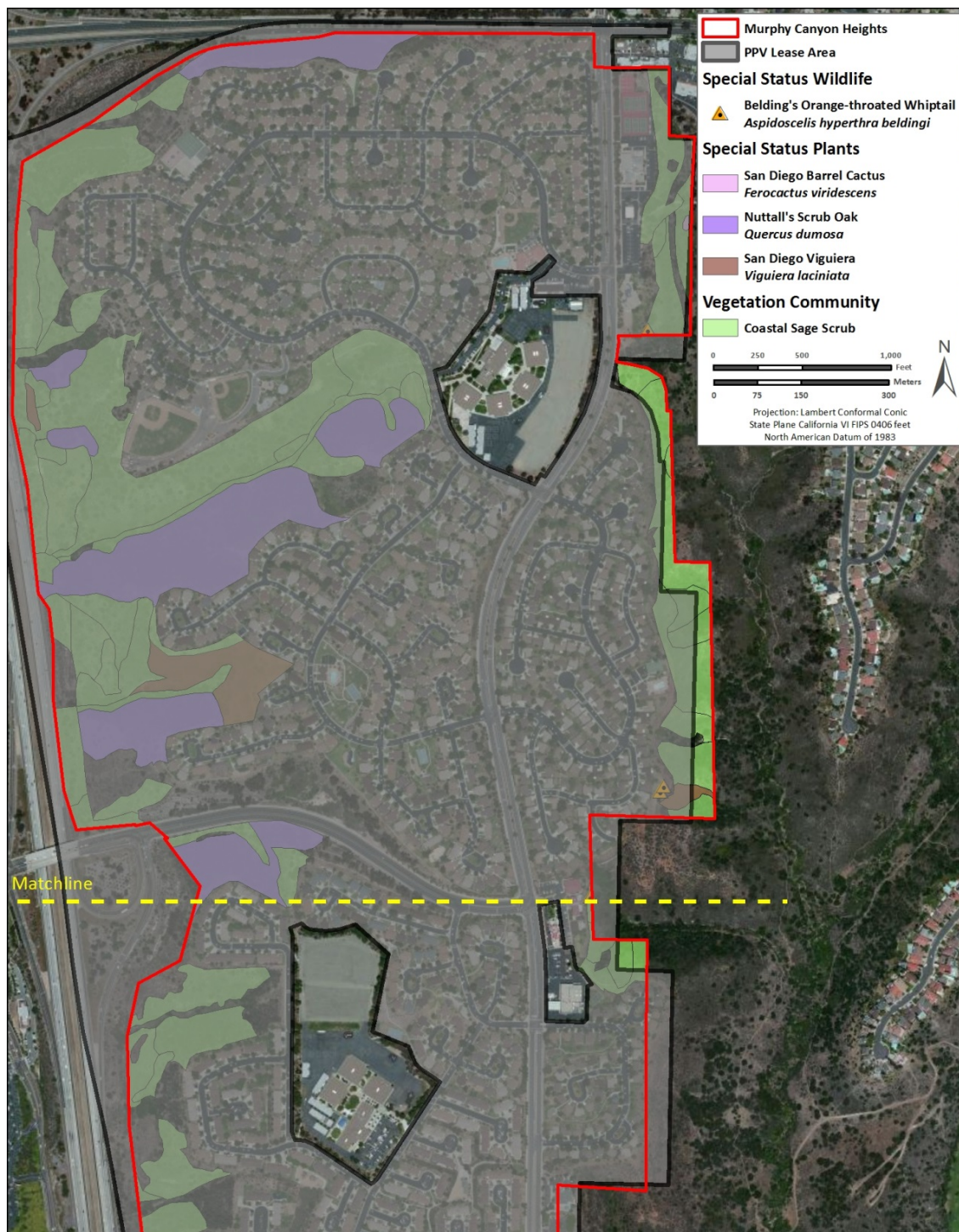
Reptilian and amphibian species observed within the Murphy Canyon Heights housing areas during the 2009 natural resources inventory include the western fence lizard, and the Belding's orange-throated whiptail (U.S. Navy 2011).

Native bird species observed within the Murphy Canyon Heights housing area during the 2009 natural resource inventory include the Red-tailed Hawk, Nuttall's Woodpecker (*Picoides nuttallii*), and Coastal California Gnatcatcher (U.S. Navy 2011).

Mammalian species observed within the Murphy Canyon Heights housing areas during the 2009 natural resources inventory include the desert cottontail, California ground squirrel, coyote, and the Southern mule deer (*Odocoileus hemionus*) (U.S. Navy 2011).

7.2.9.4 Special Status Species Management

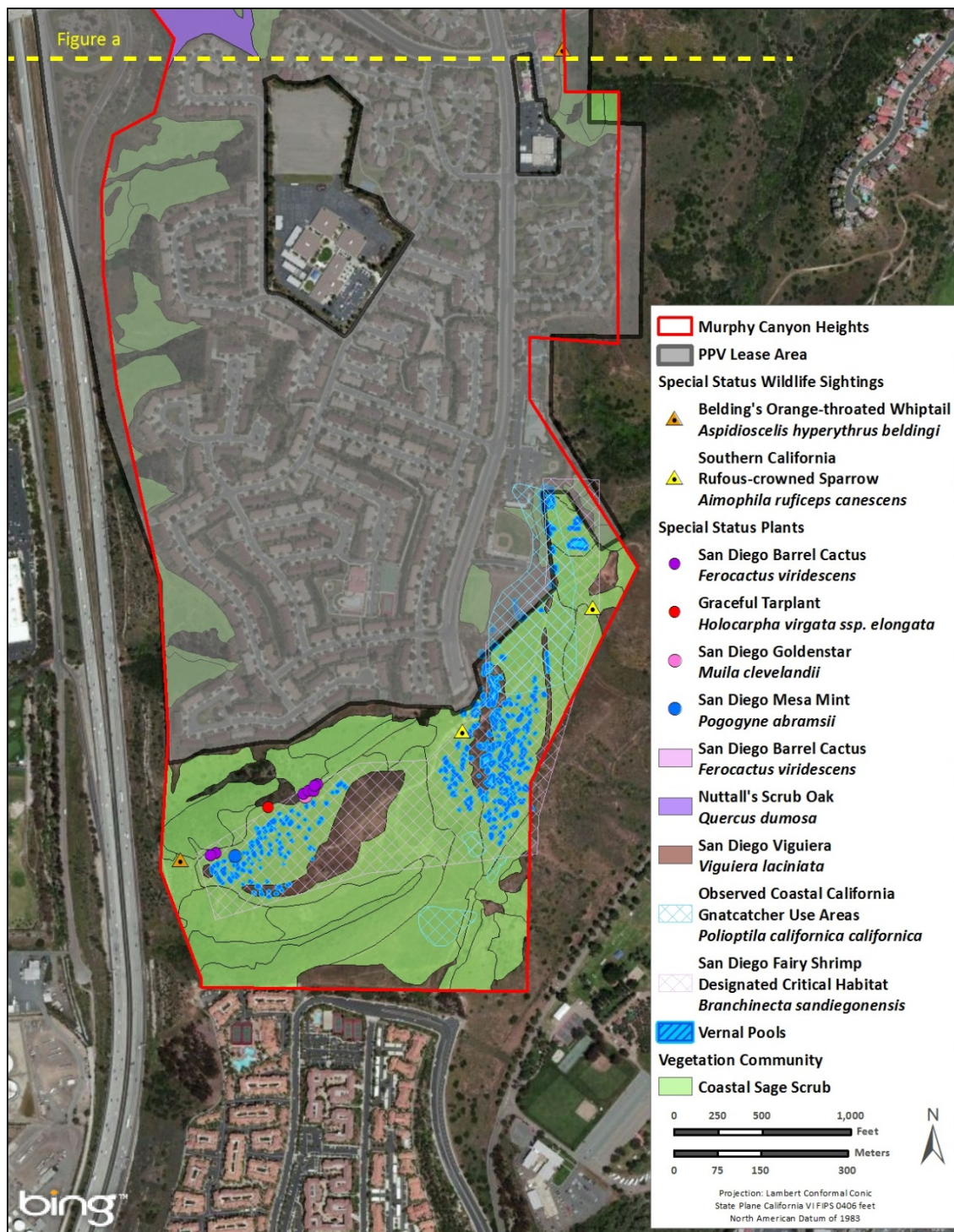
The first survey for special status species was conducted during the 2009 natural resources survey of NBSD housing areas. Special status species observed at the Murphy Canyon Heights housing area during the survey include San Diego barrel cactus, graceful tarplant, San Diego goldenstar, San Diego mesa mint, Nuttall's scrub oak, San Diego viguiera, the Southern Rufous-Crowned Sparrow, the Coastal California Gnatcatcher, the Belding's orange-throated whiptail, and the San Diego fairy shrimp (see **Figures 7-19a** and **7-19b**). For a life history, management objectives, and specific management strategies for San Diego mesa mint, the Coastal California Gnatcatcher, and the San Diego fairy shrimp see **Section 7.3.4.1**. For objectives and strategies for managing other special status species see **Section 7.3.4.2**.



Source: (c) 2009 Microsoft Corporation and its data suppliers, U.S. Navy 2011
Disclaimer: Maps do not represent legal boundaries. Maps should not be reproduced or relied upon without the approval of the Installation biologist for the most current information.

Figure 7-19a: Murphy Canyon Heights Housing Area Special Status Species (Northern End)*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.



Source: (c) 2009 Microsoft Corporation and its data suppliers, U.S. Navy 2011
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Figure 7-19b: Murphy Canyon Heights Housing Area Special Status Species (Southern End)*

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7.2.9.5 Exotic and Invasive Species Management

A total of 83.4 acres of invasive plant cover was observed within the Murphy Canyon Heights housing area (see **Figures 7-18a** and **7-18b**) (U.S. Navy 2011). Within the open space areas wild oat and brome occurs over the largest area throughout Murphy Canyon Heights (U.S. Navy 2011). The firebreak buffer that is actively maintained throughout the site consists of common disturbance-related invasive species including fountain grass, brome, mustard, wild oat, and tocolote (U.S. Navy 2011). Eucalyptus commonly occurs on the upland slopes adjacent to the housing boundary; while wild oat, brome, and Italian ryegrass dominates the upland mesas (U.S. Navy 2011). The canyon drainages commonly support a mix of pampas grass and fountain grass (U.S. Navy 2011). In addition there is a strip of tamarisk and a large black mustard stand on the north and northwestern side of Aero Road (U.S. Navy 2011).

7.2.10 Paradise Gardens Housing Area

7.2.10.1 Watershed Management

Soils

The NRCS mapped two soil types on the Paradise Gardens housing area (NRCS 2011). Soils at Paradise Gardens consist of:

Linne clay loam (LsE). Approximately 95.6 percent of the Paradise Gardens housing area is comprised of CIE2 with slopes of 9 to 30 percent. The Linne series consists of moderately deep, well drained soils that formed in material weathered from fairly soft shale and sandstone. Linne soils are on hills and have slopes of 5 to 75 percent. These soils are well drained, with medium to very rapid runoff and moderately slow permeability (NRCS 2011).

Olivenhain cobbly loam (OhE). Approximately 4.4 percent of the Paradise Gardens housing area is comprised of OhE with slopes of 9 to 30 percent.

Water Quality

All water used by Paradise Gardens housing is supplied by the City of San Diego.

7.2.10.2 Habitat Management

Vegetation and Wildlife Habitat

The Paradise Gardens housing area supports ornamental vegetation typical of residential landscaping and is mapped as Developed/Ornamental (U.S. Navy 2011).

Wetlands and Floodplains

No wetlands or other waters of the U.S. occur within the Paradise Gardens housing area (U.S. Navy 2011).

Marine Habitats

The Paradise Gardens housing area contains only upland habitat and is completely landlocked (see **Figure 7-20**); therefore, no marine habitats occur within the housing area.



Source: (c) 2009 Microsoft Corporation and its data suppliers, U.S. Navy 2011
 Disclaimer: Maps do not represent legal boundaries. Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 7-20: Paradise Gardens Housing Area Location*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.

Critical Habitat

There is no designated critical habitat for any of the listed species in Paradise Gardens.

Other Regulatory or Habitat Planning Designation

There are no other regulatory or habitat planning designations within the Paradise Gardens housing area.

7.2.10.3 Fish and Wildlife Management

No invertebrate species were documented in the Paradise Gardens housing area during the 2009 natural resources inventory (U.S. Navy 2011).

No reptiles or amphibians were documented in the Paradise Gardens housing area during the 2009 natural resources inventory (U.S. Navy 2011).

Native bird species observed within the Paradise Gardens housing area during the 2009 natural resource inventory include the Mourning Dove, Common Raven, and the House Finch (U.S. Navy 2011).

No mammalian species were observed in the Paradise Gardens housing area during the 2009 natural resources survey (U.S. Navy 2011).

7.2.10.4 Special Status Species Management

The first survey for special status species was conducted during the 2009 natural resources survey of NBSD housing areas. No special status species were observed on the Paradise Gardens housing area during the 2009 survey (U.S. Navy 2011).

7.2.10.5 Exotic and Invasive Species Management

No invasive species were identified at the Paradise Gardens housing area during the 2009 natural resources inventory (U.S. Navy 2011).

7.2.11 Pomerado Terrace Housing Area

7.2.11.1 Watershed Management

Soils

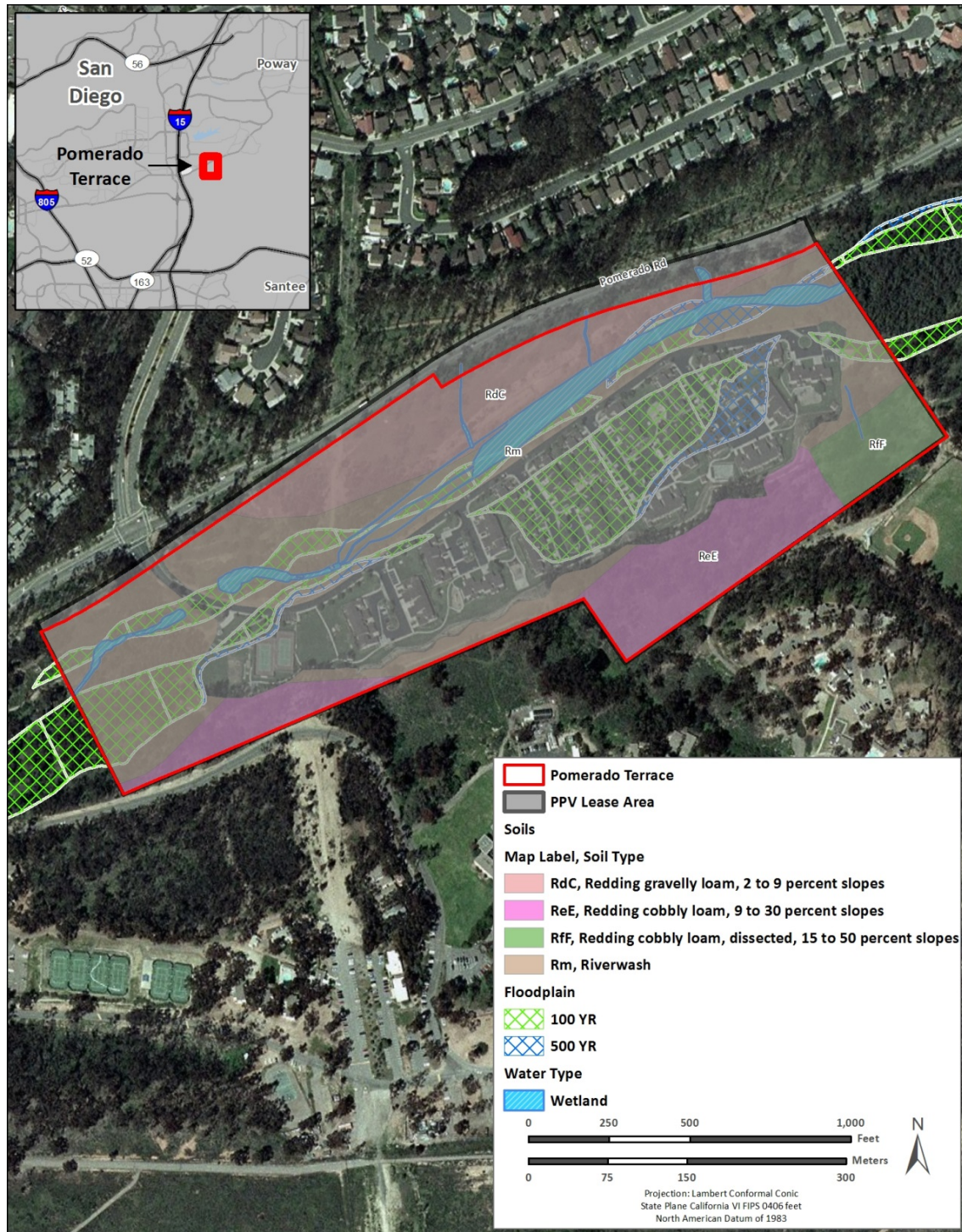
The NRCS mapped four soil types on the Pomerado Terrace housing area (see **Figure 7-21**) (NRCS 2011). Soils at Pomerado Terrace consist of:

Riverwash (Rm). Approximately 68.5 percent of the Pomerado Terrace housing area is comprised of Rm.

Redding gravelly loam (RdC). Approximately 16.4 percent of the Pomerado Terrace housing area is comprised of RdC with slopes of 2 to 9 percent.

Redding cobbly loam (ReE). Approximately 13.3 percent of the Pomerado Terrace housing area is comprised of ReE with slopes of 9 to 30 percent.

Redding cobbly loam, dissected (RfF). Approximately 1.9 percent of the Pomerado Terrace housing area is comprised of RfF with slopes of 15 to 50 percent.



Source: (c) 2010 I-cubed, U.S. Navy 2011

Disclaimer: Maps do not represent legal boundaries. Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 7-21: Pomerado Terrace Housing Area Soils and Water Resources*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.

Water Quality

All water used by Pomerado Terrace housing is supplied by the City of San Diego.

7.2.11.2 Habitat Management

Vegetation and Wildlife Habitat

For a complete listing of terrestrial floral species observed on Pomerado Terrace, see **Appendix G**.

The Pomerado Terrace housing area contains approximately 29 acres of open space located along the periphery of the Pomerado Terrace housing area (U.S. Navy 2011). The vegetation communities documented within the open space areas include coastal sage scrub, non-native grassland and eucalyptus-woodland (see **Figure 7-22**) (U.S. Navy 2011). Eighty species of plants were documented within the Pomerado Terrace housing area during the 2009 natural resources inventory; of those, 42 plant species are native (U.S. Navy 2011).

The majority of the open space areas consist of non-native grassland/eucalyptus-woodland that is dominated by eucalyptus with an open herbaceous component of wild oat, brome, and tocolote (U.S. Navy 2011). Over half of the native plant species are found within a drainage and along the drainage edge that runs adjacent to the housing area and Pomerado Road (U.S. Navy 2011). However, the dominate vegetation consist of non-native species that include fern pine (*Podocarpus gracilior*), Italian ryegrass, and annual beard grass (*Polypogon monspeliensis* (U.S. Navy 2011). In addition mustard, eucalyptus and willows were documented on the eastern section of the drainage (U.S. Navy 2011).

Wetlands and Floodplains

Wetlands and non-wetland jurisdictional waters of the U.S. were delineated at the Pomerado Terrace housing area. A total of 1.63 acres of wetlands and 0.59 acres of concrete ditches were delineated within the housing area (see **Figure 7-21**) (U.S. Navy 2011). Two un-named blue-line streams have been identified by the USGS as occurring within the housing area (U.S. Navy 2011). One of the streams enters the site from the northeast and connects with the other, where they eventually empty into the Los Peñasquitos Lagoon (U.S. Navy 2011). In addition, culvert outfalls which direct water from along Pomerado Road and Scripps Ranch Boulevard into Carroll Canyon are present (U.S. Navy 2011).

Marine Habitats

The housing facility is inland and therefore, no marine habitats (habitats within and adjacent to the San Diego Bay) occur within the housing area.

Critical Habitat

There is no designated critical habitat for any of the listed species in Pomerado Terrace.

Other Regulatory or Habitat Planning Designation

The Pomerado housing area falls within the bounds of the Multiple Species Conservation Program (MSCP) Multi-Habitat Planning Area (MHPA). There are no other regulatory or habitat planning designations within the Pomerado Terrace housing area.



Source: ESRI ArcGIS Online and data partners, U.S. Navy 2011
 Disclaimer: Maps do not represent legal boundaries. Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 7-22: Pomerado Terrace Housing Area Vegetation and Invasive Species*

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7.2.11.3 Fish and Wildlife Management

For a complete listing of terrestrial faunal species observed on Pomerado Terrace, see **Appendix G**.

Invertebrate species observed within the Pomerado Terrace housing area during the 2009 natural resources inventory include jumping spiders, Argentine ants, and true wasps (U.S. Navy 2011).

No reptiles or amphibians were documented in the Pomerado Terrace housing area during the 2009 natural resources inventory (U.S. Navy 2011).

Native bird species observed within the Pomerado Terrace housing area during the 2009 natural resource inventory include the Red-tailed Hawk, California Towhee, and the Lesser Goldfinch (U.S. Navy 2011).

No mammalian species were observed on Pomerado Terrace housing area during the 2009 natural resources survey (U.S. Navy 2011).

7.2.11.4 Special Status Species Management

The first survey for special status species was conducted during the 2009 natural resources survey of NBSD housing areas. No special status species were observed on the Pomerado Terrace housing area during the 2009 survey (U.S. Navy 2011).

7.2.11.5 Exotic and Invasive Species Management

A total of 26.5 acres of invasive plant cover was observed within the Pomerado Terrace housing area (see **Figure 7-22** (U.S. Navy 2011). The upland vegetation surrounding the main drainage consists of eucalyptus-dominated woodland with wild oat, brome and tocolote (U.S. Navy 2011). Pampas grass was found along the fence north of the housing boundary and south of the main drainage (U.S. Navy 2011). In addition, fern pine was documented within the main drainage (U.S. Navy 2011).

7.2.12 Prospect View Housing Area

7.2.12.1 Watershed Management

Soils

The NRCS mapped two soil types on the Prospect View housing area (NRCS 2011):

Salinas clay loam (SbA). Approximately 94.2 percent of the Prospect View housing area is comprised of SbA with slopes of 0 to 2 percent. The Salinas series consists of deep, well-drained soils that formed in alluvium weathered from sandstone and shale. They are well drained, have slow to medium runoff and moderately slow permeability (NRCS 2011).

Fallbrook sandy loam (FaB). Approximately 5.7 percent of the Prospect View housing area is comprised of FaB with slopes of 2 to 5 percent.

Water Quality

All water used by Prospect View housing is supplied by the Padre Dam Municipal Water District.

7.2.12.2 Habitat Management

Vegetation and Wildlife Habitat

Prospect View housing area supports ornamental vegetation typical of residential landscaping and is mapped as Developed/Ornamental (U.S. Navy 2011).

Wetlands and Floodplains

No wetlands or other waters of the U.S. occur at Prospect View housing area (see **Figure 7-23**) (U.S. Navy 2011).

Marine Habitats

The Prospect View housing area contains only upland habitat and is completely landlocked; therefore, no marine habitats occur within the housing area.

Critical Habitat

There is no designated critical habitat for any of the listed species in Prospect View.

Other Regulatory or Habitat Planning Designation

There are no other regulatory or habitat planning designations within the Prospect View housing area.

7.2.12.3 Fish and Wildlife Management

No invertebrate species were documented in the Prospect View housing area during the 2009 natural resources inventory (U.S. Navy 2011).

No reptiles or amphibians were documented in the Prospect View housing area during the 2009 natural resources inventory (U.S. Navy 2011).

Native bird species observed within the Prospect View housing area during the 2009 natural resource inventory include the Mourning Dove, Common Raven, and the House Finch (U.S. Navy 2011).

Mammalian species observed within the Prospect View housing areas during the 2009 natural resources inventory include coyote and northern raccoon (*Procyon lotor*) (U.S. Navy 2011)

7.2.12.4 Special Status Species Management

The first survey for special status species was conducted during the 2009 natural resources survey of NBSD housing areas. No special status species were observed on the Prospect View housing area during the 2009 survey (U.S. Navy 2011).

7.2.12.5 Exotic and Invasive Species Management

No invasive species were identified at the Prospect View housing area (U.S. Navy 2011).



Source: (c) 2009 Microsoft Corporation and its data suppliers, U.S. Navy 2011
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Figure 7-23: Prospect View Housing Area Location*

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7.2.13 Ramona Vista Apartments Housing Area

7.2.13.1 Watershed Management

Soils

Approximately 100 percent of the soils mapped on the Ramona Vista Apartments housing area consisted of Placentia sandy loam. Placentia sandy loam has slopes of 9 percent (NRCS 2011).

Water Quality

All water used by the Ramona Vista housing is supplied by the Ramona Municipal Water District. One hundred percent of the district's water supply is purchased from the San Diego County Water Authority, which purchases its water from the Metropolitan Water District of Southern California. The water is a blend of Colorado River water and California State Water Project water (Ramona 2010).

7.2.13.2 Habitat Management

Vegetation and Wildlife Habitat

The Ramona Vista Apartments housing area supports ornamental vegetation typical of residential landscaping and is mapped as Developed/Ornamental (U.S. Navy 2011).

Wetlands and Floodplains

No wetlands or other waters of the U. S. occur within the Ramona Vista Apartments housing area (U.S. Navy 2011).

Marine Habitats

The Ramona Vista housing area contains only upland habitat and is completely landlocked (see **Figure 7-24**); therefore, no marine habitats occur within the housing area.

Critical Habitat

There is no designated critical habitat for any of the listed species in Ramona Vista.

Other Regulatory or Habitat Planning Designation

There are no other regulatory or habitat planning designations within the Ramona Vista housing area.

7.2.13.3 Fish and Wildlife Management

No mammalian species were observed on the Ramona Vista Apartments housing area during the 2009 natural resources survey (U.S. Navy 2011).

The House Finch was the only bird species observed within the Ramona Vista Apartments housing area during the 2009 natural resources inventory (U.S. Navy 2011).

No reptiles or amphibians were documented in the Ramona Vista Apartments housing area during the 2009 natural resources inventory (U.S. Navy 2011).



Source: (c) 2009 Microsoft Corporation and its data suppliers, U.S. Navy 2011
 Disclaimer: Maps do not represent legal boundaries. Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 7-24: Ramona Vista Apartments Housing Area Location*

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No invertebrate species were documented in the Ramona Vista Apartments housing area during the 2009 natural resources inventory (U.S. Navy 2011).

7.2.13.4 Special Status Species Management

The first survey for special status species was conducted during the 2009 natural resources survey of NBSD housing areas. No special status species were observed on the Ramona Vista housing area during the 2009 survey (U.S. Navy 2011).

7.2.13.5 Exotic and Invasive Species Management

No invasive species were identified at the Ramona Vista Apartments housing area during the 2009 natural resources inventory (U.S. Navy 2011).

7.2.14 Riverplace Housing Area

7.2.14.1 Watershed Management

Soils

The NRCS mapped two soil types on the Riverplace housing area (NRCS 2011). Soils at Riverplace consist of:

Fallbrook sandy loam (FaB). Approximately 98.7 percent of the Riverplace housing area is comprised of FaB with slopes of 9 to 15 percent.

Ramona sandy loam (RaC). Approximately 1.3 percent of the Riverplace housing area is comprised of RaC with slopes of 5 to 9 percent. The Ramona soils are nearly level to moderately steep. They are on terraces and fans at elevations of 250 to 3,500 feet. They formed in alluvium derived mostly from granitic and related rock sources. They are well drained, with slow to rapid runoff and moderately slow permeability (NRCS 2011).

Water Quality

All water used by Riverplace housing is supplied by the Padre Dam Municipal Water District.

7.2.14.2 Habitat Management

Vegetation and Wildlife Habitat

The Riverplace housing area supports ornamental vegetation typical of residential landscaping and is mapped as Developed/Ornamental (U.S. Navy 2011).

Wetlands and Floodplains

No wetlands or other waters of the U.S. occur at Riverplace housing area (U.S. Navy 2011).

Marine Habitats

The Riverplace housing area contains only upland habitat and is completely landlocked (see **Figure 7-25**); therefore, no marine habitats occur within the housing area.



Source: (c) 2009 Microsoft Corporation and its data suppliers, U.S. Navy 2011
 Disclaimer: Maps do not represent legal boundaries. Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 7-25: Riverplace Housing Area Location*

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Critical Habitat

There is no designated critical habitat for any of the listed species in Riverplace.

Other Regulatory or Habitat Planning Designation

There are no other regulatory or habitat planning designations within the Riverplace housing area.

7.2.14.3 Fish and Wildlife Management

No mammalian species were observed on the Riverplace housing area during the 2009 natural resources survey (U.S. Navy 2011).

The House Finch was the only bird species observed within the Riverplace housing area during the 2009 natural resources inventory (U.S. Navy 2011).

No reptiles or amphibians were documented in the Riverplace housing area during the 2009 natural resources inventory (U.S. Navy 2011).

No invertebrate species were documented in the Riverplace housing area during the 2009 natural resources inventory (U.S. Navy 2011).

7.2.14.4 Special Status Species Management

The first survey for special status species was conducted during the 2009 natural resources survey of NBSD housing areas. No special status species were observed on the Riverplace housing area during the 2009 survey (U.S. Navy 2011).

7.2.14.5 Exotic and Invasive Species Management

No invasive species were identified at the Riverplace housing area during the 2009 natural resources inventory (U.S. Navy 2011).

7.2.15 Terrace View Villas Housing Area

7.2.15.1 Watershed Management

Soils

The NRCS mapped four soil types on the Terrace View Villas housing area (NRCS 2011). Soils at Terrace View consist of:

Redding cobbly loam (ReE). Approximately 54.4 percent of the Terrace View Villas housing area is comprised of ReE with slopes of 9 to 30 percent.

Made Land (Md). Approximately 45.1 percent of the Terrace View Villas housing area is comprised of Md.

Terrace escarpments (TeF). Approximately 0.4 percent of the Terrace View Villas housing area is comprised of TeF.

Redding-Urban land complex (RhC). Approximately 0.1 percent of the Terrace View Villas housing area is comprised of RhC with slopes of 2 to 9 percent.

Water Quality

All water used by Terrace View housing is supplied by the City of San Diego.

7.2.15.2 Habitat Management

Vegetation and Wildlife Habitat

For a complete listing of terrestrial floral species observed on Terrace View, see **Appendix G**.

The Terrace View Villas housing area contains approximately 5 acres of open space broken into two areas located on the southeastern corner of the site and a smaller area on the southwestern corner (U.S. Navy 2011). The vegetation communities documented within the open space areas include disturbed coastal sage scrub, non-native grassland and non-native vegetation (see **Figure 7-26**) (U.S. Navy 2011). Forty-nine species of plants were documented within the Terrace View Villas housing area during the 2009 natural resources inventory; of those, approximately one half of the plant species are native (U.S. Navy 2011).

The southeastern open space area consists of disturbed coastal sage scrub surrounded by non-native grassland and non-native vegetation (U.S. Navy 2011). The dominant plant species include California sagebrush, California adolphia (*Adolphia californica*), garland, foxtail chess (*Bromus madritensis*), coastal cholla, and fountain grass (U.S. Navy 2011). While the open space area in the southwestern corner consists of mostly disturbance-related species that are located along a drainage seep associated with the housing area (U.S. Navy 2011). The dominant plant species include pampas grass, castor bean (*Ricinus communis*), western ragweed, fountain grass, wild oat, bromes, and mustards (U.S. Navy 2011). However, a few native species surround the drainage and include black sage, California sagebrush, and mule fat (U.S. Navy 2011).

Wetlands and Floodplains

No wetlands or other waters of the U.S. occur within the Terrace View Villas housing area (U.S. Navy 2011).

Marine Habitats

The Terrace View Villas housing area contains only upland habitat and is completely landlocked; therefore, no marine habitats occur within the housing area.

Critical Habitat

There is no designated critical habitat for any of the listed species in Terrace View Villas.

Other Regulatory or Habitat Planning Designation

There are no other regulatory or habitat planning designations within the Terrace View Villas housing area.



Source: ESRI ArcGIS Online and data partners, U.S. Navy
 Disclaimer: Maps do not represent legal boundaries. Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 7-26: Terrace View Villas Housing Area Vegetation and Invasive Species*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.

7.2.15.3 Fish and Wildlife Management

For a complete listing of terrestrial faunal species observed on Terrace View, see **Appendix G**.

Invertebrate species observed within the Terrace View Villas housing area during the 2009 natural resources inventory include jumping spiders, spittle bugs, and bees (U.S. Navy 2011).

Reptilian and amphibian species observed within the Terrace View Villas housing areas during the 2009 natural resources inventory include the western fence lizard and the Belding's orange-throated whiptail (U.S. Navy 2011).

Native bird species observed within the Terrace View Villas housing area during the 2009 natural resource inventory include the Mourning Dove, Common Raven, and the House Finch (U.S. Navy 2011).

Mammalian species observed within the Terrace View Villas housing areas during the 2009 natural resources inventory include the coyote and the northern raccoon (U.S. Navy 2011).

7.2.15.4 Special Status Species Management

The first survey for special status species was conducted during the 2009 natural resources survey of NBSD housing areas. Special status species observed at the Terrace View Villas housing area during the survey include California adolphia, San Diego barrel cactus, San Diego viguiera, and the Belding's orange-throated whiptail (see **Figure 7-27**). Additionally, the Coastal California Gnatcatcher was observed in the open area east of the housing area. For objectives and strategies for managing special status species see **Section 7.3.4.2**.

7.2.15.5 Exotic and Invasive Species Management

A total of 0.4 acres of invasive plant cover was observed within the Terrace View Villas housing area (see **Figure 7-26**) (U.S. Navy 2011). The invasive species occurring in the southeastern open space area include foxtail chess and fountain grass. The open space area in the southwestern corner consists of disturbance-related species along a drainage seep and include pampas grass, castor bean, western ragweed, fountain grass, wild oat, bromes, and mustards (U.S. Navy 2011).

7.2.16 Woodlake Housing Area

7.2.16.1 Watershed Management

Soils

Approximately 100 percent of the Woodlake housing area is comprised of Grangeville fine sandy loam soils with slopes of 0 to 2 percent. The Grangeville series consists of very deep, somewhat poorly drained soils that formed in moderate coarse textured alluvium dominantly from granitic rock sources. Grangeville soils are on alluvial fans and floodplains and have slopes ranging from 0 to 2 percent. This soil is somewhat poorly drained, has negligible to very low runoff and moderately rapid permeability (NRCS 2011).

Water Quality

All water used by Woodlake housing is supplied by the Padre Dam Municipal Water District.



Figure 7-27: Terrace View Villas Housing Area Special Status Species*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.

7.2.16.2 Habitat Management

Vegetation and Wildlife Habitat

The Woodlake housing area supports ornamental vegetation typical of residential landscaping and is mapped as Developed/Ornamental (U.S. Navy 2011) (see **Figure 7-28**).

Wetlands and Floodplains

No wetlands or other waters of the U.S. occur within the Woodlake housing area (U.S. Navy 2011).

Marine Habitats

The Woodlake housing area contains only upland habitat and is completely landlocked; therefore, no marine habitats occur within the housing area.

Critical Habitat

There is no designated critical habitat for any of the listed species in Woodlake housing area.

Other Regulatory or Habitat Planning Designation

There are no other regulatory or habitat planning designations within the Woodlake housing area.

7.2.16.3 Fish and Wildlife Management

No invertebrate species were documented in the Woodlake housing area during the 2009 natural resources inventory (U.S. Navy 2011).

No reptiles or amphibians were documented in the Woodlake housing area during the 2009 natural resources inventory (U.S. Navy 2011).

Native bird species observed within the Woodlake housing area during the 2009 natural resource inventory include the Mourning Dove, Anna's Hummingbird, Black Phoebe, Wrentit, California Towhee, Hooded Oriole, Lesser Goldfinch and the House Finch (U.S. Navy 2011).

No mammalian species were observed on the Woodlake housing area during the 2009 natural resources survey (U.S. Navy 2011).

7.2.16.4 Special Status Species Management

The first survey for special status species was conducted during the 2009 natural resources survey of NBSD housing areas. No special status species were observed on the Woodlake housing area during the 2009 survey (U.S. Navy 2011).

7.2.16.5 Exotic and Invasive Species Management

No invasive species were identified at the Woodlake housing area during the 2009 natural resources inventory (U.S. Navy 2011).



Source: (c) 2009 Microsoft Corporation and its data suppliers, U.S. Navy 2011
 Disclaimer: Maps do not represent legal boundaries. Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 7-28: Woodlake Housing Area Location*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.

7.2.17 Naval Base San Diego Housing Area and Pacific Beacon Housing Area

Pacific Beacon Housing Area on NBSD Main Site

Based on key provisions in the Pacific Beacon Ground Lease (see **Figure 7-29**), the Lessee (Clark) has several important responsibilities with regard to the leased land, pertaining to natural resources. First, it is important to note that, per Pacific Beacon Ground Lease Section 1.1, that the subject land is leased “exclusively” to Clark, for Clark’s use and possession. Per Pacific Beacon Ground Lease Sections 1.2 and 1.3, the Government granted and conveyed to Clark “all of the Government’s right, title and interest” in the improvements existing on the leased land as of the time of lease execution, and provided that the improvements to be constructed were to belong to the Lessee. The Lessee’s key responsibilities with regard to the subject leased land include the following: Lessee shall comply with all applicable Environmental Laws (Pacific Beacon Ground Lease Section 11.1, also see Section 13.1, stating that Lessee shall at all times during the lease term faithfully observe and comply with the provisions of all Applicable Laws, particularly those provisions concerning (among other topics) the protection of the environment); Lessee is to use all commercially reasonable efforts to protect the environment and natural resources in accordance with all Environmental Laws (Pacific Beacon Ground Lease Section 11.16); Lessee shall be liable for a violation of applicable Environmental Laws, for damage caused by Lessee and arising from Lessee’s activities (in accordance with the Lease terms) (Pacific Beacon Ground Lease Section 11.18); Lessee is to take certain actions to protect bird species and nests, in accordance with the Migratory Bird Treaty Act (Pacific Beacon Ground Lease Section 11.25); all landscape species utilized by Lessee on the leased land must be consistent with the Naval Base San Diego Integrated Natural Resources Management Plan (Pacific Beacon Ground Lease Section 11.26); Lessee shall, at all times during the lease term and at no expense to the Government, protect, preserve, maintain, and repair the Project and keep it in good order and condition (reasonable wear and tear and damage by casualty excepted) (Pacific Beacon Ground Lease Section 12.1); and on or before expiration of the lease term, Lessee is to abandon the Project in good, clean order and repair (ordinary wear and tear excepted) (Pacific Beacon Ground Lease Section 10.2).

Accordingly, for the Pacific Beacon project leased land, the Navy notes that the Lessee has exclusive possession of the land, and is the owner of all of the improvements (those existing at the time of lease execution and those improvements constructed by the Lessee). Lessee also has the important responsibilities listed above with regard to natural resources issues. Lessee will retain these responsibilities until termination of the ground lease (lease termination date is December 14, 2056), at which time the Lessee is to abandon the project in good, clean order and repair. Thus, for natural resources issues that may arise for the Pacific Beacon project at Naval Base San Diego, questions should be directed to the Lessee (Clark) in accord with the Lessee’s exclusive possession of the leased land and ownership of all improvements, and per the Lessee’s responsibilities as set forth above. If appropriate, the Government will work with the Lessee, and any regulatory agency, for natural resources issues that may arise with respect to the leased land.

As set forth in the Pacific Beacon Ground Lease, “Lessee shall not construct or make, or permit its sublessees or assigns to construct or make, any substantial alterations, additions or improvements to or installations upon or otherwise modify or alter the Project in any way which could reasonably be expected to materially and adversely affect human health or the environment without the prior written approval of the Government.” (Pacific Beacon Ground Lease, Section 11.20). Such consent is provided in the form of a “Site Approval Request” or “SAR”.

Further, the Government intends to conduct ongoing informal communication with the Lessee regarding natural resources issues that arise during the lease term.



Source: (c) 2009 Microsoft Corporation and its data suppliers, U.S. Navy 2011
 Disclaimer: Maps do not represent legal boundaries. Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 7-29: Pacific Beacon Housing Area Location*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.

7.2.17.1 Watershed Management

Soils

Approximately 100 percent of the soils at the Naval Base San Diego housing area are made land.

Water Quality

All water used by Naval Base San Diego housing is supplied by the City of San Diego.

7.2.17.2 Habitat Management

Vegetation and Wildlife Habitat

The Naval Base San Diego housing area supports ornamental vegetation typical of residential landscaping and is mapped as Developed/Ornamental (U.S. Navy 2011) (see **Figure 7-30**).

Wetlands and Floodplains

No wetlands or other waters of the U.S. occur within the Naval Base San Diego housing area (U.S. Navy 2011).

Marine Habitats

The Naval Base San Diego housing area is completely landlocked; therefore, no marine habitats occur within the housing area.

Critical Habitat

There is no designated critical habitat for any of the listed species in Naval Base San Diego.

Other Regulatory or Habitat Planning Designation

There are no other regulatory or habitat planning designations within the Naval Base San Diego housing area.

7.2.17.3 Fish and Wildlife Management

No invertebrate species were documented in the Naval Base San Diego housing area during the 2009 natural resources inventory (U.S. Navy 2011).

No reptiles or amphibians were documented in the Naval Base San Diego housing area during the 2009 natural resources inventory (U.S. Navy 2011).

Native bird species observed at the Naval Base San Diego housing area during the 2009 natural resource inventory include the Mourning Dove, Black Phoebe, Wrentit, and the House Finch (U.S. Navy 2011).

No mammalian species were observed on the Naval Base San Diego housing area during the 2009 natural resources survey (U.S. Navy 2011).



Source: (c) 2009 Microsoft Corporation and its data suppliers, U.S. Navy 2011
 Disclaimer: Maps do not represent legal boundaries. Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 7-30: Naval Base San Diego Housing Area Location*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.

7.2.17.4 Special Status Species Management

The first survey for special status species was conducted during the 2009 natural resources survey of NBSD housing areas. No special status species were observed on the Naval Base San Diego housing area during the 2009 survey (U.S. Navy 2011).

7.2.17.5 Exotic and Invasive Species Management

No invasive species were identified at the Naval Base San Diego housing area during the 2009 natural resources inventory (U.S. Navy 2011).

7.3 Natural Resources Management

7.3.1 Watershed Management

Watershed management is important to natural resources management because it directly affects both surface water and groundwater quality and is critical to maintaining valuable aquatic habitats.

Healthy soils are the foundation of a healthy ecosystem. As soils lose their structure and begin to erode, other systems also begin to fail. Vegetation and wildlife decline in numbers and diversity, and the quality of surface water declines as it becomes loaded with eroded sediments. Some soil types, such as those found at NBSD, took centuries to develop and are not easily replaced or repaired if lost or damaged. Inherent in the clay and sandy nature of NBSD's soils is a risk of significant erosion when vegetation is removed or soil structures are disturbed. The fragile nature of these soils make the protection of NBSD's soils vital for maintaining many of the functional systems that make up a healthy ecosystem.

Specific Concerns

- Development/anthropogenic disturbances.

Current Management

OPNAVINST 5090.1D requires that installation sources of dust, runoff, silt, and erosion debris be controlled to prevent damage to land, water resources, equipment, and facilities, including adjacent properties. An erosion-and-sediment-control plan must be implemented where appropriate. Maintenance of vegetative cover is consistent with ecosystem management goals expressed earlier. Other materials can be used including gravel, fabrics, riprap, and recycled concrete and pavement that are environmentally safe and compatible with the site. However, bioengineered stabilization should be considered prior to hard structures. Placing fill materials into waters of the U.S., including wetlands is a regulated activity and using bioengineered bank stabilization could mean an easier permitting process (CWA 404/401) and/or potentially no mitigation requirements. Where bare ground is necessary, other measures for dust, sedimentation, and erosion control should be implemented (e.g., check dams, windbreaks, diversions). To minimize land maintenance expenditures and help ensure environmental compliance, physically intensive activities should be located on those areas least susceptible to erosion. The erosion potential of a site and adjacent water resources need to be identified and analyzed in preparing development, training, and land use plans.

Management Objective and Strategy

Objective: Protect soils by maintaining soils and reducing runoff, erosion, and gully formation, and implement appropriate BMPs.

Strategies:

1. Develop and include an Erosion Control Plan. Include erosion control BMPs within the plan.
2. Educate landscaping personnel on erosion and sedimentation BMPs and watershed protection issues once the Erosion Control Plan is completed. Inform PPV that an Erosion Control Plan was developed and is available for use by PPV if so desired.
3. Annually review erosion control BMPs to ensure that they are still adequate to control adverse erosion and sedimentation on NBSD. Conduct surveys to determine whether activities on NBSD are adversely impacting soil and water resources as a result of erosion and sedimentation on Navy-retained portions of NBSD housing areas.

7.3.2 Habitat Management

7.3.2.1 Vegetation and Wildlife Habitat

Habitat management is a broad term that encompasses a whole range of management issues that affect fish and wildlife, threatened and endangered species, and ecosystem goals.

Specific Concerns

- Invasive species encroaching on native species habitats.
- Altered fire regime.
- Development/anthropogenic influence.
- Erosion and sedimentation from either anthropogenic or natural causes.
- Climate change (e.g., changes in temperature or sea level rise).
- Overuse, or improper use, of fertilizers.

Current Management

Management of native habitats at NBSD includes their enhancement by the removal of invasive exotic plant species and planting of native species, as well as habitat restoration of disturbed areas. Removal of invasive exotic plants, planting of native species, and habitat restoration activities are conducted through coordination with the NAVFAC SW biologist.

Management Objective and Strategy

Objective: Develop and implement a program for natural land and habitat restoration and rehabilitation.

Strategies:

1. Continue invasive and noxious weed identification and control as necessary.
2. Support PPV personnel at the housing areas to implement management strategies that adhere to Federal and state laws (including but not limited to, the ESA and MBTA) at the NBSD housing areas.
3. Develop specifications and standards for reseeded/revegetation of disturbed sites for use in contracts, maintenance, and other projects.

4. Annually review program to make certain it still meets ecosystem management goals.

7.3.2.2 Wetlands and Floodplains

The Federal no net loss policy for wetlands is the principle by which counties, agencies, and governments strive to balance unavoidable habitat, environmental and resource losses with replacement of those items on a project-by-project basis so that further reductions to resources may be prevented. Avoidance, minimization, or compensatory mitigation may be required through the permitting process to offset any impacts to waters of the U.S., including wetlands. Waters of the U.S., including wetlands, management strategies vary depending primarily on the resource classification, which is determined by the value of a particular waters of the U.S., including wetland areas. A waters of the U.S., including wetlands', value is decided by the quality of the functions and services it provides or has the potential to provide, including its biomass production, habitat, erosion control, storm water storage, water quality protection, aquifer recharge potential, and low flow augmentation. Some of the factors used to measure the quality of these functions are the size, its location in the watershed, the amount of development in the watershed, vegetative structure and composition, rate of water flow, the size of natural buffers, and surrounding land uses. Regardless of the habitat value, waters of the U.S., including wetland, areas are almost always poor choices for building sites or for most activities, other than providing non-consumptive enjoyment of the outdoors. Installation natural resources staff will ensure during the program/project review process that program/project managers are aware of the laws and regulations and permitting process regarding the protection of waters of the U.S., including wetlands.

The major goal in wetland and floodplain management is to minimize the impact that NBSD has on wetlands and floodplains. The natural resources staff strives to maintain the existing functions and services of the all wetlands and non-wetland waters of the U.S. located on NBSD. When possible, wetlands and non-wetland waters of the U.S. may be rehabilitated to increase the functions and services these resources provide within the ecosystem and to society. It is also the goal to maximize floral diversity of wetland communities, which, in turn, maximizes the faunal diversity of the ecosystem. Through achieving these goals, natural resources managers at NBSD can manage for no net loss of wetland and floodplain acreage, functions, and services.

Specific Concerns

- Development/anthropogenic disturbances.
- Invasive species encroaching into wetland habitat.
- Climate change.
- Erosion and sedimentation from either anthropogenic or natural causes.
- Pollution.

Current Management

According to OPNAVINST 5090.1C CH-1, the Navy will comply with the national goal of no net loss of wetlands, and will avoid loss of size, function and value of wetlands. The following jurisdictional wetlands and non-wetland waters of the U.S. were identified during the 2009 NBSD housing area surveys (**Table 7-2**):

Table 7-2: Wetlands and Non-wetland Waters of the U.S. on Naval Base San Diego Military Housing Areas

Housing Area	Wetlands	Non-Wetland Waters of the U.S.
Bayview Hills	0.02 acres	0.33 acres
Chollas Heights	0.10 acres	0.05 acres
Murphy Canyon Heights	0.10 acres	0.25 acres
Pomerado Terrace	1.63 acres	0.50 acres

Source: U.S. Navy 2011

Jurisdictional delineations for waters of the U.S. are conducted as needed at the NBSD housing areas based development initiatives. As long as delineations are conducted and associated Jurisdictional Determinations are obtained on NBSD on a regular basis and information from the delineations is maintained in the GIS database, management of wetlands should not pose an issue at NBSD.

Management Objective and Strategy

Objective: Avoid impacts to wetlands and non-wetland waters of the U.S. located on NBSD to the maximum extent practicable while maintaining the existing functions and services of these resources.

Strategies:

1. Update the water resource inventory data, including wetland distribution and categories.
2. Conduct Environmental Review for activities that could affect wetlands.
3. Plan development and training activities to avoid waters of the U.S., including wetland impacts to the maximum extent possible and mitigate unavoidable impacts on functions, and size, and services.
4. Remain in compliance with the CWA and implement procedures to manage for a no net loss of wetland and floodplain acreage, functions, and services. Support PPV personnel at the housing areas to implement management strategies that adhere to Federal and state laws (including but not limited to, the ESA and MBTA) at the NBSD housing areas.
5. Reduce habitat fragmentation and control the spread of invasive species.
6. Annually review the natural resources management program and implement adaptive management techniques to ensure that management actions do not adversely impact wetlands.
7. Implement erosion control BMPs to avoid adverse environmental impacts to wetlands.

7.3.2.3 Wildland Fire

Federal wildland fire policy requires that all Federal lands with burnable vegetation have a fire plan and resources to safely mitigate losses. This policy was adopted by the DoD Wildland Fire Policy Working Group in 1996. DoD fire policy was developed by DoD Instruction 6055.06 Fire and Emergency Services Program.

Specific Concerns

- Loss of habitat due to uncontrolled fire, species include the spiny redberry (host plant for the Hermes copper butterfly), and habitat for the Coastal California Gnatcatcher and Least Bell's Vireo.

Current Management

A Wildland Fire Management Plan was developed for MGRF, Murphy Canyon Housing Area, and Chollas Heights Housing Area in August of 2010. The purpose of the FMP is to reduce wildfire potential, protect Navy assets, protect and enhance natural resources, and implement goals and objectives for the wildland fire management program. The FMP describes fire attributes and fuels for lands on and surrounding MGRF, Murphy Canyon Housing Area, and Chollas Heights Housing Area and guidance for managing fire at these two housing areas. Specific provisions within the plan for management include the following:

- Use of ignition-resistant design and building materials
- Removal of leaves, twigs and other combustible debris from roofs and gutters
- Removal of flammable trees within 100 feet of housing structure
- Keeping access roads clear of fallen debris.

Management Objective and Strategy

Objective: Support a Wildland Fire Management Program to protect high-value natural resources areas from catastrophic wildfire while conserving resources and military operational flexibility.

Strategies:

1. Develop and implement an FMP for MGRF. The purpose of the FMP is to reduce wildfire potential, protect Navy assets, protect and enhance natural resources, and implement goals and objectives for the wildland fire management program. The FMP should also describe fire attributes and fuels for lands on and surrounding MGRF, and guidance for managing fire at MGRF.
2. Educate the MGRF community about wildland fire. This can be accomplished through posting fire prevention signs around MGRF, and developing fire prevention messages and handouts for Navy personnel.
3. Educate the surrounding MGRF community about wildland fire through participation on local fire-wise councils, through posting signage around the facility, and developing and distributing educational materials to recreational users of MGRF concerning wildland fire.
4. Once developed, annually review the MGRF FMP and update the plan according to DoD Instruction 6055.06.

7.3.3 Fish and Wildlife Management

7.3.3.1 General Fish and Wildlife Management

For the purposes of this INRMP, wildlife management is defined as manipulation of the environment and wildlife populations to produce desired objectives. The primary goal of wildlife management at NBSD is

to maintain wildlife populations at levels compatible with land use objectives while promoting the existence, importance, and benefits of nongame species.

The basis of managing a rich assemblage of nongame wildlife is to provide a mosaic of habitats that are structurally and biologically diverse. In managing for a diversity of habitats and diversity within those habitats, the potential exists for numerous species to be found. NBSD should employ these techniques for managing wildlife.

Monitoring Wildlife. Creating, monitoring, and updating GIS data on wildlife species will allow NBSD to store, retrieve, present, and analyze the data to make informed management decisions.

Managing for Migratory Birds. The MBTA provides for a year-round closed season for nongame birds and prohibits the taking of migratory birds, nests, and eggs, except as permitted by the USFWS. Impacts on birds protected under the MBTA will be avoided through surveying for nesting birds in areas proposed for disturbance and, if necessary, waiting until the nesting and fledging process is complete. Alternatively, the USFWS recommends that conducting activities outside of nesting areas or outside of the general migratory bird-nesting season can help avoid direct impacts.

Protecting Sensitive Areas. NBSD should maintain biological diversity by protecting, to the extent practicable, sensitive areas that provide unique habitat niches. Protection measures might include restricting vehicle movement, and protecting habitats of exceptional biological value by establishing protective buffers and maintaining healthy and diverse ecosystems.

Specific Concerns

- Improper use of pesticides.
- Habitat loss.
- Invasive species.
- Climate change.
- Predators.
- Fire.

Current Management

Opportunities for the management of fish and wildlife species on NBSD housing areas are primarily accomplished by managing habitats. NBSD natural resources personnel coordinate with CDFW and USFWS to identify, prioritize, and implement habitat enhancement projects targeted for particular species or groups of species (e.g., birds). Projects to manage wildlife habitat include invasive plant control, enhancing and protecting wetlands, and conducting surveys (e.g., migratory nesting bird survey).

Habitat loss has a direct correlation to a decline or loss of fish and wildlife populations. Installation INRMPs are meant to be used as tools in operational, training, and construction planning endeavors to minimize or prevent loss of habitat, thus preserving species diversity and populations at respective installations.

Management Objective and Strategy

Objective: Employ a systematic approach to managing wildlife resources, using a process that includes inventory, monitoring, modeling, management, assessment, and evaluation.

Strategies:

1. Provide training opportunities for PPV personnel on the goals and objectives contained within this INRMP for fish and wildlife management if so desired.
2. Continue documenting nongame species that are incidentally observed during surveys on Navy-retained portions of NBSD housing areas.
3. Survey for and monitor herpetofauna populations using guidelines recommended by PARC.
4. Install bird and bat boxes where feasible around housing communities.
5. Revegetate areas with native species using species on the NAVFAC SW recommended plant list.
6. Control the spread of invasive species.

7.3.3.2 Invertebrate and Pollinator Management**Specific Concerns**

- Improper use of pesticides.
- Development/anthropogenic disturbances.
- Invasive species (flora and fauna).
- Habitat loss and/or changes.
- Erosion and sedimentation.
- Climate change.
- Fire.

Current Management

Natural resources managers are not currently managing for pollinator species at NBSD housing areas.

Management Objective and Strategy

Objectives: Maintain and enhance pollinator populations and their habitat when not in conflict with health and safety, or the military mission.

Strategies:

1. Develop and distribute outreach and education materials on pollinators.
2. Revegetate with native species contained on the NAVFAC SW recommended plant list.
3. Control the spread of invasive species.

7.3.3.3 Birds and Migratory Bird Management

The MBTA (16 U.S.C. 703-712) protects all migratory birds and prohibits the direct taking of migratory birds, their young, nests, and eggs, except as permitted by the USFWS. The USFWS recommends that NBSD avoid impacting birds protected under the MBTA by surveying for nesting birds in areas proposed for disturbance and if necessary, waiting until the nesting and fledging process is complete. Alternatively, the USFWS recommends conducting activities outside of nesting areas or outside of the general migratory bird-nesting season that extends from mid-February through the end of August, to help avoid direct impacts.

The MBTA implements various treaties and conventions between the U.S. and Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Under the MBTA, taking, killing, or possessing migratory birds is unlawful.

Prohibited Acts: Unless permitted by regulations, the MBTA provides that it is unlawful to pursue, hunt, take, capture, or kill; attempt to take, capture, or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or receive any migratory bird, part, nest, egg or product, manufactured or not.

On March 15, 2005, the USFWS published in the Federal Register (FR 70(49):12710-12716) a final list of the bird species to which the MBTA does not apply because they are not native to the United States and have been introduced by humans everywhere they occur in the nation. The list is required by the Migratory Bird Treaty Reform Act of 2004. The actual list of migratory birds protected by the MBTA is published in the CFR (Title 50, Part 10.13). When it became law in 2004, the Reform Act excluded any species not specifically included on the Title 50, Part 10 list from protection.

In addition, DoD and the USFWS entered into an MOU in July 2006, to Promote the Conservation of Migratory Birds, in accordance with EO 13186, Responsibilities of Federal Agencies to Protect Migratory Birds (DoD 2007). This MOU describes specific actions that should be taken by DoD to advance migratory bird conservation; avoid or minimize the take of migratory birds; and ensure DoD operations other than military readiness activities are consistent with the MBTA. The MOU also describes how the USFWS and DoD will work together cooperatively to achieve these ends. The MOU does not authorize the take of migratory birds; the USFWS, however, may develop incidental take authorization for Federal agencies that complete an EO MOU.

Specific Concerns

- Development/anthropogenic disturbances.
- Invasive species (flora and fauna).
- Habitat loss and/or changes.
- Erosion and sedimentation.
- Climate change.
- Fire.
- Predation.

Current Management

Migratory birds on NBSD are managed according to the provisions in the 2006 MOU between DoD and USFWS.

Management Objective and Strategy

Objective: Maintain and enhance populations, and nesting and foraging habitats of migratory birds on NBSD.

Strategies:

1. Develop effective management for minimizing the unintentional take of migratory birds.

2. Conduct regular (approximately every 2 years) surveys to determine what species of migratory birds may have potential to be on Navy-retained portions of NBSD housing areas.
3. Once finalized, implement monitoring protocols contained within the DoD Coordinated Bird Monitoring Plan. Contribute to date to the Coordinated Bird Monitoring Database.
4. Develop and make available outreach and education materials on migratory birds to housing residents and PPV staff.
5. Revegetate with native species contained on the NAVFAC SW recommended plant list.
6. Control the spread of invasive species
7. Participate in DoD Partners in Flight initiative.
8. Ensure feral cats and cat colonies are eliminated from NBSD installations per SECNAVINST 6401.1A.

7.3.3.4 Bird/Wildlife Aircraft Strike Hazard

Not applicable to NBSD housing areas due to a lack of flight operations.

7.3.4 Special Status Species

Special status species include those species that are federally listed endangered, threatened, or candidate; state listed endangered, threatened, candidate or species of special concern; Birds of Conservation Concern; and plants identified by the CNPS as having a California Rare Plant Rank. **Figure B-2 in Appendix B** provides an illustration of the hierarchy for special status species as used in this INRMP.

Table 7-3 includes those species observed at the NBSD housing areas during the 2009 natural resources survey (U.S. Navy 2011).

7.3.4.1 Federal Listed Species

Coastal California Gnatcatcher

The Coastal California Gnatcatcher is a federally threatened species and a CDFW species of special concern. The Coastal California Gnatcatcher is a small, slate colored bird with a long, black tail that is edged and tipped with white, which it flicks erratically as it perches. The bird has a distinct kitten-like mewing call, which helps distinguish the California Gnatcatcher from the Blue Grey Gnatcatcher. During the breeding season, the male develops a black cap that distinguishes it from the female. The Coastal California Gnatcatcher is a non-migratory songbird found on the coastal slopes of southern California. It ranges from Ventura County south to northwest Baja California, Mexico. The breeding season of the Coastal California Gnatcatcher extends from late February through August with the peak of nesting occurring from mid-March through mid-May. The breeding territory size of the Coastal California Gnatcatcher ranges from 2 to 14 acres, with home ranges expanding from 13 to 39 acres during the non-breeding season. Nest parasitism by brown-headed cowbirds has been documented. Typically, there is a high rate of nest failure each breeding season. This is offset by rapid and persistent re-nesting efforts; a breeding pair may attempt to nest as many as 10 times in a year, producing up to three successful broods in a season. There is evidence that this bird is also susceptible to nest predation by various animals such as snakes, coyotes, fox, rodents, and other birds, such as Western Scrub-jays.



Credit: U.S. Fish and Wildlife Service

Table 7-3: Special Status Species Observed or Have the Potential to Occur at NBSD Housing Areas

Common Name	Scientific Name	Federal Status	State Status	Housing Area
Plants				
San Diego button celery	<i>Eryngium aristulatum</i> var. <i>parishii</i>	FE	SE, CNPS Rank 1B,1	Chollas Heights
San Diego barrel cactus	<i>Ferocactus viridescens</i>	--	CNPS Rank 2.1	Chollas Heights Howard Gilmore Murphy Canyon
Graceful tarplant	<i>Holocarpha virgata</i> ssp. <i>elongata</i>	---	CNPS Rank 4.2	Chollas Heights Murphy Canyon
San Diego goldenstar	<i>Muilla clevelandii</i>	--	CNPS Rank 1B	Murphy Canyon
San Diego mesa mint	<i>Pogogyne abramsii</i>	FE	SE, CNPS Rank 1B	Murphy Canyon
San Diego viguiera	<i>Viguiera laciniata</i>	--	CNPS Rank 4.2	Chollas Heights Howard Gilmore Murphy Canyon
Birds				
Southern California Rufous-Crowned Sparrow	<i>Aimophila ruficeps</i> <i>canescens</i>	--	WL	Howard Gilmore Murphy Canyon
Coastal California Gnatcatcher	<i>Polioptila californica</i> <i>californica</i>	FT	SSC	Chollas Heights Eucalyptus Ridge Howard Gilmore Murphy Canyon
Least Bell's Vireo	<i>Vireo bellii pusillus</i>	FE	SE	Chollas Heights
Reptiles				
Belding's orange-throated whiptail	<i>Aspidoscelis hyperythrus</i> <i>beldingi</i>	--	SSC	Eucalyptus Ridge Murphy Canyon
Invertebrates				
San Diego fairy shrimp	<i>Branchinecta sandiegonensis</i>	FE	--	Chollas Heights Murphy Canyon
Hermes copper butterfly	<i>Hermelycaena hermes</i>	FC	--	Eucalyptus Ridge* Mission Gorge Recreational Facility

Source: U.S. Navy 2011, CDFG 2011a, CDFG 2011b

Note: Species with * have the potential to occur but are not known to occur at NBSD.

Key:

Federal Status: FE = Federal Endangered, FT = Federal Threatened, FC = Federal Candidate, BCC = Birds of Conservation Concern

State Status: SE = State Endangered, ST = State Threatened, SSC = Species of Special Concern, WL = Watch List, FP = Fully Protected, CNPS = California Native Plant Society, List 1B = Rare, threatened, or endangered in California and elsewhere. 0.1: Seriously threatened in California, CNPS List 2.1 = List 2: Rare, threatened, or endangered in California, but more common elsewhere. 0.1: Seriously threatened in California, CNPS List 4.2 = Limited distribution (Watch list). 0.2: Moderately threatened in California.

* Species is not known to occur, but has the potential to occur based on U.S. Navy 2011.

Objective: Minimize the potential for adverse effects to the Coastal California Gnatcatcher from maintenance activities conducted at the housing areas.

Strategies:

1. Make available education opportunities to housing residents and PPV personnel who might have contact with the Coastal California Gnatcatcher, their habitat, or nests.
2. Develop and implement Gnatcatcher specific conservation and monitoring measures for each housing area where the Coastal California Gnatcatcher nests or has been observed.
3. Conduct regular (approximately every 2 years) surveys for Coastal California Gnatcatcher individuals, or nests, that may be present on Chollas Heights, Eucalyptus Ridge, Howard Gilmore, and Murphy Canyon Heights housing areas. Once surveys are completed, incorporate survey data into this INRMP.

San Diego Button Celery

The San Diego button celery is a federally and state-listed endangered species, and on the CNPS list 1B. This species is a small, low-spreading, green flowered bi-annual herb in the Apiaceae (parsley/carrot) family. It is restricted to southern coastal California, with few occurrences in northern Baja California, Mexico. The species is closely associated with ephemeral vernal pool habitat on clay soils. San Diego button celery is variously associated with other federally listed vernal pool species including California Orcutt grass, San Diego mesa mint, Otay Mesa mint, spreading navarretia, San Diego fairy shrimp and Riverside fairy shrimp (*Streptocephalus woottoni*). San Diego button celery is a biennial or longer lived perennial gray-green herb that has a storage tap-root. It has a spreading shape and reaches a length of 16 inches (40 centimeters). The stems and lanceolate leaves give the plant a prickly appearance. It is a clay soil, surface and non-surface hard pan, vernal pool obligate and relies on ephemerally wet conditions to reproduce and blooms from April to June. It reproduces exclusively by seeds. San Diego button celery seems more tolerant of peripheral vernal pool habitat than most obligate vernal pool species.



Credit: Greg mason-CalPhotos

The historical distribution of San Diego button celery habitat included a coastal swath in Baja California, Mexico, north to Los Angeles County, California in the United States. San Diego button celery was federally listed as endangered on August 3, 1993 and at that time was found in Riverside County, San Diego County at Otay Mesa, Kearny Mesa, Del Mar Mesa, Marine Corps Air Station Miramar, and Marine Corps Base Camp Pendleton, and in northern Baja California, Mexico. By 1998, San Diego button celery continued to exist in approximately 61 vernal pool complexes in the United States. San Diego button celery currently occurs in 14 geographic areas in Riverside and San Diego Counties. The majority of the occupied range of the taxon in the United States occurs in 10 regional locations in San Diego County including Marine Corps Base Camp Pendleton, Carlsbad, San Marcos, Ramona, Del Mar Mesa, Carmel Mountain, Mira Mesa, MCAS Miramar, Otay Lakes, and Otay Mesa. This species can be locally abundant in remnant vernal pools; however, the distribution of this variety has been dramatically reduced due to loss of vernal pool habitat in San Diego County. Habitat loss remains as the primary threat to occurrences of San Diego button celery. Loss of habitat from development is considered a primary contributor to vernal pool species loss throughout California, and specifically to vernal pools in southern California.

Objective: Increase population and distribution of San Diego button celery at the Chollas Heights housing area.

Strategies:

1. Conduct periodic monitoring (recommend at least annually) to determine existing population health.
2. Perform a vulnerability assessment to assess threats to existing populations.
3. Complete the NEPA/SAR process to avoid/minimize adverse impacts (e.g., threats).
4. Conduct vegetation management, including invasive species control, to keep cover down.
5. Incorporate San Diego button celery into revegetation projects, as appropriate.

San Diego Mesa Mint

The San Diego mesa mint is a federally and state-listed endangered species, and on the CNPS list 1B. It is an annual herb in the Lamiaceae (mint) family that is restricted to vernal pools in southern California. Plants can reach 1 foot (30 centimeters) or more in height and flowers are arranged in whorls that typically bloom in May or June though occasionally early July. The plant usually gives off a strong, sweet mint odor. Vernal pools containing San Diego mesa mint typically occur on gravelly loams that are saturated or inundated seasonally, subsequently dry out and remain dry for about 6 to 8 months during the summer. The surface substrates are underlain by a subsoil of clay, or by a hardpan layer that prohibits drainage and creates a perched water that forms the vernal pool. These are well-drained gravelly loams that have gravelly clay



Credit: Barry Du Bois-CalPhotos

subsoil and a hardpan. San Diego mesa mint seeds germinate depending on the inundation and drying cycles of vernal pools. For many vernal pool plant species, temperature and moisture affect the timing of plant germination. The link between the onset of germination, temporal conditions associated with vernal pool inundation, temperature, and moisture are critical to the germination, maturation, flowering, and fruiting of San Diego mesa mint. Natural differences in the precipitation and the inundation/drying time of vernal pools from year to year may influence the distribution and abundance of San Diego mesa mint. These environmental factors make it difficult to obtain an accurate measure of the population. Additionally, a portion of the population is represented by seeds remaining in the seed bank and is not accounted for each year.

Examination of occurrence data from the time of listing suggests that the distribution of San Diego mesa mint has decreased since its listing in 1978. San Diego mesa mint has been extirpated from pool complexes in the most southern and northern extremities of its range and San Diego mesa mint was extirpated from at least one pool complex in 12 of the 13 geographic areas where it was known to occur since listing. No new extant occurrences have been detected since the time of listing, though it has been restored at multiple mitigation sites. Historically, outside of San Diego mesa mint's current range, it is thought to have occurred around Linda Vista, the vicinity of Balboa Park, Normal Heights, and the area surrounding San Diego State University. The primary cause of species decline is vernal pool destruction caused by vehicles, road maintenance and urbanization of San Diego's mesas.

Objective: Increase population and distribution of San Diego button celery at Murphy Canyon Heights housing area.

Strategies:

1. Conduct periodic monitoring (recommend at least annually) to determine existing population health.
2. Perform a vulnerability assessment to assess threats to existing populations.
3. Complete the NEPA/SAR process to avoid/minimize adverse impacts (e.g., threats).
4. Conduct vegetation management, including invasive species control, to keep cover down.
5. Incorporate San Diego mesa mint into revegetation projects, as appropriate.

San Diego Fairy Shrimp

The San Diego fairy shrimp is a federally listed endangered species. This species is a small aquatic crustacean generally restricted to vernal pools in coastal southern California and northwestern Baja California, Mexico. The San Diego fairy shrimp was federally listed as endangered on February 3, 1997 (62 FR 4925 4939). This species is a small, delicate freshwater branchiopod with large stalked compound eyes, no carapace, and 11 pairs of swimming legs. They swim or glide gracefully upside down by means of complex wavelike beating movements of the legs that pass from front to back. Females carry eggs in an oval or elongated ventral brood sac. Adults are observed from December to April when seasonal rainfall fills vernal pools and eggs start to hatch, however, in years with early or large rainfall, the hatching period may be extended. This species hatches and matures within 7 to 14 days, depending on water temperature. Eggs are either dropped to the pool bottom or remain in the brood sac until the female dies and sinks. They can be found in vernal pools and similar ephemeral wetland types, including artificial habitats, and are presumed to feed on algae, diatoms, and bits of organic matter. Currently, 137 complexes (a local metapopulation of hydrologically linked pools) occupied by San Diego fairy shrimp have been identified in the United States. At listing in 1997, development was characterized as the most significant threat to San Diego fairy shrimp habitat across its range. Development can result in direct impacts to San Diego fairy shrimp habitat, i.e., destruction of vernal pools or their watersheds, and isolation of pools and fragmentation of pool systems; development can also cause alterations in the hydrology of adjacent pools.



Credit: U.S. Department of Justice

Objective: Minimize the potential for adverse effects to the San Diego fairy shrimp and vernal pool habitat from maintenance activities conducted at Chollas Heights and Murphy Canyon Heights housing areas.

Strategies:

1. Make available an education program to housing residents and PPV personnel, who might have contact with vernal pools at Chollas Heights and Murphy Canyon Height housing areas. Make available education opportunities to PPV personnel and residents on vernal pools at Chollas Heights and Murphy Canyon Heights including details on their designation as critical habitat for the San Diego fairy shrimp, and how this designation affects some activities conducted at these housing areas.
2. Develop and implement fairy shrimp-specific conservation and monitoring measures for protecting and enhancing vernal pool habitat at Chollas Heights and Murphy Canyon Heights housing areas.

3. Conduct regular (approximately every 2 years) surveys of vernal pools for San Diego fairy shrimp at Chollas Heights, and Murphy Canyon Heights housing areas. Once surveys are completed, incorporated survey data into this INRMP.
4. Perform invasive species control in areas where vernal pools are known to exist.
5. Complete a vulnerability assessment to assess threats to existing populations.
6. Complete the NEPA/SAR process to avoid/minimize adverse impacts (e.g., threats).

7.3.4.2 Other Special Status Species

Eight rare plant species, as listed by CNPS, occur on NBSD housing areas. These species include: San Diego mesa mint (*Pogogyne abramsii*), federally and state listed endangered and CNPS Rank 1B.1; San Diego button celery (*Eryngium aristulatum* var. *parishii*), federally and state listed endangered and CNPS Rank 1B.1; San Diego goldenstar (*Muilla clevelandii*), CNPS Rank 1B.1; Nuttall's scrub oak, CNPS Rank 1B.1; San Diego barrel cactus, CNPS Rank 2.1; California adolphia, CNPS Rank 2.1; San Diego viguiera, CNPS Rank 4.2; and graceful tarplant CNPS Rank 4.2 (U.S. Navy 2011, CNPS 2011).

Three sensitive bird species were documented within the NBSD housing areas during the 2009 natural resources inventory. The Least Bell's Vireo, a federally and state listed endangered species, was observed at the Chollas Heights housing area. The Coastal California Gnatcatcher, listed as federally threatened and a California Species of Special Concern, was observed at Bayview Hills, Chollas Heights, Eucalyptus Ridge, Howard Gilmore Terrace, Murphy Canyon Heights and Terrace View Village housing areas. The Southern California Rufous-crowned Sparrow (*Aimophila ruficeps canescens*) was seen at Howard Gilmore Terrace and Murphy Canyon Heights housing areas (U.S. Navy 2011).

No sensitive reptile or amphibian species were observed within the NBSD housing areas during the 2009 natural resources inventory (U.S. Navy 2011). However, the Belding's orange-throated whiptail, a subspecies of the orange-throated whiptail (*Aspidoscelis hyperythra*), a California Species of Special Concern, was observed at Eucalyptus Ridge, Murphy Canyon Ridge and Terrace View Village housing areas (U.S. Navy 2011).

One sensitive invertebrate species was observed within the NBSD housing areas during the 2009 natural resources inventory (U.S. Navy 2011). The San Diego fairy shrimp, a federally endangered species, was observed at the Chollas Heights and Murphy Canyon Heights housing areas (U.S. Navy 2011).

Candidate and state listed species are not protected under the ESA, but because they could be federally listed in the future. OPNAVINST 5090.1D requires these species to be included in INRMPs. In addition, potential affects to these species will be included in NEPA documents. Installation INRMPs will include strategies to avoid any activities that necessitate the listing of these species in accordance with guidance from USFWS and NMFS, and the state wildlife action plans. Other special status species at Naval housing areas are identified in **Table 7-3** and management for those species is discussed in **Section 7.3.4.3**.

7.3.4.3 General Management of Special Status Species

An installation's overall ecosystem management strategy must provide for protection and recovery of special status species. Under the ESA, an "endangered species" is defined as any species that is in danger of extinction throughout all or a significant portion of its range. A "threatened species" is defined as any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The USFWS also has available an updated list of species that are regarded as candidates for possible listing under the ESA. Although candidate species receive no

statutory protection under the ESA, the USFWS believes it is important to advise government agencies, industry, and the public that these species are at risk and could warrant protection under the ESA.

Management needs for special status species and their habitats are based on results contained within surveys performed from 2009 for the NBSD housing areas. NBSD will continue to conduct species surveys at the housing areas as deemed necessary and subject to available funding. Management strategies will be developed or revised based on the recommendations of those surveys.

Specific Concerns

- Habitat loss resulting from urban development and habitat fragmentation.
- Invasive species encroaching on native species habitats.
- Habitat loss due to either anthropogenic or natural causes.
- Erosion and sedimentation from either anthropogenic or natural causes.
- Fire.
- Climate change.
- Predation.

Current Management

Management needs of special status species and their habitats are based on results contained within surveys performed in 2009 for the NBSD housing areas. Listed species that occur on the housing areas include the Coastal California Gnatcatcher, the San Diego fairy shrimp, and the San Diego button celery. Species surveys will continue to be conducted as deemed necessary and subject to available funding. Management strategies will be developed or revised based on the recommendations of those surveys.

Management Objective and Strategy

Objective: Minimize the potential for adverse effects on special status species and their associated ecosystems while protecting the operational functionality of the installation mission by using an ecosystem based management approach.

Strategies:

1. Investigate the need for implementing research projects to understand ecological requirements of special status species.
2. Continue use of the established Environmental Review process to identify actions that result in adverse effects on special status species or their habitats.
3. Coordinate with the proponent to ensure NEPA and other regulatory requirements are met to reduce adverse effects.
4. Review and update species lists to reflect presence of threatened, endangered, and other special status species.
5. Conduct regular surveys for special status species that may be present at the Navy-retained portions of NBSD housing areas.

6. Continue monitoring special status species (e.g., Hermes copper butterfly) as described in this INRMP and adapt monitoring and management actions as needed. Use monitoring information and other information to guide adaptive management.
7. Work with stakeholders to develop appropriate habitat goals and management actions to achieve those goals and establish success criteria and reporting requirements.
8. Initiate habitat improvement projects to conserve biodiversity and protect plant and animal habitats, as funding is available and when such projects will not adversely affect the military mission (e.g., noxious weeds, or invasive species removal; habitat disturbance where such disturbance will promote native plant growth; preventing habitat disturbance when this will promote nonnative plant growth; and revegetation with native plants).
9. Implement erosion control BMPs to avoid adverse environmental impacts to special status species habitat.
10. Revegetate with native species included on the NAVFAC SW recommended plant list. Include sensitive plant species in the NAVFAC SW recommended plant list.
11. Annually review the natural resources management program to make certain that management actions do not adversely impact special status species habitat.
12. Maintain accurate, usable, and informative GIS data for ease in management planning and documentation.

7.3.4.4 ESA Consultation and Mission Requirements

Objective: Maximize effectiveness and efficiency of the NBSD Endangered Species Program to achieve the best conservation possible while maintaining and improving training activities at the desired level.

Strategies:

1. Prioritize management issues within and between species, and within the overall natural resources program to guide management actions and funding expenditures.
2. Coordinate with the USFWS to identify actions that adversely impact training capabilities, and identify activities that could adversely affect listed species. Adapt measures as warranted and consult with the USFWS to receive incidental take coverage where appropriate.
3. Ensure that NBSD remains in compliance with the ESA and appropriate state regulations. Support PPV personnel at the housing areas to implement management strategies that adhere to Federal and state laws (including but not limited to, the ESA and MBTA) at the NBSD housing areas.
4. Annually review the natural resources management program to make certain that management actions do not adversely impact threatened and endangered species.
5. Maintain accurate, usable, and informative GIS data for ease in management planning and documentation.

7.3.5 Exotic and Invasive Species Management

Invasive species management is a large part of pest management activities. The Federal Noxious Weed Act and EO 13112 require Federal agencies to control noxious and invasive species on Federal lands. The Federal Noxious Weed Act, enacted January 3, 1975, established a Federal program to control the introduction and spread of foreign noxious weeds into the United States. Amendments in 1990

established management programs for undesirable plants (including noxious weeds) on Federal lands. There are several plant species that are considered noxious and control is mandatory for those found on the Federal list. EO 13112 requires that Federal agencies prevent the introduction of invasive species, detect and control populations of invasive species, and restore native species and habitat conditions in ecosystems that have been invaded. Invasive species are alien species (not native to the ecosystem) whose introduction does, or is likely to, cause economic or environmental harm, or harm to human health. All of the invasive weeds listed on the Federal list are not necessarily found at NBSD housing areas.

The California Wildlife Action Plan has identified the growth and spread of floral and faunal invasive species in the state as a major concern to maintaining biodiversity in the state (CDFG 2007). As a result, natural resources personnel and NAVFAC SW ensure that invasive species are not introduced on the installation, and have developed a program to control the spread of and the eradication of existing infestations of invasive species.

Problems associated with invasive nonnative plants and animals are currently being addressed at many different levels in California, within the constraints of budgets and staffing resources. Examples include the CNPS which serves as the state's noxious weed coordination center for activities addressing noxious weeds within the state. The NRCS also has a lead role in coordinating an aggressive state/Federal/private effort to eradicate, or at least stop, the spread of invasive species.

Specific Concerns

- Anthropogenic disturbances (e.g., foot traffic).
- Landscaping on and off base.
- Rapid spread of invasive non-native plants that displace native species and degrade habitat for native floral and faunal species.
- Climate change.

Current Management

Natural resources managers at NBSD have developed a program to monitor and control the spread of existing infestations of invasive species, and to determine if new species populations have become established. Assessments of invasive species populations are conducted annually during the rainy season to determine the extent of invasive species populations on NBSD. Once assessed, species are prioritized for treatment based on the extent of the infestation, and where the populations are located (e.g., next to listed species habitat).

Management Objective and Strategy

Reduce Spread of Invasive and Exotic Species

Objective: Minimize nonnative species encroachment in areas where severe to moderate encroachment occurs, and in new areas of encroachment where infestation might be spreading but is not yet severe.

Strategies:

1. Conduct surveys annually on Navy-retained portions of NBSD housing areas to determine whether controls on existing infestations of species have been effective, and whether new populations have become established.

2. Support PPV personnel at the housing areas to implement management strategies that adhere to Federal and state laws (including but not limited to, the ESA and MBTA) at the NBSD housing areas. Develop and implement a review process for all projects that include a landscaping component to ensure nonnative species are not introduced.
3. Develop outreach and education materials for distribution within the Navy housing areas.

Project Planning

Objective: Include control and management of invasive species in project planning and maintenance projects.

Strategies:

1. Manage roads, access routes, and new construction sites to minimize the spread of invasive nonnative species.
 - a. Require that maintenance or repair of existing roads stay within established footprints.
 - b. Clean roadside mowing equipment of adhering dirt and vegetation between mowing cycles.
 - c. Schedule roadside mowing to minimize weedy species seed distribution.
2. Make project proponents pay for restoration projects that are used to compensate for development of habitat.

7.3.6 Grounds and Landscape Maintenance

Environmentally and economically beneficial landscaping practices can reduce maintenance costs while also providing wildlife habitat. Planting windbreaks around buildings and parking areas, establishing wildflower areas, and reducing mowing are all ways to spend dollars more wisely, educate the public about the benefits of reduced maintenance, and become better stewards of the environment. NBSD acknowledges its responsibilities as listed in the White House Memorandum, *Environmentally and Economically Beneficial Practices on Federal Landscaped Grounds* (1994). The memorandum's requirements include the following:

- Using regionally native plants for landscaping
- Using construction practices that minimize adverse effects on the natural habitat
- Reduce pollution by reducing the use of fertilizer and pesticides, using integrated pest management, recycling green waste, and minimizing runoff
- Implementing water efficient practices
- Creating demonstrations of these practices to promote their use elsewhere.

Specific Concerns

- Water use conservation requirements.

Current Management

The installation's representative biologist and NAVFAC SW landscape architect monitor landscaping and grounds projects to ensure that all projects follow the guidance contained in the NAVFAC SW recommended plant list (see **Appendix I**). This guidance includes:

1. Ensuring that landscape designs and plant lists are reviewed and approved by the installation biologist and the NAVFAC SW landscape architect during the planning phase of the project.
2. Ensuring that projects include California native species from the approved plant list shall constitute a minimum of 60 percent of the plant material within each stratum (herb, shrub, and tree). Other drought tolerant species from this list shall constitute the remainder of the plant material (a maximum of 40 percent in each stratum) for each project. A higher proportion of natives may be required for projects within or adjacent to natural areas. The determination of whether cultivars are considered native or exotic will be made on a project-by-project basis.
3. Allowing for use of additional native species in landscaping designs contingent upon approval by the installation biologist or NAVFAC SW landscape architect.
4. Ensuring that project designers coordinate with the installation's representative biologist and NAVFAC SW landscape architect early in the planning process to determine site-specific needs and constraints. In addition, it should be noted that not all species on this list are appropriate for all settings.

In addition, the NBSD IAP is the official direction for designing, developing and reviewing all installation construction and renovation projects at NBSD. The executive summary for the plan states that the IAP has a two-fold purpose: 1) to provide aesthetic and functional direction for new development and renovation efforts, and 2) to protect and preserve the installation's natural and historic resources. Though preservation of resources must be a high priority, the guidelines must be flexible enough to allow for renovation, expansion or demolition of inadequate facilities that may need to be removed to make room for other mission essential facilities (U.S. Navy 2008b). Specific guidelines for grounds and landscape maintenance include (U.S. Navy 2008b):

1. Employ basic principles of landscape design in the planning and execution of all new and renovated landscapes. Comply with UFC 4-010-01 *DOD Minimum Antiterrorism Standards for Buildings*.
2. Preserve all healthy, mature trees unless doing so poses safety or significant design problems or involves prohibitive cost. Preserve healthy, mature shrubs if they are on the plant list approved for the installation and they are used appropriately.
3. Preserve healthy, mature shrubs if they are on the plant list approved for the installation, and they are used in an appropriate location.
4. To protect wildlife and possible nesting habitat, existing mature trees shall not be removed without prior consultation with and approval from the Installation biologist.
5. No plants shall have significant disease, root or maintenance problems. All plants, with minor exceptions, shall maintain an acceptable natural form with no pruning at their mature size, and, as appropriate for the designated space/use.
6. Group plants with similar environmental characteristics, such as sun exposure and water requirements. Adjust plant palettes to accommodate micro-climates.

7. All plants for new and replacement planting shall be selected from the recommended plant list. Planting design shall conform to and be reviewed in accordance with the plant list "Conditions of Use."
8. New and renovation construction will not use turf except for recreational purposes as approved by the Public Works Officer. Minimize existing turf whenever possible to reduce water, maintenance and costs.
9. In coordination with the wildlife biologist, select trees that do not encourage birds to roost or nest over vehicles, tables, benches, etc.

Management Objective and Strategy

Objective: Maintain an aesthetically pleasing landscape on NBSD that preserves natural ecosystem functions, conserves water in landscaped areas, and promotes pollinator species.

Strategies:

1. Provide professional advice to assist the grounds landscaping and maintenance program in the use of native species as identified in the NAVFAC SW recommended plant list.
2. Maintain and annually update the list of recommended plants that can be used in landscaping.
3. Develop and implement BMPs for grounds maintenance at NBSD (e.g., water conservation), and make these BMPs available to PPV.

7.3.7 Pest Management

Authority for pest management activities on NBSD is directed under the Federal Insecticide, Fungicide and Rodenticide Act as amended (7 U.S.C. 136r-1), DoD Instruction 4150.07, SDMAI IPMP, December 2009, and OPNAVINST 6250.4B, Pest Management Programs. IPM is a sustainable approach that incorporates the use of multiple techniques to prevent or suppress pests in a given situation. Although IPM emphasizes the use of nonchemical strategies, chemical control might be an option used in conjunction with other methods. IPM strategies depend on surveillance to establish the need for control and to monitor the effectiveness of management efforts.

Specific Concerns

- Water use conservation requirements.
- Overuse of fertilizers and pesticides.

Current Management

The 2009 IPMP for SDMAI, which includes NBSD, describes pest management requirements, identifies pests for SDMAI, outlines roles and responsibility for IPM at each SDMAI, outlines procedures for pest control at each facility, and describes the administrative, safety, and environmental requirements of the program. Specific aspects of the program include pest identification, pesticide management (includes storage, transportation, and use and disposal), environmental health and safety, emergency pest management, and available program resources (U.S. Navy 2009). All installation pest management activity is coordinated by the installation IPM Coordinator. Pesticides to be applied on the installation must be approved by the regional NAVFAC pest management consultant and included in the installation pesticide authorized use list. All pesticides that are to be applied to natural areas should also be reviewed and approved by the natural resources manager.

Threatened, endangered, or candidate species can be directly or indirectly affected by pest control activities. The following pest management operations require natural resource manager review:

- Weed and outdoor pest control in endangered/threatened species habitats and natural areas
- Outdoor large area insecticide fogging
- Pesticide applications to, over or adjacent to water bodies, waterways, or wetlands
- Installation of bird barriers, exclusion devices, or repelling devices
- Wildlife and feral animal control
- Invasive species control.

Natural resources managers will obtain any necessary approvals, consultations, or permits. No pest management activities will violate the practices described for threatened, endangered, or candidate species by the California Department of Pesticide Regulation. NBSD will use the California Department of Pesticide Regulation Endangered Species Project web site (<http://www.cdpr.ca.gov/docs/es/index.htm>) to determine the best chemicals to control pest species and their use limitation.

In addition, management of feral animals is a component of pest management at NBSD. Feral animals, especially feral cats and dogs, pose a potential threat to public health and safety. They also pose a threat to wildlife, especially federally listed species and migratory birds. Existing Navy policy included in SECNAVINST 6401.1A of August 16, 1994 regarding veterinary health services prohibits dogs, cats, and other privately owned or stray animals from running free on military installations. The CNO issued a policy letter on January 10, 2002 that clarifies the application of SECNAVINST 6401-1A. An objective of the existing policy is to control feral animals in a humane manner to prevent injury or disease to Navy personnel and eliminate adverse impacts on native wildlife. The instruction requires Navy commands to institute proactive pet management procedures in order to prevent establishment of free-roaming cat and dog populations.

The 2009 SDMAI IPMP identifies a number of strategies to conduct pest management at Navy installations in the San Diego Metro area. As long as the strategies discussed within the SDMAI IPMP are implemented, pests should not pose a threat at NBSD.

Management Objective and Strategy

Implementation of the Pest Management Plan

Objective: Ensure compliance with environmental legislation, regulations, and guidelines.

Strategies:

1. Make available a copy of the SDMAI IPMP to PPV personnel.
2. Implement pest management controls from the SDMAI IPMP and other pest-related guidance.
3. Conduct surveys of pests that pose a potential health risk to humans or natural resources on Navy-retained portions of NBSD housing areas.
4. Monitor pest and invasive species populations. Track usage of active ingredients and man-hours spent controlling pest and invasive species during implementation to ensure that the management strategies are sufficient.

Management of Feral Animals

Objective: Control populations of feral animals at the NBSD housing areas as required by SECNAVINST 6401.1A.

Strategies:

1. Develop and implement a program to control feral animals on NBSD. Control populations of feral animals on NBSD housing areas.

7.3.8 Outdoor Recreation and Public Access

Specific Concerns

- Erosion and sedimentation.

Current Management

The outdoor recreation activities provided at NBSD housing areas include jogging, cycling, walking and wildlife viewing trails. In addition, recreational access is compliant with the requirements associated with the provisions of the American with Disabilities Act of 1990 as amended and the Disabled Sportsman Access Act as amended.

Management Objective and Strategy

Objective: Provide quality outdoor recreation experiences while sustaining ecosystem integrity, and not conflicting with mission priorities.

Strategies:

1. Identify and evaluate suitable outdoor recreation opportunities for housing residents. Allow close partnership with the local community, and improve knowledge of the natural world and the Navy's stewardship of natural resources.
2. Develop and distribute outreach and education materials for housing residents.

7.3.9 Law Enforcement of Natural Resources Laws and Regulations

Current Management

Natural resources managers at NBSD have established the following objectives for enforcement: (1) Enforce laws and regulations pertaining to the implementation of the natural resources program; (2) Integrate natural resources enforcement into the overall natural resources program; and (3) Use enforcement personnel to enhance the natural resources program at NBSD.

There are no game wardens stationed at NBSD. The DoD police have the authority of the Commander (exclusive jurisdiction) and of the Sikes Act to enforce all Federal laws relating to the management of natural resources at NBSD, including the ESA and MBTA.

Management Objective and Strategy

Objective: Ensure compliance with state and Federal natural resources laws and regulations.

Strategies:

1. Provide training to personnel responsible for enforcement of applicable laws and regulations.
2. Continue to protect special status species and the natural communities.
3. Cooperate with other agencies, particularly the USFWS and CDFW, to ensure that natural resources laws are adequately enforced.
4. Annually review Federal and state laws and regulations to ensure natural resources laws and regulations are adequately enforced.

7.3.10 Environmental Awareness

Conservation awareness is instrumental in creating conditions needed to manage natural resources. The Navy approach to awareness stresses education. It provides military personnel and the public with insights into natural environments and conservation challenges. The more people know about the unique and valuable natural resources on the installation, the more responsibly they act toward using them.

Education also promotes awareness of critical environmental projects and the rationale behind them. Activities such as fish stocking, land rehabilitation, and wildfire suppression can be accomplished with little conservation awareness effort since installation personnel, recreationists, and the general public support these easily understood efforts. However, such issues as protection of sensitive areas for little known plant and wildlife species, prescribed burning, and permit fees and their uses require effective conservation communication to get positive support and, perhaps more importantly, to avoid adverse reactions from various users. A conservation awareness program must be directed to both installation and external interests if it is to be effective.



Educational Sign at Chollas Heights

Management Objective and Strategy

Objective: Promote environmental stewardship through training and awareness, and provide people residing on the installation and in the surrounding community with an understanding of the NBSD natural resources program.

Strategies:

1. Annually review outreach and education materials to ensure that each is still current and meeting goals of outreach and education program.
2. Develop educational materials and brochures for specific housing areas that identify and educate about their unique natural resources features.
3. Reach out to housing area residents and local community groups for volunteers.
4. Establish a watchable wildlife program.

5. Educate the local community, as well as installation personnel and residents about the installation natural resources program.
6. Natural resources personnel work with volunteers, whenever feasible, to use their skills and build their interest in the installation natural resources program.

7.3.11 Geographic Information Systems Management, Data Integration, Access and Reporting

GIS is a computer system for capturing, storing, checking, integrating, manipulating, analyzing, and displaying data related to positions on the Earth's surface. GIS is used to create information layers used to develop and manipulate maps. GIS data are represented as different layers each containing data on a particular kind of feature (e.g., soils, wetlands, roads). Each feature is linked to a position on the graphical image of a map. The data layers are organized to create maps and to perform statistical analysis.

GIS will also provide support for the entire environmental program and the training community. NBSD will use GIS for complex analyses such as project siting, data interpolations, and risk assessments.

GIS software enables installation staff to capture, store, update, manipulate, analyze, and display all forms of geographically referenced data and tabular information about NBSD. The training of NBSD Environmental, Facilities Management, and Training staff and the allocation of their time to data entry, mapmaking, analysis of data, and interpretation of the results will determine the success of the installation GIS.

Once fully developed, the installation GIS databases can be used for projects such as the following:

- Providing maps
- Selecting suitable areas for construction activities
- Planning land rehabilitation projects
- Providing special maps for Environmental Awareness materials
- Ensuring avoidance of cultural resources during ground disturbing projects
- Ensuring avoidance of rare species habitats and other areas of special concern during construction projects
- Identifying site options for use during NEPA evaluation of alternative sites
- Calculating drainages and water flows
- Determining Neotropical bird habitat preferences.

Management Objective and Strategy

Objective: Collect, store, develop, and maintain data about historical conditions, trends, and current status for critical indicators of ecological integrity and sustainability.

Strategies:

1. Use GIS information as benchmarks for developing future natural resources management goals and objectives.

2. Ensure that GIS information is available to biologists, planners, contractors, and others in a quick and timely manner.
3. Annually review GIS data to advise resource managers of needs to update data sets during budget planning and programming.
4. Develop specific language that will be included in all contracts to ensure all spatial data produced are fully compatible with the installation GIS database.
5. Develop a standardized system for installation natural resources manager to record and map significant resource observations (e.g., plants, wildlife, erosion, damage) when incidentally encountered.
6. Provide annual funding for one person to be responsible for updating and maintaining the GIS database. This should include the necessary hardware, software, and training for the use of GIS.

8. Sustainability and Compatible Use

This section summarizes management strategies for the sustained use of natural resources. Landscape-level views of compatibility and sustainability are covered to establish a tangible link between managing the natural environment and sustaining the military mission.

8.1 Sustainability of the Military Mission in the Natural Environment

Broadly speaking, sustainability takes a long-term view of natural resources stewardship, Navy mission accomplishment, social responsibility, and economic prosperity into the future. For this INRMP, the topic of sustainability encompasses:

- Sustainability of the Navy mission at NBSD with respect to how natural resources support this mission
- Resource specific best practices, consistent with the NBSD plans
- Preparations for climate change and regional growth
- Resource use in the built environment.
- Indicators that help monitor progress toward sustainability objectives.

Specific objectives and strategies were developed to meet the goal of ensuring NBSD sustains the mission while protecting natural resources at NBSD. In addition, a series of strategies for implementation are presented following the objective for each item. A summary of the management strategies as well as the estimated time frame for completion is presented in **Appendix D**.

Some of the actions described in this section will be accomplished through interactive partnerships with other Federal, state, and local organizations. Natural resources staff at NBSD will initiate partnerships based on the benefits to the regional ecosystem and the local environment.

8.1.1 Integrating Military Mission and Sustainable Land Use Decisions

The mission of NBSD is to deliver the highest standard of support and quality of life services to the fleet, fighter, and family.

NBSD does not anticipate changes in land use and development; however, NBSD is well positioned to implement and demonstrate environmentally sound land use planning and development through its land planning and NEPA processes, interdepartmental coordination, adherence to DoN guidance and regulations, and timely review and revision of base site development plans. Development that does occur will be generic and flexible to preserve the natural environment of NBSD. In addition, DoN policy requires that all military construction projects meet a silver rating under the U.S. Green Building Council LEED 2.0 (Leadership in Energy and Environmental Design) Green Building Rating System (U.S. Navy 2006a).

Management Objective and Strategy

Objective: Sustain natural resources and the Navy institutional mission by enabling innovation in planning, design, project management, and implementation for development projects affecting the built environment.

Strategies:

1. Ensure Navy leadership has visibility with respect to the total cost of mission sustainment, day-to-day operations, infrastructure and building development, and redevelopment. This should incorporate climate change scenarios and the projected value of the loss of habitat associated with the decision for No Action. Natural resources asset valuation is needed to properly implement business decisions that affect resource capability (e.g., value of permitted air emissions, water quality permits, water resources availability). Identify those natural resources assets that sustain the mission. Assess their condition, quality, capacity, and value.
2. Use NEPA and site approval processes early in the project planning phase that includes water, air quality, engineering, and natural resources professionals.
 - a. Improve the integration of Navy natural resources professionals into the sustainability planning through NEPA and site approval processes.
 - b. Facilitate early, advance project review for stormwater management, landscaping, shoreline and in-water structures.
3. Apply sustainability principles to the management of habitats, species, and ecological functions on NBSD by identifying resource-specific best practices similar to what has been done for energy and water in the built environment using LEED and Low Impact Development (LID) approaches.
 - a. Continue to comply with EO 13123 which tasks Federal agencies with defining principles for implementing sustainable development in construction. Promote sustainable land use through avoiding the use of undeveloped land, open space, water and soil conservation areas, existing natural ecosystems, endangered species habitats, and floodplains (NAVFACINST 11010.45).
 - b. Implement LID practices for protecting water quality.
 - c. Use construction siting, materials, and methods that promote biotic communities to the fullest extent possible.
4. Use metrics (indicators) of sustainability that integrate environmental stewardship, mission accomplishment, social responsibility, and economic prosperity.
 - a. Define and adopt standards, rating systems, and metrics.
 - b. Collaborate with tenants to develop an integrated, measurable, installation-wide sustainability effort.
 - c. Incorporate metrics and standards of success meaningful to NBSD.
5. Develop sustainability indicators and BMPs, to be incorporated into the NBSD planning process. Monitor effectiveness of BMPs and revise as necessary.
6. Conduct training in sustainable design criteria in the Navy for engineers, construction and design specialists, water quality specialists, and biologists. This could be web-based training.
7. Foster socially and environmentally responsible behavior through communication. Establish and promote submission for existing sustainability leadership awards for excellence in environmental, transportation, and energy management.

8.1.2 Encroachment

The metro San Diego region has been experiencing rapid growth over the past several decades. As a result, NBSD could be affected both internally and externally by this growth. Internal factors include

meeting the needs of existing mission partners, anti terrorism/force protection (ATFP) standards, and a potential increase in requests from Federal agencies for NBSD's real property assets in terms of facilities and buildable land.

Outside factors expected to drive growth and development immediately adjacent to NBSD include a reduction in available land in the region, a continuing increase in population growth, and development in the coming decades. Consequently, the impacts of planning and future development in San Diego County and NBSD are inextricably linked.

An Encroachment Action Plan (EAP) is in the process of being developed for NBSD and will be included in annual updates to this INRMP.

Management Objective and Strategy

Objective: Achieve no net loss of military value by aligning current and future land and water use (location, extent, timing, and intensity) with environmental value protection into the future, while minimizing the cost of environmental conflict resolution and mitigation.

Strategies:

1. Maintain and enhance existing land uses to support the mission through coordination with all NBSD Navy stakeholders.
2. Locate new facilities within existing facility footprints or other previously disturbed areas to the extent practicable.
3. Review proposed new uses or alterations to existing buildings or structures, in consultation with a Navy Archaeologist, to determine the eligibility of affected structures for the National Register of Historic Places (NRHP) contributing elements. As needed, analyze for potential impacts in accordance with guidelines established for NRHP-eligible buildings.
4. Conduct appropriate environmental surveys on any proposed new land use within an undeveloped area to identify sensitive natural and cultural resources, environmental resources, and IRPs (hazardous waste cleanups).
5. Ensure compliance with statutes and regulations to protect sensitive natural and cultural resources, to maintain environmental quality and to exercise responsible stewardship of public lands.
6. Ensure the public health and safety of NBSD personnel and authorized visitors by maintaining a secure military operating environment on NBSD-administered lands.
7. Maintain and enhance coordination and cooperation with neighboring communities, agencies, and organizations to ensure compatibility of natural resource uses with the Navy's mission.
8. Provide reasonable accommodation of compatible nonmilitary land use to the extent practicable.
9. Maintain healthy and intact habitats that self-recover from disturbance, using principles of ecosystem management and sustainability to balance short-term projects with long-term goals.
10. Address long-term threats to the stability of the natural environment including but not limited to soil erosion, invasive exotic species, climate change, sea level rise, and habitat fragmentation.
 - a. Use ecosite planning (based on soils and vegetation classified by NRCS for soil surveys), where available, to assess the condition of habitats.
 - b. Avoid the proliferation of roads.

- c. Avoid and minimize road or traffic characteristics that promote plant invasions, or result in significant habitat fragmentation for animals.
11. Continue to use NEPA documentation, including cumulative effects analysis, to guide specific projects and document choices.
12. As part of the INRMP metrics review, ensure the CO's preparedness to answer the following questions:
 - a. Does the natural resources team consult with operators when making changes to the INRMP in order to keep it current? Coordination examples include: maps, signage, pamphlets, other communications, orientations, meetings, training, etc.
 - b. To what level do natural resources compliance requirements support the installation's ability to sustain the operational mission?
 - c. Has there been a net loss of training lands?

8.1.3 Adapting to Effects of Climate Change

The 1994 DoD policy memorandum *Implementation of Ecosystem Management in the DoD* was developed to ensure that resources on DoD installations were managed in a manner to conserve and protect biological diversity through adopting an ecosystem management approach to natural resources management (Benton et al. 2008). The policy states that "military installations will use ecosystem management to: (1) restore and maintain ecological associations that are of local and regional importance and compatible with existing geophysical components (e.g., soil, water); (2) restore and maintain biological diversity; (3) restore and maintain ecological processes, structures, and functions; (4) adapt to changing conditions, including changes resulting from a changing climate; (5) manage for viable populations, and (6) maintain ecologically appropriate perspectives of time and space" (Benton et al. 2008).

The DoD leadership further strengthened the need to manage resources using an ecosystem management approach in DoD Instruction 4715.03 (DoD 2011), that stressed the importance of recognizing the relationship between ecosystem management and biodiversity conservation (Benton et al. 2008). The instruction outlined five goals for installations to preserve and enhance biodiversity including: "(1) maintain or restore remaining native ecosystem types across their natural range of variation; (2) maintain or reestablish viable populations of all native species in an installation's areas of natural habitat, when practical; (3) maintain evolutionary and ecological processes, such as disturbance regimes, hydrological processes, and nutrient cycles; (4) manage over sufficiently long time periods for changing system dynamics, including climate change; and (5) accommodate human use in those guidelines" (Benton et al. 2008).

With the passage of the Sikes Act, Improvement Act in 1997, DoD ensured that all INRMPs were developed with an ecosystem management approach to overall natural resources management. One of the primary facets of ecosystem management is to maintain the ecological integrity of the area managed. Ecological integrity is defined as "the ability to support and maintain a balanced, integrated, adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of natural habitat of the region" (Benton et al. 2008). The INRMP is developed to conserve and protect ecological integrity by promoting a proactive, as opposed to a reactive, strategy for managing resources. The Sikes Act also requires that INRMPs are reviewed annually and updated every 5 years to ensure that these documents remain as living documents that can be revised based on changes to current conditions (including changes as a result of climate). The goals and objectives developed for this INRMP

were developed using an ecosystem management approach that is flexible and takes into account ecosystem changes resulting from various factors including climate change.

The DoN has also developed *Cooperative Strategy for 21st Century Sea Power* that addresses a need for adaptive management in the face of a changing climate (U.S. Navy, U.S. Marine Corps and U.S. Coast Guard 2007). In addition, the 2008 DoN Environmental Strategy, *Sustaining our Environment, Protecting our Freedom* states the importance of all Naval bases to evaluate activities and ensure that best management practices have been put into place to reduce the overall environmental footprint of the Navy and enhance sustainability (U.S. Navy 2008a). Finally, in May 2009, the DoN created a task force to explore and develop policies, and strategies that address climate change. The Task Force Climate Change is made up of senior DoN staff and other stakeholders and findings will be based on many factors, including the most current scientific research.

The guidance for Navy INRMPs (OPNAVINST 5090.1C CH-1) includes a requirement to address climate change in INRMPs. It states that “the evidence for climate change is extensive and has generated consensus in the scientific community. Addressing climate change poses a new challenge for natural resources managers who will need to understand changes in ecosystem structure and function anticipated from climate change, in addition to understanding ecosystems as they function now and as they have in the past.” The guidance continues with a framework for addressing climate change issues. The following resources provide additional information and guidance on how to address climate change issues:

- U.S. Forest Service Climate Change Resource Center
- DoD Natural Resources Conservation Program, Climate Change Tools for Adapting Management Strategies
- National Wildlife Federation, Scanning the Conservation Horizon, A Guide to Climate Change Vulnerability Assessments
- Strategic Environmental Research and Development Program
- U.S. Fish and Wildlife Service, National Conservation Training Center, courses on Climate Change and Structured Decision Making

Assessing the impacts of climate change is best approached by identifying an environmental baseline for the future that considers the differences in landscape form and function caused by climate change and other stressors on the landscape. Conducting a climate change vulnerability assessment may guide essential monitoring requirements, as well as develop appropriate adaptive management strategies. However, the abundance and distribution of species and habitats on Navy properties may be too small in scale to address comprehensive climate change vulnerabilities. Therefore, regional partnerships may be the most appropriate means to conduct such assessments and in developing and implementing adaptation strategies. In general, natural resources managers should identify NRM strategies that provide conservation benefits to the ecosystem, regardless of whether climate changes occur.

Additional information on the regional impacts and adaptation efforts are discussed in **Section 3.1.7**.

Management Objective and Strategy

Objective: Adapt to the adverse impacts of climate change through collaboration with other agencies and working groups and set annual goals based on science-based scenarios, targets, collaborative planning, and adaptive management.

Strategies:

1. Address the anticipated shifts in species ranges and population abundances through environmental monitoring.
 - a. Ensure plant community composition and productivity are within the normal range expected for plant communities/ecological sites.
 - b. Ensure sufficient soil health to prevent accelerated erosion.
 - c. Ensure the health of intertidal and nearshore environments through monitoring.
2. Identify data and research needs for ensuring an effective response to the consequences of climate change.
 - a. Work with the applicable USFWS Landscape Conservation Cooperative to address climate change research needs and applicable results.
 - b. Identify species and communities resilient/vulnerable to climate change impacts by conducting climate change vulnerability assessments.
 - c. Improve the application of models through data collection and validation (as feasible and needed) and for using such science-based models in environmental and natural resources management planning.
 - d. Improve the graphical depiction of the potential impacts of climate change scenarios for NBSD to address anticipated shifts in species ranges and population abundances in climate change vulnerability assessments.
3. Adapt to the adverse consequences of climate change, including stresses on infrastructure, aquatic vegetation, erosion, and shifts in distributions of terrestrial endemic species and plant communities.
 - a. Ensure that species/community conservation priorities and expenditures reflect climate change risks, such as those on the margins of their distribution patterns.
 - b. Identify restoration projects to provide habitat elements for specific species which may be altered by climate change.
 - c. Provide for the management of threatened, endangered, and other rare species such that changes in distribution and abundance may be understood in the context of climate change.
4. Address the anticipated increase in extreme events by emphasizing preventative technologies.
 - a. Comply with project siting guidelines.
 - b. Improve water conservation.
 - c. Improve stormwater management through use of LID technologies.
 - d. Improve coordination between natural resources and staff and development project proponents to ensure more energy efficient design features.
5. Improve and strengthen governance with respect to climate change.
 - a. Establish partnerships for collaboratively addressing climate change issues.
 - b. Analyze project impacts and cumulative effects through NEPA in a consistent way.
 - c. Incorporate climate change in Navy Encroachment Action planning.

- d. Develop science-based agency coordination to protect, maintain, and restore at-risk habitats.
6. Ensure that NBSD personnel have access to climate change education and outreach in order to help minimize forecasts for global warming through modification of individual behavior and lifestyle consumption patterns that contribute to global warming.

8.2 Beneficial Partnerships and Collaborative Resources Planning

Effective communication among personnel from different offices is vital for ensuring that site activities are implemented as planned under the INRMP. An ecosystem approach to natural resources management also requires managers to look beyond site boundaries to non-DoD partners. There are many agencies, organizations, and other institutions that can assist in implementing an INRMP. It is Navy policy to encourage local and regional partnerships to implement an INRMP. The following sections discuss other potential organizations that could provide support with INRMP implementation.

8.2.1 Other DoD Organizations and Programs

8.2.1.1 Partners in Flight

It is DoD policy to promote and support the Partners in Flight (PIF) initiative that protects and conserves neotropical migratory birds and their habitats. The DoD and its components support PIF by protecting vital habitat, enhancing biodiversity, and maintaining healthy and productive natural systems on their lands, consistent with military missions. PIF includes national working groups to deal with local and regional problems. NBSD can coordinate with and seek assistance from the PIF West Region Working Group to manage for particular migratory birds species.



8.2.1.2 DoD Legacy Resource Management Program

Congress instituted the DoD Legacy Resources Management Program in 1991 to promote stewardship of natural and cultural resources on DoD lands. The intent of the Program is to fund natural and cultural resources management projects that may go unfunded through normal funding procedures. Legacy projects typically demonstrate innovative techniques for management, conservation, and preservation of natural and cultural resources. Legacy funds may be requested annually in accordance with instructions provided by DUSD(I&E) and CNO.



8.2.1.3 U.S. Army Corps of Engineers

The USACE provides contract management, construction management, and technical support. NBSD has the option to use USACE contracts as vehicles for natural resource management and to access USACE organizations, such as the U.S. Army Engineer Research and Development Center for technical assistance and support for natural resources projects.



In addition, the USACE has regulatory authority over waters of the U.S., which include activities within perennial and intermittent streams and wetlands, as well as ephemeral drainages when there is a significant nexus to navigable waters. Section 404 of the CWA authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredged or fill materials into

the waters of the U.S., including wetlands. Therefore, even an inadvertent encroachment into wetlands or other waters of the U.S. resulting in displacement or movement of soil or fill materials has the potential to be viewed as a violation of the CWA if an appropriate permit has not been issued by the USACE.

Additionally, under the Rivers and Harbors Act Section 10, a permit is required for work or structures in, over or under navigable waters of the U.S. USACE administers Sections 9 & 10 of the Rivers and Harbors Act of 1899 which regulates “work” and structures in navigable waters and Section 103 of the Marine Protection Research and Sanctuaries Act of 1972 which regulates the transport of dredge material for ocean disposal.

Within California, the USACE has adopted the California Rapid Assessment Methodology (CRAM) for evaluation of streambed quality. This process is most often used for determining mitigation values.

8.2.1.4 Armed Forces Pest Management Board

The Armed Forces Pest Management Board (AFPMB) recommends policy, provides guidance, and coordinates the exchange of information on all matters related to pest management throughout the DoD. The AFPMB's mission is to ensure that environmentally sound and effective programs are present to prevent pests and disease vectors from adversely affecting DoD operations. The AFPMB Natural Resources Committee provides guidance on integrating pest management and natural resource management programs including:

1. Addressing wildlife damage management and pest management requirements in aquatic, riparian, and wetland environments.
2. Identifying conflicts between threatened and endangered species and pest management actions.
3. Integrating pest management considerations with natural resources program responsibilities regarding vegetation management, forest insect and disease damage, and pest damage to ornamentals.
4. Coordinating approval and use of pesticides for vegetation management and other natural resources programs.
5. Initiating and/or reviewing research regarding natural resource pest management requirements/considerations.

8.2.1.5 Partners in Amphibian and Reptile Conservation

Partners in Amphibian and Reptile Conservation (PARC) is an inclusive partnership dedicated to the conservation of the herpetofauna (i.e. reptiles and amphibians) and their habitats. Their mission is to conserve amphibians, reptiles and their habitats as integral parts of our ecosystem and culture through proactive and coordinated public/private partnerships. The DoD arm of PARC DoD has a primary responsibility to ensure that the DoD has the operational and logistical flexibility necessary for testing and training exercises. The PARC Web site can be viewed at: <http://www.parcplace.org/>



8.2.2 Other Federal Agencies and Programs

8.2.2.1 U.S. Environmental Protection Agency

The EPA leads the nation's environmental science, research, education and assessment efforts. Its activities include developing and enforcing environmental regulations, providing financial assistance to state environmental programs, non-profits and educational institutions, performing environmental research at laboratories located nationwide, sponsoring voluntary partnerships and programs, and providing environmental education (EPA 2009). The EPA oversees the USACE in administering Section 404 of the CWA and has veto power over any USACE permit action under CWA 404, and provides guidance for managing IRP sites.



8.2.2.2 Natural Resources Conservation Service

The NRCS has several natural resources conservation programs that could assist NBSD in managing resources including conserving soils, improving water quality, increasing wildlife habitat, and reducing damage resulting from floods, or other natural disasters (NRCS 2010).



8.2.2.3 U.S. Department of Agriculture – Wildlife Services

The mission of U.S. Department of Agriculture – Wildlife Service (USDS-WS) is “to provide Federal leadership in managing problems caused by wildlife... [by] helping to solve problems that occur when human activity and wildlife are in conflict with one another” (USDA-WS 2009). The USDA-WS can provide expertise and coordinate with the Navy to monitor nuisance wildlife, and provide nuisance and non-native fauna control.

8.2.2.4 U.S. Geological Survey

The USGS is a multi-disciplinary organization that provides scientific information on biology, geography, geology, geospatial information, and water, to minimize damage from natural disasters; and manage the nation’s water, biological, energy, and mineral resources. The USGS could assist NBSD by helping design biological, water quality, and hydrologic surveys, and facilitating the integration of NBSD data into national or regional databases.



8.2.3 State Agencies

8.2.3.1 California Department of Water Resources

The California Department of Water Resources (CDWR) is responsible for managing the water resources within California to “benefit the State's people, and to protect, restore, and enhance the natural and human environments” (CDWR 2009). Strategic planning goals for the agency include (CDWR 2009):



1. Develop and assess strategies for managing the state’s water resources, including development of the California Water Plan Update.

2. Plan, design, construct, operate, and maintain the State Water Project to achieve maximum flexibility, safety, and reliability.
3. Protect and improve the water resources and dependent ecosystems of statewide significance, including the Sacramento-San Joaquin Bay-Delta Estuary.
4. Protect lives and infrastructure as they relate to dams, floods, droughts, and watersheds impacted by fire and disasters, and assist in other emergencies.
5. Provide policy direction and legislative guidance on water and energy issues and educate the public on the importance, hazards, and efficient use of water.
6. Support local planning and integrated regional water management through technical and financial assistance.
7. Perform efficiently all statutory, legal, and fiduciary responsibilities regarding management of state long-term power contracts and servicing of power revenue bonds.
8. Provide professional, cost-effective, and timely services in support of CDWR programs, consistent with governmental regulatory and policy requirements.

8.2.3.2 California Environmental Protection Agency

San Diego County is included in California Environmental Protection Agency (Cal/EPA) Region 7 (Cal/EPA 2009). Stormwater is managed and permits are issued under California NPDES by the Colorado River Basin Regional Water Quality Control Board (Cal/EPA 2009). Through issuance of permits, Cal/EPA can assist NBSD in maintaining healthy waters and streams, and ensure a no net loss of wetland acreage on the installation.



8.2.3.3 California Biodiversity Council

The California Biodiversity Council (CBC) was established in 1991 to “improve coordination and cooperation between the various resource management and environmental protection organizations at Federal, state, and local levels” (CBC 2009). The CBC is comprised of 42 members that represent Federal, state and local government agencies within California, and is co-chaired by the California Secretary for Natural Resources and BLM (CBC 2009). The goal of the CBC is to strengthen “ties between local communities and governments...by way of promoting strong local leadership and encouraging comprehensive solutions to regional issues” (CBC 2009).



8.2.4 Regional and Local Agencies

Local governments and agencies can also have an important role in implementing this INRMP, particularly with respect to helping NBSD accomplish ecosystem and watershed management objectives. A couple of these local entities include the San Diego County Department of Planning and Land Use, and the cities of San Diego, Bonita, Chula Vista, Poway, and Ramona.

8.2.5 Colleges and Universities

Universities may be contracted to provide technical support in natural resources management and technical expertise on specific resource issues. Seventeen universities and research institutions, along with nine Federal agencies (including DoD) comprise the California Cooperative Ecosystems Studies Unit (CA-CESU). The host institution for the CA-CESU is the University of California at Berkeley. The

mission of the CA-CESU is “to provide research, technical assistance and education across the biological, physical, social, and cultural sciences to address natural and cultural resource management issues at multiple scales and in an ecosystem context in California and nationally as appropriate” (CA-CESU 2004). The CA-CESU was established in July 2003 through a cooperative agreement. Therefore, NBSD has access to any of the partners in the CESU and can acquire their technical assistance through a task agreement. Colleges and universities near NBSD include:

- San Diego State University
- University of California, San Diego
- California State University San Marcos
- San Diego Community College District (includes San Diego City College, San Diego Mesa College, and San Diego Miramar College)
- Alliant International University
- Coleman University
- John Paul the Great Catholic University
- National University
- New School of Architecture and Design
- Pacific Oaks College
- The Art Institute of California, San Diego
- Point Loma Nazarene University
- San Diego Christian College
- Southern States University
- Woodbury University School of Architecture's satellite campus
- University of San Diego
- California Western School of Law
- Thomas Jefferson School of Law
- University of San Diego School of Law.

8.2.6 Contractors

Contractors may be hired to perform specialized management projects or provide technical knowledge about natural resources management. Contractors must adhere to the requirements and management actions detailed in the INRMP. Examples of contractor support in the assistance of NBSD natural resource goals implementation include:

- Endangered species surveys
- Invasive species surveys
- Soil surveys
- Wetland delineations.

8.2.7 Nonprofit Organizations

8.2.7.1 The Nature Conservancy

The Nature Conservancy (TNC) and DoD signed a cooperative agreement in 1988. This agreement allows installation commanders to obtain technical assistance from TNC and to participate in programs and projects of mutual interest. It also permits TNC to study significant ecosystems under the Navy’s control. Natural Resources staff at NBSD can benefit from this agreement through use of TNC resources and staff to manage natural resources on the installation.



8.2.7.2 NatureServe and State Heritage Programs

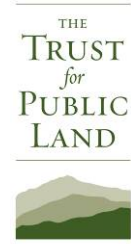
NatureServe is a non-profit conservation organization whose mission is to provide the scientific basis for effective conservation action. NatureServe and its network of natural heritage programs are the leading source for information about rare and endangered species and threatened ecosystems.



NatureServe represents an international network of biological inventories, known as natural heritage programs or conservation data centers operating in all 50 U.S. states, Canada, Latin America and the Caribbean. Together they not only collect and manage detailed local information on plants, animals, and ecosystems, but develop information products, data management tools, and conservation services to help meet local, national, and global conservation needs. The objective scientific information about species and ecosystems developed by NatureServe is used by conservation groups, government agencies, corporations, academia, and the public to make informed decisions about managing our natural resources. NatureServe has a long history of working with DoD to accomplish mutual conservation goals, and natural resources managers can use the NatureServe resources to manage resources on NBSD.

8.2.7.3 Trust for Public Land

The Trust for Public Land is a nonprofit agency whose mission is to “conserve land for people to enjoy as parks, community gardens, historic sites, rural lands, and other natural places, ensuring livable communities for generations to come (Trust for Public Land 2009). The agency has partnered with DoD to battle encroachment around military bases. The Navy and NBSD can partner with the Trust for Public Land and acquire lands for conservation around NBSD under the Encroachment Partnering Program.



8.2.8 Interagency Programs

8.2.8.1 Multi-Agency Rocky Intertidal Network

The Multi-Agency Rocky Intertidal Network (MARINe) is “a partnership of agencies, universities and private groups committed to determining the health of the rocky intertidal habitat and providing this information to the public” (MARINe 2009). MARINe is a nonprofit organization that monitors biodiversity and habitats along the California coastline (MARINe 2009). The organizations key goals include (MARINe 2009):

1. Develop a long-term monitoring program with standardized protocols so data are comparable temporally and spatially.
2. Develop a shared database for the users to analyze data across sites.
3. Promote research projects at MARINe monitoring sites and jointly publish data in peer-reviewed journals, technical conferences and through workshops.
4. Develop biological indices of measurement to determine health. Indices will provide a scientifically based, approach for determining health.
5. Make MARINe findings available to the public.

8.2.8.2 San Diego River Conservancy

In September 2002 the California Legislature passed the San Diego River Conservancy Act (Public Resources Code Division 22.9, Sections 32630 – 32661) “to preserve, restore and enhance the San Diego

River Area.” Through the Act, the San Diego River Conservancy was established as a non-regulatory agency within the State of California administered by a nine-member governing board consisting of state and local representatives (San Diego River Conservancy 2009). The mission of the Conservancy is to “further the goals of its enabling legislation (i.e., land conservation, recreation and education, natural and cultural resources preservation and restoration, water quality and natural flood conveyance), by conserving and restoring its land and water for the enjoyment of present and future generations” (San Diego River Conservancy 2006).

8.3 Infrastructure and Facilities Management

On occasion there is a need to build new facilities to ensure the ability of the installation to fulfill its military mission. The DoD military construction (MILCON) budget is a primary source of funds for construction. However, recent budget cuts have limited the MILCON project roster.

Current Management

By EO, the President has directed that Federal agencies shall design, use, or promote construction practices that minimize adverse effects on the natural habitat where cost effective and to the extent practicable (EO 13112). Additionally, CWA section 404(b)(1) analysis states that the USACE can only authorize the Least Environmentally Damaging Practicable Alternative. Several other laws are pertinent: CWA, Clean Air Act, ESA, NEPA, and Soil Conservation Act. Routine maintenance activities that may affect drainages fall under the USACE authority from Section 404 of the CWA and activities that may affect all navigable waters including all structures fall under USACE authority from the Rivers and Harbors Act. Locations where roads cross drainages are most likely to require coverage by a permit. Locations where roads cross drainages are most likely to require coverage by a permit.

Routine maintenance of roads, buildings, utility lines, and other infrastructure is important for safeguarding access to facilities that are central to support the military mission, as well as the safety of those involved in implementing the mission. Proper maintenance also prevents erosion and associated non-point source and air pollution. Guidelines for maintenance are needed that allow for protection of sensitive environmental resources and the timely, cost-effective completion of environmental documentation requirements, while ensuring full accomplishment of the military mission.

Of necessity, roads and other infrastructure will traverse sensitive natural and cultural habitats. Routine maintenance may be hampered by the need to comply with requirements to protect these resources unless there is advanced early coordination. With foresight and proper planning, delays and impacts can be avoided or minimized. However, this often requires a substantial change in the day-to-day business to which maintenance departments have become accustomed.

Management Objective and Strategy

8.3.1.1 Construction Management

Objective: Fish and wildlife conservation should be considered in all site feasibility studies and project planning, design and construction. Per DoD Instruction 4715.03, appropriate conservation work and associated funding shall be included in project proposals and construction contracts and specifications.

Strategies:

1. Develop or use proven BMPs for controlling soil erosion from construction and landscaping sites.

2. Ensure NEPA protocols are followed when selecting sites for new construction projects.
 - a. Consult with the USFWS on all new construction projects that could potentially affect federally listed or proposed species. Hold meetings early in the planning stages of a project to discuss with USFWS, NOAA Fisheries, CDFW, EPA, Regional Water Quality Control Board (RWQCB) and CCC to discuss potential environmental issues that need to be addressed.
 - b. In-water construction that may affect the California Least Tern is covered under an MOU between the U.S. Navy and the USFWS.
 - c. Try to locate new structures in previously disturbed areas.
3. If a project has the potential to affect nesting birds or nesting substrate (including trees used annually for nesting), a qualified biologist from NBSD shall be contacted immediately to determine if there will be any violations of the MBTA.
4. Where appropriate, encourage planners and designers to consider lower impact alternatives, such as permeable roads, green roofs, and erosion control through green engineering with wetlands.

8.3.1.2 Facilities Maintenance

Objective: Conduct construction and facility maintenance to allow for protection of sensitive resources, while not impacting the military mission.

Strategies:

1. Ensure that the Recommended Plant List is consulted when designing and installing vegetated landscapes.
2. Ensure incorporation of erosion control BMPs in the preliminary engineering, design, and construction of facilities involving ground disturbance.
3. Vehicular traffic associated with the construction activities and operational support activities will remain on established roads to the maximum extent practicable. Areas with highly erodible soils will be given special consideration when designing the proposed project to ensure incorporation of various erosion control techniques, such as, straw bales, silt fencing, aggregate materials, wetting compounds, and rehabilitation, where possible, to decrease erosion. Rehabilitation may include revegetating or the distribution of organic and geological materials (i.e., rocks) over the disturbed area to reduce erosion while allowing the area to naturally vegetate. Additionally, erosion control measures and appropriate BMPs, engineering designs will be implemented before, during, and after construction activities.
4. Construction equipment will be cleaned at the temporary staging 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.

8.3.1.3 Routine Maintenance

Objective: Safeguard Fleet readiness by maintaining access and operation of roads, utilities, and other infrastructure to their original design standard or better, while protecting wildlife habitat, sensitive species, soil productivity, watershed functioning, and water quality.

Strategies:

1. Align infrastructure to contribute to Fleet readiness and protection of environmental values.
 - a. Seek agreement between Public Works, Security, the Fire Department, and NAVFAC SW on the minimum network of roads needed to meet requirements for Fleet readiness, safety and security, fire control, and environmental protection.
 - b. Public Works Office should develop a 5-to-10 year long-term maintenance plan. The reason is to prevent delays in performance of routine maintenance (such as culvert replacement or pipeline repair) due to environmental issues under the ESA and CWA. A long-term plan will also support a more programmatic approach to consultation with resource agencies.
2. Take migratory and resident bird populations into consideration when performing maintenance such as mowing, tree trimming, pruning, or removing trees.
 - a. Projects should be phased to avoid disturbing nesting birds.
 - b. If nesting birds or eggs are encountered within a project area, the contractor must immediately notify the Contracting Officer or Project Manager and not attempt to harass nesting adult birds or remove any young birds or eggs from the nest.

8.3.1.4 Road Maintenance

Objective: Improve the soundness of road maintenance practices to avoid and minimize environmental impacts, to control non-native species, enhance biodiversity, and protect sensitive species, soil productivity, watershed functioning, and water quality.

Strategies:

1. Comply with CWA Section 404 Permit and Section 401 State Water Quality Certification if a project may affect a floodplain, wetlands or watercourses. Ensure project proponents understand their responsibilities for obtaining and complying with CWA permits.
2. Develop and implement protocols for conducting maintenance activities on roads. Provide training on protocols to applicable personnel. For example, reducing mowing frequency and intensity based on ecological considerations (e.g., annual nesting season).

8.4 Stormwater Management

Stormwater discharge to navigable waters and tributaries is prohibited unless an NPDES permit is obtained. The EPA has delegated responsibility for the NPDES program to the State Water Board.

Specific Concerns

- Runoff of stormwater delivering pollutants to streams leading to San Diego Bay.

Current Management

The U.S. Navy policy related to stormwater management is: “Develop, implement, and maintain current stormwater management plans, and comply with Federal, state, and local regulations and permit conditions, as applicable.” The Navy has coverage under two general stormwater permits: the statewide

General Industrial NPDES Storm Water Permit and the statewide General Construction NPDES Stormwater Permit.

Management Objective and Strategy

Objective: Reduce and minimize stormwater pollutants harmful to the ocean ecosystem from entering NBSD waters.

Strategies:

1. Implement Erosion Control Plan BMPs.
2. Implement recommendations for stormwater management contained within any NPDES permits maintained by NBSD.
3. Investigate the use of LID for future development projects to minimize adverse impacts of surface runoff from impervious areas.
4. Develop an improved training program for appropriate government employees.
 - a. Support regular workshops on the need, design, and implementation of BMPs.
 - b. Provide training on LID to maintain pre-development hydrologic conditions.

8.5 Communications Towers, Wind Farms and Power Lines

Specific Concerns

- Growing impacts from communications towers and, power lines, and wind farms to migratory birds protected under the MBTA.

Management Objective and Strategy

Objective: Safeguard military readiness by maintaining communications towers and overhead power lines while avoiding and minimizing impacts to native wildlife and plants.

Strategies:

1. Comply with USFWS guidelines for reducing fatal bird strikes on communication towers, such as the service guidance on the siting, construction, operation and decommissioning of communications towers, to the greatest extent practicable.
2. Develop an avian protection plan using information from the DoD, PIF, and USFWS.

8.6 Consistency with Cultural Resources Management

NBSD has developed an Integrated Cultural Resources Management Plan (ICRMP), and objectives and strategies for management of cultural resources are outlined in that document.

Specific Concerns

- Natural resources monitoring programs and control and management of terrestrial invasive species have the potential to impact cultural resources sites.

Management Objective and Strategy

Objective: Coordinate management activities between the cultural and natural resource management program when a natural resource impacts, or has the potential to impact, a cultural resource.

Strategies:

1. Coordinate with the cultural resources program when natural resources projects that have the potential to impact sensitive cultural resources are not able to provide site-specific information.
2. Review and ensure that natural resources activities do not conflict with the NBSD ICRMP.

8.7 NEPA Compliance

NEPA requires review of Federal supported activities, actions, and alternatives to assess their potential impacts on the environment. The NEPA process is designed to identify potential environmental problems early in the planning process so the proponent of the action can resolve problems in the early stages of project development. OPNAVINST 5090.1C CH-1, Chapter 5: *Environmental Planning Under the National Environmental Policy Act (NEPA) and Executive Order (E.O.) 12114*, sets forth policy, responsibilities, and procedures for integrating environmental considerations into Navy planning and decision making. Subsequent guidance released by NAVFAC SW in December 2011 provides a checklist, or format, for Environmental Assessment documents for facilities projects.

Current Management

The NEPA program at NBSD is conducted according to OPNAVINST 5090.1C CH-1, Chapter 5.

The instruction provides guidance for conducting the Environmental Review Process to ensure compliance with Federal, state and DoN guidance and regulations pertaining to NEPA. The objectives for complying with NEPA as described in the instruction include the following (DoN 2011b):

1. Achieving the widest range of beneficial uses of the environment without degradation, risk to health and safety, or other consequences that are undesirable and unintended.
2. Preserving important historical, cultural, and natural aspects of our national heritage, and maintaining, where possible, an environment that supports diversity and variety of individual choice.
3. Achieving a balance between resource use and development within the sustained carrying capacity of the ecosystem involved.
4. Enhancing the quality of renewable resources and working toward the maximum attainable recycling of depleting resources.
5. Providing the opportunity for public comment.

To ensure compliance with NEPA, the instruction requires Navy personnel to (DoN 2011):

1. Assess environmental consequences of proposed actions that could affect the quality of the environment in the U.S., its territories, and possessions per DoD and CEQ regulations.
2. Use a systematic, interdisciplinary approach that ensures the integrated use of the natural and social sciences and environmental considerations in planning and decision making where there may be an impact on the human environment.

3. Ensure the consideration of presently unmeasured environmental amenities in the decision making process.
4. Consider the reasonable alternatives to recommended actions in any proposal that would involve unresolved conflicts concerning alternative uses of available resources.
5. Make available to states, counties, municipalities, institutions, and individuals advice and information useful in restoring, maintaining, and enhancing the quality of the environment.
6. Use ecological information in planning and developing resource oriented projects.

All projects on NBSD are submitted to the respective tenant liaison, which in turn enters and tracks these projects. Projects are then brought before the Work Induction Board, where the NBSD NEPA planner determines which level of NEPA, if any, will be required. NBSD personnel have also developed and implemented a Site Approval Process to ensure compliance with NEPA, and this process is illustrated in **Figure 8-1**.

Management Objective and Strategy

Objective: Conduct planning of mission activities having potential environmental effects by applying NEPA's requirements and policies to enhance the mission related use and the protection of natural resources. Seek opportunities for streamlining environmental assessment procedures.

Strategies:

1. Continue to comply with OPNAVINST 5090.1C CH-1.
2. Continue to assess the environmental consequences of each proposed action that could affect the natural environment, and address the significant impact of each action through analysis, planning and avoidance.
3. Implement established protocols to ensure that NEPA is integrated early in the planning process for project development.

8.8 Oil Spill and Hazardous Substance Prevention and Cleanup

The Federal Water Pollution Control Act of 1972 (33 U.S.C. 1251, et seq.), as amended by the CWA of 1977, authorizes the President, in the case of an oil or hazardous substance release, to take any action necessary to mitigate damage to the public health and welfare; including, but not limited to fish, shellfish, wildlife, public and private property, shorelines and beaches. Natural Resource Trustees are authorized to recover damages for injury to, destruction of or loss of natural resources resulting from a discharge or the substantial threat of discharge, of oil into navigable waters.

The CWA prohibits spills, leaks or other discharges of pollutants into waters of the U.S. in quantities that may be harmful, which includes discharges of pollutants that: (1) violate applicable water quality standards; (2) cause a film or sheen upon or discoloration of the surface of the water or adjoining shorelines; or (3) cause sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines.

The Oil Pollution Prevention Act of 1990 amended the CWA to expand oil spill prevention activities, improve preparedness and response capabilities, and ensure that companies are responsible for damages from spills. The U.S. Coast Guard is the lead agency for oil spill prevention and response, and is authorized to direct state and local agencies in controlling pollution in bays and coastal waters.

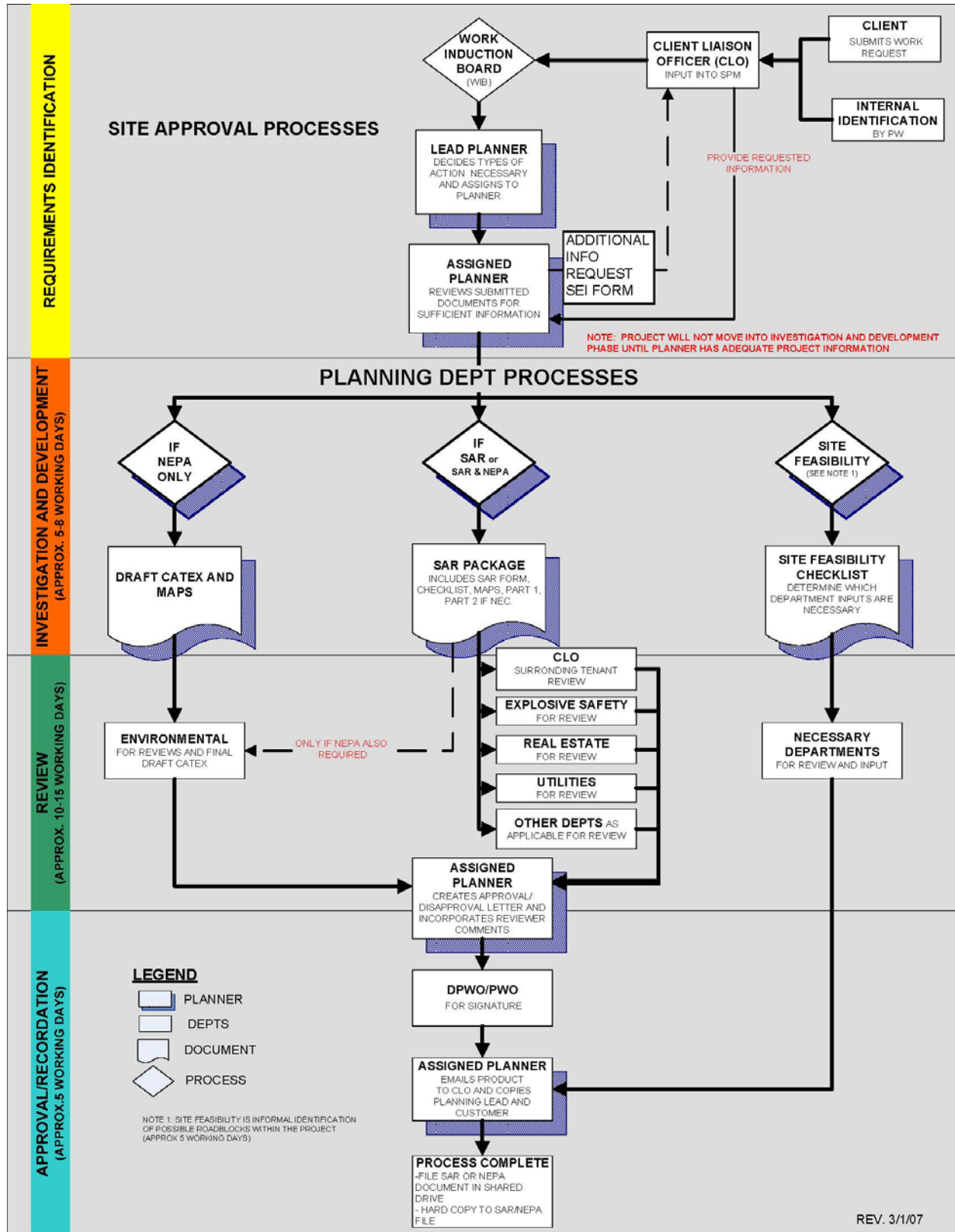


Figure 8-1: Site Approval Process for NBSD

Hazardous substances other than oil are addressed by the CERCLA (42 U.S.C. 9601, et seq.), which authorizes Natural Resource Trustees to recover damages for injury to, destruction of or loss of natural resources resulting from the release of a hazardous substance.

OPNAVINST 5090.1C CH-1, Chapter 26 (Natural Resources Damage), describes policies, requirements and all pertinent legislation, references, and information related to the release of oil or hazardous substances that injure or threaten to injure natural resources within Navy control or management (DoN 2011). NOAA is assigned responsibility for performing a Natural Resources Damage Assessment (NRDA) from spills, and the Navy has adopted NOAA procedures for damage assessment (15 CFR 990). Similarly, the Department of the Interior is in charge of damage assessment for hazardous substance spills under EO 12580. The baseline condition of the natural resources and services that would have existed had the oil or hazardous substance release not occurred is estimated using historical data, reference data, control data or data on incremental changes, alone or in combination, as appropriate. Navy guidance (OPNAVINST 5090.1C CH-1) suggests that this information may be obtained from INRMPs, NEPA documents, or special studies.

In California, the CDFW Office of Spill Prevention & Response (OSPR) is responsible for protecting California's natural resources by preventing, preparing for, and responding to spills of oil and other deleterious materials, and through restoring and enhancing affected resources. The USCG and CDFW-OSPR agreed to joint preparation of contingency plans through co-chairing the three Port Area Committees for Contingency Planning: USCG Port Areas for San Francisco, Los Angeles/Long Beach, and San Diego.

The OSPR's Resource Assessment Program conducts NRDA of pollution events that result in significant injuries to wildlife and/or habitat. The goal of OSPR's NRDA program is to quantify the damages, to seek compensation from the responsible parties, and to both restore the injured resources and compensate the public for the lost interim ecological benefits and uses of these resources. CDFW normally leads wildlife response during a spill in California through the California Wildlife Operations Branch.

Specific Concerns

- Cumulative effects of small, medium, and large oil spills from boats, personal watercraft, and ships can contaminate NBSD waters and affect natural resources.
- Coordinated planning for oil spill cleanup activities should be integrated with conservation priorities of this INRMP.
- The collection and maintenance of ecological information required by OPNAVINST 5090.1D (Chapter 26) are essential to pre-incident planning on behalf of the Navy's Regional Environmental Coordinator.
- There is a need to incorporate planning for NRDA under both Federal and state oil spill prevention regulation, as well as to establish a quantitative baseline to support natural resources management decisions, habitat mitigation and enhancement planning, and sustainability planning.

Current Management

The Emergency Management Program at NBSD provides the necessary policy guidance, organizational structure, mitigation strategies, and responsibilities to establish an all hazards approach to Emergency Management. Emergency Management at NBSD provides the framework for Navy interaction with Federal, state, local, and other service organizations. The NBSD Emergency Management Officer can be contacted at: 619-553-0090 (CNIC 2009b). There is also an Emergency Response Plan available for all NBSD areas (see **Section 2.2.5**).

Management Objective and Strategy

Objective: Prevent spills of oil and other hazardous substances, and ensure the effectiveness of prevention and response planning.

Strategies:

1. Continue to comply with NBSD established procedures for managing petroleum, oil, lubricants, and hazardous wastes.
2. Integrate the protection priorities of this INRMP into contingency spill planning.
 - a. Update GIS layers of natural resources to support preparedness planning.
 - b. Integrate baseline ecological surveys into preparedness planning.
 - c. Integrate invasive exotic species response planning with oil spill contingency plans.

8.9 Real Estate Outgrants and Leases

8.9.1 Leases and Easements

All real estate transactions go through the Site Approval Process for review by an interdisciplinary team including the installation biologist. All real estate transactions should be reviewed for consistency with this INRMP.

The installation natural resources manager may be designated as the contact for ensuring terms for natural resources management within a lease are met. **Table 8-1** includes a summary of known leases and their natural resources management requirements.

Table 8-1: Existing NBSD Leases with Natural Resources Management Requirements

Lease Number	Year	Lessee	Lease Area	Natural Resources Management Terms
NF-R-32974_1978-086780	1978	Department of Transportation, State of California	CalTrans I-15 Right-of-Way	
		Lincoln Property Company	Housing Areas	Lincoln LLC developed 2003 natural area guidelines and 2007 community policies.
N6871105RP05P78	2005	San Diego Gas and Electric Company	Easement at MGRF and Murphy Canyon for construction, repair and replacement of transmission line.	Conduct activities consistent with Navy INRMP and SDG&E Natural Resources Management Plan, and conduct long-term invasive weed control.

8.9.2 Agricultural/Grazing and Forestry

OPNAVINST 5090.1D requires the Navy to identify areas that may be suitable and available for agricultural/grazing outleasing or commercial forestry. More specifically, the Military Construction Authorization Act and 10 U.S.C. 2665 and 2667 provide for the use of DoD lands under a lease to an agency, organization, or person for the purpose of agricultural/grazing outleasing or the production of and sale of forest products that have commercial value.

At NBSD there are no forestlands suitable for timber production, or lands suitable for agricultural and grazing outleasing. The Navy has no plans to initiate commercial use, such as grazing, agriculture, or oil exploration, on NBSD.

8.10 Natural Resources Staffing and Training

8.10.1 Natural Resources Program Staffing

The Sikes Act, DoD Instruction 4715.03, and OPNAVINST 5090.1D specifically requires that there be “sufficient numbers of professionally trained natural resources management and natural resources enforcement personnel to be available and assigned responsibility” to implement an INRMP. Personnel assigned to natural resources management are the core staff responsible for implementing the INRMP. These personnel ensure that a consistent conservation program is carried out by using strategies outlined in this plan to support the Navy mission and achieve INRMP goals and objectives. Staff coordination includes both planning teams for initiating projects and staffing teams to manage and run projects. Some of the projects described in this plan will depend on coordination with other installation personnel. The following staff positions are required to implement this INRMP at NBSD:

- Biologist (dedicated to NBSD)
- Biological Science Technician.

8.10.2 Professional Education and Training

Continuing education, training courses, and workshops allow managers to stay up to date with the latest research findings and application techniques. Membership in professional societies is encouraged, including The Wildlife Society, Society of Range Management, National Military Fish and Wildlife Association (NMFWA), Society for Ecological Restoration, the California Native Plant Society, and the Society for Conservation Biology. These societies produce some of the best scientific publications in natural resources. Meetings of these societies also provide excellent ways to communicate with fellow professionals, and to maintain professional standards.

Environmental personnel are encouraged to join professional societies and become active members. Personnel are sent to as many meetings as feasible to meet with other professionals to exchange ideas and attend technical meetings. Maintenance and enhancement of professional skills are emphasized.

At least one environmental staff person from NBSD should, if funding allows, attend the following recommended annual workshops or professional conferences as funding permit (this is not an inclusive list and other relevant workshops or conferences may be attended):

- National Military Fish and Wildlife Association annual workshop
- North American Natural Resources Conference

- Western Association of Fish and Wildlife Agencies
- The Wildlife Society Conference (national, section, and chapter levels)
- Society for Range Management annual meeting
- International Erosion Control Association Conference
- Environmental Systems Research Institute (ESRI) Users GIS Conference.

Other conferences/workshops will be evaluated for their usefulness. Decisions will be made based on the appropriateness to ongoing projects and funding availability. Training that is especially useful includes endangered species workshops, GIS basic and advanced training, watchable wildlife workshops, wetlands training, and PIF workshops. It is especially useful to have as many people as possible attend NMFWA workshops, and efforts will be made to have more than minimal attendance at that meeting. Personnel will be trained in related environmental fields. NEPA training is required of all personnel who review or prepare NEPA documents.

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9. Implementation

9.1 Project Prescription Development

The policy on INRMP implementation is contained in DoD Memorandum *Implementation of the Sikes Act Improvement Act: Updated Guidance* (DUSD[I&E] 2002). According to the memorandum, an INRMP is considered implemented if an installation:

- Actively requests, receives, and uses funds for “must fund” projects and activities;
- Ensures that sufficient numbers of professionally trained natural resources management personnel are available to perform the tasks required by the INRMP;
- Coordinates annually with all cooperating offices; and
- Documents specific INRMP action accomplishments undertaken each year.

Key elements of INRMP implementation (e.g., projects) are addressed in **Appendix D, Tables D-1 through D-5**.

9.2 Priority Setting and Funding Classification

Project priority within this INRMP is initially determined by funding classification, as defined in Department of Defense Instruction 4715.03, *Natural Resources Conservation Program* (DoD 2011). The recurring and non-recurring conservation requirements in Department of Defense Instruction 4715.03 and in OPNAVINST 5090.1D are as follows:

Recurring and Non-Recurring Conservation Requirements (DoD 4715.03, 2011)

Recurring Natural Resources Conservation Management Requirements.

- a. Administrative, personnel, and other costs associated with managing the DoD Natural Resources Conservation Program that are necessary to meet applicable compliance requirements in Federal and state laws, regulations, Executive Orders (EOs), and DoD policies, or in direct support of the military mission.
- b. DoD components shall give priority to recurring natural resources conservation management requirements associated with the operation of facilities, installations, and deployed weapons systems. These activities include day-to-day costs of sustaining an effective natural resources management program, as well as annual requirements, including manpower, training, supplies, permits, fees, testing and monitoring, sampling and analysis, reporting and recordkeeping, maintenance of natural resources conservation equipment, and compliance self-assessments.

Non-Recurring Natural Resources Management Requirements. Current Compliance. Includes installation projects and activities to support:

- a. Installations currently out of compliance (e.g., received an enforcement action from an authorized Federal or state agency or local authority).
- b. Signed compliance agreement or consent order.
- c. Meeting requirements with applicable Federal or state laws, regulations, standards, EOs, or DoD policies.

- d. Immediate and essential maintenance of operational integrity or military mission sustainment.
- e. Projects or activities that will be out of compliance if not implemented in the current program year. Those activities include:
 - i. Environmental analyses for natural resources conservation projects, and monitoring and studies required to assess and mitigate potential impacts of the military mission on conservation resources.
 - ii. Planning documentation, master plans, compatible development planning, and INRMPs.
 - iii. Natural resources planning-level surveys.
 - iv. Reasonable and prudent measures included in incidental take statements of biological opinions, biological assessments, surveys, monitoring, reporting of assessment results, or habitat protection for listed, at-risk, and candidate species so that proposed or continuing actions can be modified in consultation with the USFWS or National Marine Fisheries Service (NMFS) Fisheries Service.
 - v. Mitigation to meet existing regulatory permit conditions or written agreements.
 - vi. Nonpoint source pollution or watershed management studies or actions needed to meet compliance dates cited in approved state coastal nonpoint source pollution control plans, as required to meet determinations consistent with Coastal Zone Management.
 - vii. Wetlands delineation critical for the prevention of adverse impacts to wetlands, so that continuing actions can be modified to ensure mission continuity.
 - viii. Compliance with missed deadlines established in DoD-executed agreements.

Non-Recurring Natural Resources Management Requirements. Maintenance Requirements. Includes those projects and activities needed to meet an established deadline beyond the current program year and maintain compliance. Examples include:

- a. Compliance with future deadlines.
- b. Conservation, GIS mapping, and data management to comply with Federal, state, and local regulations, EOs, and DoD policy.
- c. Efforts undertaken in accordance with non-deadline specific compliance requirements of leadership initiatives.
- d. Wetlands enhancement to minimize wetlands loss and enhance existing degraded wetlands.
- e. Conservation recommendations in biological opinions issued pursuant to the ESA.

Non-Recurring Natural Resources Management Requirements. Enhancement Actions Beyond Compliance. Includes those projects and activities that enhance conservation resources or the integrity of the installation mission, or are needed to address overall environmental goals and objectives, but are not specifically required by law, regulation, or EO, and are not of an immediate nature. Examples include:

- a. Community outreach activities, such as International Migratory Bird Day, Earth Day, National Public Lands Day, Pollinator Week, and Arbor Day activities.
- b. Educational and public awareness projects, such as interpretive displays, oral histories, Watchable Wildlife areas, nature trails, wildlife checklists, and conservation teaching materials.
- c. Restoration or enhancement of natural resources when no specific compliance requirement dictates a course or timing of action.

- d. Management and execution of volunteer and partnership programs.

Navy Environmental Readiness Levels (OPNAVINST 5090.1C CH-1)

Environmental Readiness Level 4 (absolute minimum level of environmental readiness capability required to maintain compliance with applicable legal requirements):

- a. Supports all actions specifically required by law, regulation or Executive Order (DoD Class I and II requirements) just in time.
- b. Supports all DoD Class 0 requirements as they relate to a specific statute such as hazardous waste disposal, permits, fees, monitoring, sampling and analysis, reporting and record keeping.
- c. Supports recurring administrative, personnel and other costs associated with managing environmental programs that are necessary to meet applicable compliance requirements (DoD Class 0).
- d. Supports minimum feasible Navy executive agent responsibilities, participation in Office of the Secretary of Defense (OSD) sponsored inter-department and inter-agency efforts, and OSD mandated regional coordination efforts.

Environmental Readiness Level 3:

- a. Supports all capabilities provided by ERL4.
- b. Supports existing level of Navy executive agent responsibilities, participation in OSD sponsored inter-department and inter-agency efforts, and OSD mandated regional coordination efforts.
- c. Supports proactive involvement in the legislative and regulatory process to identify and mitigate requirements that will impose excessive costs or restrictions on operations and training.
- d. Supports proactive initiatives critical to the protection of Navy operational readiness.

Environmental Readiness Level 2:

- a. Supports all capabilities provided under ERL3.
- b. Supports enhanced proactive initiatives critical to the protection of Navy operational readiness.
- c. Supports all Navy and DoD policy requirements.
- d. Supports investments in pollution reduction, compliance enhancement, energy conservation and cost reduction.

Environmental Readiness Level 1:

- a. Supports all capabilities provided under ERL2.
- b. Supports proactive actions required to ensure compliance with pending/strong anticipated laws and regulations in a timely manner and/or to prevent adverse impact to Navy mission.
- c. Supports investments that demonstrate Navy environmental leadership and proactive environmental stewardship.

9.3 Project Development and Tracking

Natural resources projects are tracked and allocated funding via the Navy Environmental Program Requirements Web Database (EPRWeb) (U.S. Navy 2006a). The database is used by the Navy to determine programming and budgeting requirements for projects under the Planning, Programming, Budget, and Execution System (PPBES) process (DoN 2011b). The information in the database is also used by the Navy to develop their annual Environmental Quality Report (EQR) for Congress (DoN 2011b).

The installation natural resources manager is responsible for entering projects in **Appendix D** into EPRWeb to ensure that natural resources management prescriptions identified in this revised INRMP are reviewed by the chain of command, and are documented for inclusion in the annual EQR report to Congress (U.S. Navy 2006a). Once funding is allocated, natural resources personnel at NBSD are responsible for ensuring that EPRWeb is updated with the date project funding was received, and progress made towards project completion (U.S. Navy 2006a).

The Navy Natural Resources Metrics (**Appendix J**) were developed to assist installations evaluate INRMP implementation. Annually, each installation receives a report card informing them on where they stand in regard to INRMP implementation. The program also requires each installation to address specific questions related to implementation to ensure that the implemented INRMP meets all regulatory requirements. Navy guidance suggests that projects progress be updated at least twice per year in EPRWeb, and the information will be used to answer questions in the annual Natural Resources Data Call Station, which will be used to evaluate INRMP implementation (U.S. Navy 2006a).

9.4 Funding Mechanisms and Sources

9.4.1 Funding Mechanisms

The PPBES budget process employed by the DoD is an ongoing, continuously reviewed process that can be summarized as follows (DoD 2005):

- The PPBES process consists of long-range planning to anticipate and secure requirements to meet security threats and accomplish program goals.
- Resources to meet these requirements are estimated and programmed by program managers in the Future Year Defense Plan (FYDP). The FYDP is a list of resource requirements for the next 6 years. Specifically, the FYDP comprises the subsequent fiscal year budget and funding requirements projected out 5 years.
- The FYDP resources are then analyzed via the Programming Process. In the Programming Process, program managers reassess their requirements, reprioritize planned activity, reevaluate existing funding guidance, and estimate their funding needs for the next budget year, plus the subsequent 5 fiscal years (referred to as Program Objectives Memoranda [POMs] 1–5).
- The POM process takes place within Defense Components beginning in the fall of each year. Then each DoD component submits the POM in the spring to the OSD. The OSD reviews the budget submissions and develops the President’s budget that will be submitted to Congress. At the installation level, data submissions to support this are made to the Major Commands twice annually, in fall and spring.
- Based on POM decisions of each component, budget controls are issued to the field commands for budget preparation.

The time scale of an INRMP fits well into the DoD PPBES forecasting process. One full cycle of the DoD budget process includes the next budgeted fiscal year and projections for the following 5 fiscal years. One full cycle of the INRMP, with upper command approval, covers at least a 5-year period. This means that by relying on an INRMP that is updated regularly, natural resource managers should be able to project relatively accurate funding requirements for five-year periods, at a minimum (DoD 2005).

The Regional Commander or Commanding Officer is responsible for ensuring that NBSD has sufficient staff to implement the INRMP. Each NBSD facility environmental office and NAVFAC SW is responsible for annual coordination with USFWS and CDFW, requesting funds for INRMP implementation, and documenting implementation actions. Consequently, the projects and schedules proposed in this revised INRMP are targets to facilitate natural resources program planning. When requested funds are not received, natural resource management prescriptions and the programming schedule may be reexamined. In addition, plans may be adapted to account for the revised project schedule and the proposed budget may be adjusted to account for available funding.

9.4.2 Funding Sources

Once a project has been placed into EPRWeb, a funding source needs to be determined. In general, ERL level 3 and 4 projects will receive funding, but it is up to natural resource managers to find funds for ERL level 1 and 2 projects (U.S. Navy 2006a). The following are the primary funding sources for Navy natural resources programs (U.S. Navy 2006a):

1. **O&MN Environmental Funds.** The majority of natural resource projects are funded with Operations and Maintenance, Navy (O&MN) environmental funds. These appropriated funds are the primary source of resources to support must-fund, just-in-time environmental compliance (i.e., Navy ERL 4 projects). O&MN funds are generally not available for Navy Environmental Readiness Level 3 - 1 projects. In addition to the restriction to Environmental Readiness Level 4 requirements, there are other limitations placed on the use of O&MN funds:
 - a. Only the initial procurement, construction, and modification of a facility or project are considered valid environmental funding requirements. The subsequent operation, modification due to mission requirements, maintenance, repair, and eventual replacement is considered a Real Property Maintenance funding requirement. For example, the cost of initially installing a BMP can be funded through O&MN, but future maintenance or repair of that BMP must be paid by Real Property Maintenance funds.
 - b. When natural resource requirements are tied to a specific construction project or other action, funds for the natural resource requirements should be included in the overall project costs. For example, if a permit for filling wetlands is required as part of a MILCON project, the costs of obtaining the permit and implementing required mitigation should be paid by MILCON funds as part of the overall construction project costs.
2. **Legacy Funds.** The Legacy Resource Management Program (Legacy Program) is a special Congressionally mandated initiative to fund military conservation projects. The Legacy Program can provide funding for a variety of conservation projects, such as regional ecosystem management initiatives, habitat preservation efforts, archaeological investigations, invasive species control, monitoring and predicting migratory patterns of birds and animals, and national partnerships and initiatives, such as National Public Lands Day.
3. **Fish and Wildlife Fees.** User fees collected for the privilege of hunting, fishing, or trapping will be collected, deposited and used in accordance with the Sikes Act, as amended, *Military reservations and facilities: hunting, fishing, and trapping* (10 U.S.C. 2671), and the DoD financial management regulations. The Sikes Act specifies that user fees collected for hunting,

fishing or trapping shall be used only on the installation where collected. Further, collections will be used exclusively for fish and wildlife conservation and management on the installation where collected. At this time, no hunting, fishing or trapping is conducted at NBSD.

- a. The same fee schedule will be used for all participants with the exception of senior citizens, children and the handicapped. Membership in an installation conservation organization will not give members priority in participating in hunting, fishing and trapping programs. Efforts should be made to utilize the services of the installation's morale, welfare, and recreation (MWR) function to collect and administer these funds locally in accordance with Sikes Act authorization.
4. **Recycling Funds.** An installation with a Qualified Recycling Program (QRP) may use proceeds for some types of natural resource projects. Proceeds must first be used to cover QRP costs. Up to 50 percent of net proceeds may then be used for pollution abatement, pollution prevention, composting, alternative fueled vehicle infrastructure support, vehicle conversion, energy conversion, or occupational safety and health projects, with first consideration given to projects included in the installation's pollution-prevention plans. Remaining funds may be transferred to the non-appropriated MWR account for approved programs, or retained to cover anticipated future program costs. Natural resources projects can be funded as pollution prevention/abatement (e.g., wetlands or riparian forest restoration) or MWR projects (e.g., trail construction and maintenance).
 5. **Strategic Environmental Research and Development Program (SERDP) Funds:** SERDP is DoD's corporate environmental research and development program, planned and executing in full partnership with the Department of Energy (DOE) and EPA, with participation by numerous other Federal and non-Federal organizations. SERDP funds for environmental and conservation are allocated through a competitive process. Within its broad areas of interest the SERDP focuses on cleanup, compliance, conservation, and pollution preventions technologies. The purpose of the conservation technology program is to use research and development to provide improved inventory and monitoring capabilities; develop more effective impact and risk assessment techniques; and provide improved mitigation and rehabilitation capabilities. Recently, the program solicited Statements of Need for conservation technology proposals to research indicators of stress on threatened and endangered species and to develop techniques to inventory and monitor threatened and endangered species in accessible areas.
 6. **Non-DoD Funds.** Many grant programs are available for natural resources management projects, such as watershed management and restoration, habitat restoration, and wetland and riparian area restoration. When federally funded, these programs typically require non-Federal matching funds. However, installations may partner with other groups to propose eligible projects. Below is one example of a grant program:
 - a. The Five-Star Restoration Challenge Grants Program is sponsored by the National Association of Counties, National Association of Service and Conservation Corps, National Fish and Wildlife Foundation, and Wildlife Habitat Council in cooperation with the EPA, NOAA Fisheries, and other sponsors. This program provides modest financial assistance (\$5,000-\$20,000) on a competitive basis to support community-based wetland and riparian restoration projects that build diverse partnerships and foster local natural resource stewardship. Installations would need to partner with other groups to be eligible for this type of program. Applications are due in March. Information is available on the Web at <http://www.epa.gov/owow/wetlands/restore/5star/>. INRMPs should include valid Class 2 and 3 projects and actions that would enhance an installation's natural resources.

- b. National Public Lands Day Grants. Installations are eligible to receive DoD Legacy funds in support of National Public Lands Day. Project eligible for funds include habitat restoration, wetland restoration, and stream cleanup.

Nontraditional sources of funding for natural resources programs include non-appropriated reimbursable funds (i.e., hunting and fishing fees), and appropriated reimbursable funds (e.g., DoD Legacy Program, U.S. Department of Agriculture Pest Management Program). These accounts are sources of funds for Class 3 projects. Installations, however, should not depend on these programs to fully fund their natural resources management programs.

9.5 Effectiveness of INRMP Providing No-Net-Loss to Military Mission

Implementation of this INRMP by NBSD will ensure that the natural resources on NBSD will continue to support the NBSD mission. This INRMP revision strives to integrate natural resources management with other installation plans and activities. It also establishes goals that represent a long-term vision for the health and quality of NBSD's natural resources. Effectiveness of INRMP implementation is measured through the annual natural resources data call for Navy Natural Resources Metrics (see **Appendix J**). The information generated from the program is used by NBSD to track implementation and adjust goals and objectives as needed.

The INRMP goal and objectives may be revised over time to reflect changing missions and environmental conditions. Any future changes in mission, training activity, or technology should be analyzed to assess its impact on natural resources. As new plans and DoN guidance and regulations are developed, they will be integrated with the goals and management actions of this INRMP. The INRMP will be reviewed, assessed, and modified as needed on a regular basis to ensure continued integration with other management plans or changes in military mission. For additional information, refer to **Section 1.3**.

9.6 Formal Adoption of INRMP by Regional Commander

Through signing this revised INRMP, the Regional Commander or Commanding Officer is committing to “seek funding and execute, subject to the availability of funding, all ERL Level 4 projects and activities in accordance with specific timeframes identified in the INRMP” (U.S. Navy 2006a).

9.7 Federal Anti-Deficiency Act

“All actions contemplated in this INRMP are subject to the availability of funds properly authorized and appropriated under Federal law. Nothing in this INRMP is intended to be nor must be construed to be a violation of the Anti-Deficiency Act (31 U.S.C. 1341 et seq.)” (U.S. Navy 2006a).

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11. References

11.1 Text References

- Audubon International 2009 Audubon International. 2009. Audubon Cooperative Sanctuary Program for Golf Courses. Available online <http://acspgolf.auduboninternational.org/>>. Accessed 02 June 2009.
- Bailey 1995 Bailey, R.G. 1995. Descriptions of the Ecoregions of the United States, Second Edition. Pub. No. 1391 (rev.), Washington, D.C.: USDA Forest Service. 1995.
- Benton et al. 2008 Benton, N. , J.D. Ripley, and F. Powledge, eds. 2008. Conserving Biodiversity on Military Lands: A Guide for Natural Resources Managers. 2008 edition. Available online <<http://www.DoDbiodiversity.org>>. Arlington, Virginia: NatureServe. 2008.
- CA-CESU 2004 Californian Cooperative Ecosystem Studies Unit (CA-CESU). 2004. Californian Cooperative Ecosystem Studies Unit Strategic Plan. November 2004.
- Cal/EPA 2009 California Environmental Protection Agency (Cal/EPA). 2009. Colorado River Basin Regional Water Quality Control Board: Fact Sheet. Available online <http://www.waterboards.ca.gov/coloradoriver/water_issues/available_documents/docs/r7_facts.pdf>. Accessed 01 July 2009.
- Cal-IPC 2006 California Invasive Plant Council (Cal-IPC). 2006. California Invasive Plant Inventory. February 2006.
- CA-NRCS 2007 California Natural Resources Conservation Service (CA-NRCS). 2007 Drought Help – California. Available online <<http://www.ca.nrcs.usda.gov/features/cadrought.html>>. Accessed 27 March 2009.
- Carretta et al. 2007 Carretta, J.V., K.A. Forney, M.M. Muto, J. Barlow, J. Baker, B. Hanson, and M.S. Lowry. 2007. U.S. Pacific marine mammal stock assessments: 2006. NOAA-TM-NMFS-SWFSC-398. 321 pp. 2007.
- Costanza et al. 1997 Costanza, R., R. d'Arge, R. de Groot, S. Farber, M. Grasso, B. Hannon, K. Linburg, S. Naem, R.V. O'Neill, J. Paruelo, R.G. Raskin, P. Sutton, and M. van den Belt. 1997. "The value of the world's ecosystem services and natural capital." *Nature* 387: 253–260.
- CBC 2009 California Biodiversity Council (CBC). 2009. Home Page. Available online <<http://biodiversity.ca.gov/>>. Accessed 01 July 2009.
- CCCC 2006 California Climate Change Center (CCCC). Our Changing Climate: Assessing the Risks to California. July 2006.

- CCE 2005 University of California Cooperative Extension (CCE). 2005. Native California oaks losing leaves early. Available online <<http://news.ucanr.org/newsstorymain.cfm?story=698>>. Accessed 15 April 2009.
- CDFG 2000 California Department of Fish and Game (CDFG). 2000. Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities. Available online <<http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/guideplt.pdf>>. Revised 08 May 2000.
- CDFG 2007 CDFG. 2007. California Wildlife Conservation Challenges: California's Wildlife Action Plan. Available online <<http://www.dfg.ca.gov/habitats/wdp/>>. 2007.
- CDFG 2009b CDFG. 2009b. Resource Management: Wildlife Action Plan. Available online <<http://www.dfg.ca.gov/wildlife/WAP/>>. Accessed 23 June 2009.
- CDFG 2009c CDFG. 2009c. Invasive Species in California. Available online <<http://www.dfg.ca.gov/invasives/>>. Accessed 27 March 2009.
- CDFG 2011a CDFG. 2011a. State and Federally Listed Endangered and Threatened Animals of California. January 2011.
- CDFG 2011b CDFG. 2011. State and Federally Listed Endangered, Threatened, and Rare Plants of California. January 2011.
- CDWR 2009 California Department of Water Resources (CDWR). 2009. Mission and Goals. <<http://www.dwr.water.ca.gov/about/mission.cfm>>. Accessed 01 July 2009.
- City of San Diego 1997 City of San Diego. 1997. Multiple Species Conservation Program: City of San Diego MSCP Subarea Plan. March 1997.
- City of San Diego 1998 City of San Diego. 1998. Final Multiple Species Conservation Program: MSCP Plan. August 1998.
- City of San Diego 2011 City of San Diego 2011. Multiple Species Conservation Program (MSCP). <<http://www.sandiego.gov/planning/mscp/faq/index.shtml>>. Accessed: 21 March 2011.
- CNM 2011 Cabrillo National Monument (CMN). 2011. Environmental Factors. Available online <<http://www.nps.gov/cabr/naturescience/environmentalfactors.htm>>. Accessed June 2011.
- CNPS 2011 California Native Plant Society (CNPS). 2011. Inventory of Rare and Endangered Plants. Available online <<http://cnps.site.aplus.net/cgi-bin/inv/inventory.cgi/Home>>. Accessed April 2011.
- COMTF 2009 California Oak Mortality Task Force (COMTF). 2009. History and Background. Available online <http://www.suddenoakdeath.org/html/history___background.html>. Accessed 15 April 2009.

- County of San Diego 2009 County of San Diego. 2009. San Diego County Zoning Ordinance. Available: <<http://www.co.san-diego.ca.us/dplu/zoning/index.html>>. Accessed on July 22, 2009.
- DoD 2005 DoD. 2005. Implementation of Sikes Act Improvement Amendments: Supplemental Guidance Concerning Leased Lands. May 2005.
- DoD 2007 DoD. 2007. Guidance to Implement the Memorandum of Understanding to Promote the Conservation of Migratory Birds. 03 April 2007.
- DoD 2011 DoD. 2011. Department of Defense Directive 4715.03, Natural Resources Conservation Program. 16 March 2011.
- DoD et al. 2006 Department of Defense (DoD), U.S. Fish and Wildlife Service, and the International Association of Fish and Wildlife Agencies. 2006. Cooperative Integrated Natural Resource Management Program on Military Installations. January 2006.
- DoD Legacy 2010a DoD Legacy Resource Management Program. 2010a. Natural Resource Conservation Program: The Facts About Pollinators. Available online <[https://www.denix.osd.mil/portal/page/portal/NaturalResources/OtherConservationTools/EcosystemServices/Pollinator_-_General_Factsheet_8-7-09\(4\).pdf](https://www.denix.osd.mil/portal/page/portal/NaturalResources/OtherConservationTools/EcosystemServices/Pollinator_-_General_Factsheet_8-7-09(4).pdf)>. Accessed 05 August 2010.
- DoD Legacy 2010b DoD Legacy Resource Management Program. 2010b. Pollinator Habitat Restoration for DoD Land Managers. Available online <<http://www.dodpollinatorworkshop.com/Legacy.html>>. Accessed 02 February 2010.
- DoN 1998 Department of Navy (DoN). 1998. Chief of Naval Operational Instructions (OPNAVINST) 6250.4B: Pest Management Programs. August 1998.
- DoN 2011a Department of Navy (DoN). 2011. Chief of Naval Operational Instructions (OPNAVINST) 5090.1C CH-1 Environmental Readiness Program Manual. Chapter 24: Natural Resources Management. 18 July 2011.
- DoN 2011b Department of Navy (DoN). 2011. OPNAVINST 5090.1C CH-1 Environmental Readiness Program Manual. Chapter 5: *Procedures for Implementing the National Environmental Policy Act*. 18 July 2011.
- DoN 2008 DoN. 2008. Draft Environmental Impact Statement/Overseas Environmental Impact Statement for the Southern California Range Complex. April 2008.
- DoN 2009 DoN. 2009. OPNAVINST 5530.14E Navy Physical Security and Law Enforcement Program. January 2009.
- DUSD(I&E) 2002 Deputy Under Secretary of Defense (Installations and Environment) Memo, Implementation of the Sikes Act Improvement Act: Updated Guidance, 10 October 2002.

- EPA 2009 U.S. Environmental Protection Agency (EPA). 2006. About EPA. Available online <<http://www.epa.gov/epahome/aboutepa.htm>>. Accessed 29 June 2009.
- Holland 1986 Holland, R. F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Nongame-Heritage Program, State of California, Department of Fish and Game, Sacramento, CA.
- Keppel 2003 Keppel, W. 2003. Basic ecosystem processes: a short introduction. Available online <<http://www.managingwholes.com/ecoblocks.htm>>. Accessed 02 April 2009.
- Keystone Center 1996 Keystone Center 1996. Keystone Center Policy Dialogue on a Department of Defense Biodiversity Management Strategy, Final Report. Keystone, Colorado. January.
- Leatherwood et al. 1982 Leatherwood S., R.R. Reeves, W.F. Perrin, and W.E. Evans. 1982. Whales, dolphins and porpoises of the eastern North Pacific and adjacent Arctic waters. NOAA technical report NMFS Circular, 444: 1- 245. 1982.
- Leatherwood et al. 1988 Leatherwood, S., R.R. Reeves, W.F. Perrin, and W.E. Evans. 1988. Whales, dolphins, and porpoises of the eastern North Pacific and adjacent Arctic waters: A guide to their identification. New York, New York: Dover Publications, Inc. 1988.
- MARINe 2009 Multi-Agency Rocky Intertidal Network (MARINe). 2009. What is MARINe. Available online <<http://www.marine.gov/About.html>>. Accessed 24 June 2009.
- McNab and Karl 1991 McNab, A.L., and T.R. Karl. 1991. Climate and Droughts. Reproduced from Hanson, R.L., 1991, Evapotranspiration and Droughts, in Paulson, R.W., Chase, E.B., Roberts, R.S., and Moody, D.W., Compilers, National Water Summary 1988-89--Hydrologic Events and Floods and Droughts: U.S. Geological Survey Water-Supply Paper 2375, p. 99-104. Available online <<http://geochange.er.usgs.gov/sw/changes/natural/drought/>>. Accessed 01 April 2009.
- Millington 2003 J.D.A. Millington. 2003. Wildfire Frequency-Area Statistics and Their Ecological and Anthropogenic Drivers. 2003.
- NAVFAC SW 2010 Naval Facilities Engineering Command, Southwest. 2010. 90-Day Finding On A Petition To List Hermes Copper Butterfly As Threatened Or Endangered 75 Federal Register 23654; May 4, 2010. 24 June 2010.
- Natural Area Guidelines "Natural Area Guidelines" Section of Appendix to the San Diego Family Housing, LLC Management Plan, dated May 1, 2003
- NBII 2009 National Biological Information Infrastructure (NBII). 2009. Wildlife Disease: Hot Topics. Available online <<http://wildlifedisease.nbii.gov/hottopics.jsp>>. Accessed 15 April 2009.

- NBSD 2011 Naval Base San Diego. 2011. Environmental Restoration Program, Site Management Plan, NAVFAC, 2011.
- NOAA 2009b NOAA. 2009b. The Weather of Southwest California: A Climate Overview. Available online <http://www.wrh.noaa.gov/sgx/research/Guide/The_Weather_of_Southwest_California.pdf>. Accessed 02 April 2009.
- NOAA 2010 NOAA. 2010. About National Marine Fisheries Service. Available online <<http://www.nmfs.noaa.gov/>>. Accessed 24 April 2010.
- NRCS 2010 Natural Resources Conservation Service (NRCS). 2010. About NRCS. Available online <<http://www.nrcs.usda.gov/about/>> Accessed June 2009.
- NRCS 2011 NRCS. 2011. National Soil Characterization Data, Database Descriptions. Available online <<http://soils.usda.gov/survey/nscd/>>. Accessed January 2011.
- Pers. Comm. A. Wastell 2012 Personal communication with Andy Wastell, Naval Base Diego Natural Resources Manager. August 2012.
- Pers. Comm. M. Edson 2012 Personal communication with Mark Edson, NAVFAC SW. September 2012.
- Real Estate Ground Lease Real Estate Ground Lease and Conveyance of Improvements, dated December 15, 2006, by and between the United States of America, acting through the Department of the Navy, as Lessor, and California Naval Communities LLC (also referred to as “Clark”), Sections 1.1, 1.2, 1.3, 10.2, 11.1, 11.16, 11.18, 11.25, 11.26, 12.1, 13.1
- Reeves et al. 2002 Reeves, R.R., B.S. Stewart, P.J. Clapham, and J.A. Powell. 2002. National Audubon Society guide to marine mammals of the world. New York: Alfred A. Knopf. 2002.
- Reisen et al. 2004 Reisen, W., H. Lothrop, R. Chiles, M. Madon, C. Cossen, L. Woods, S. Husted, V. Karmer, and J. Edman. 2004. West Nile Virus in California. From Emerging Infectious Diseases. Vol. 10. No. 8. Pgs. 1369-1378. August 2004.
- RWMG 2007 Regional Water Management Group (RWMG). 2007. 2007 San Diego Integrated Regional Water Management Plan. October 2007.
- SDF 2008 San Diego Foundation. 2008. The San Diego Foundation Regional Focus 2050 Study: Climate Change Related Impacts in the San Diego Region by 2050. 2008.
- San Diego River Conservancy 2006 San Diego River Conservancy. 2006. San Diego River Conservancy Five Year Strategic and Infrastructure Plan 2006-2011. March 2006.
- San Diego River Conservancy 2009 San Diego River Conservancy. 2009. Who Are We? Available online <http://sdrc.ca.gov/who_are_we.html>. Accessed 18 June 2009.

- Sawyer and Keeler-Wolf 1995 Sawyer, J. O., and T. Keeler-Wolf. 1995. A Manual of California Vegetation. California Native Plant Society, Sacramento, California.
- SDUPD 2003. San Diego Unified Port District. 2003. Quit Claim Deed N6871103RP03X16. San Diego County Recorder's Office. September 2003.
- SDFH Ground Lease 2007 Second Amended and Restated Real Estate Ground Lease, dated October 1, 2007, by and between the United States of America, acting through the Department of the Navy, and San Diego Family Housing, LLC, Sections 1.1, 10.2, 11.1, 11.1.1, 11.18, 11.31, 12.1
- The Pollinator Partnership/NAPPC 2010 The Pollinator Partnership™/North American Pollinator Protection Campaign (NAPPC). 2010. Selecting Plants for Pollinators. A Regional Guide for Farmers, Land Managers, and Gardeners in the California Coastal Chaparral Forest and Shrub Province Along the Southern California Coast. Available online <<http://www.pollinator.org/PDFs/Calif.Coastal.Chaparral.rx2.pdf>> Accessed 05 August 2010.
- Thorne 1963 Thorne, F.T. 1963. The distribution of an endemic butterfly, *Lycaena hermes*. Journal of Research on the Lepidoptera. 2: 143-150. 1963.
- Trust for Public Land 2009 Trust for Public Land. 2009. About TPL. Available online <http://www.tpl.org/tier2_sa.cfm?folder_id=170>. Accessed 27 July 2009.
- U.S. Navy 1998 U.S. Navy. 1998. Final Integrated Natural Resources Management Plan for the Naval Amphibious Base, Coronado, California. 1998.
- U.S. Navy 2002a U.S. Navy. 2002. Naval Base San Diego Integrated Natural Resources Management Plan. August 2002.
- U.S. Navy 2002b U.S. Navy. 2002b. Environmental Assessment for Naval Base San Diego Integrated Natural Resources Management Plan. August 2002.
- U.S. Navy 2005a U.S. Navy. 2005a. Environmental Assessment for Homeporting of Littoral Combat Ship (LCS) Flight 0. April 2005.
- U.S. Navy 2005b U.S. Navy. 2005b. Draft Environmental Assessment San Diego Gas & Electric – Navy Easement Replacement. July 2005.
- U.S. Navy 2005c U.S. Navy. 2005c. Marine resources assessment for the Southern California Operating Area. Prepared for the Pacific Division, Naval Facilities Engineering Command, Pearl Harbor, HI, by Geo-Marine, Inc., Plano, TX.
- U.S. Navy 2006a U.S. Navy. 2006a. Integrated Natural Resources Management Program Guidance, and Integrated Natural Resources Management Plan Guidance. April 10, 2006.
- U.S. Navy 2006b U.S. Navy. 2006b. Environmental Assessment for Redevelopment of Navy Broadway Complex. May 2006.

- U.S. Navy 2008a U.S. Navy. 2008a. Sustaining our Environment, Protecting our Freedom. April 2008.
- U.S. Navy 2008b U.S. Navy 2008b. Naval Base San Diego Installation Appearance Plan. January 2008.
- U.S. Navy 2009 U.S. Navy. 2009. Integrated Pest Management Plan Naval Base San Diego, Naval Base Point Loma, Naval Base Coronado, San Diego Metro Area, San Diego, CA. December 2009.
- U.S. Navy 2010a U.S. Navy. 2010a. Silver Strand Training Complex Draft Environmental Impact Statement. January 2010.
- U.S. Navy 2010b U.S. Navy. 2010b. Final Natural Resources Inventory Report for Naval Base San Diego, San Diego, California. August 2010
- U.S. Navy 2011 U.S. Navy. 2011. Final Report for the Natural Resources Baseline Inventory for Navy San Diego Metro Housing Areas at Naval Base San Diego, Naval Base Coronado, and Naval Base Point Loma, San Diego County, California. January 2011.
- U.S. Navy 2012a U.S. Navy. 2012b. List of Major Shore and Afloat Commands. Available online < <http://www.cnmc.navy.mil/SanDiego/About/TenantCommands/index.htm>>. Accessed July 2012.
- U.S. Navy 2012b U.S. Navy. 2012c. Naval Base San Diego Mission and Vision. Available online < <http://www.cnmc.navy.mil/SanDiego/About/MissionAndVision/index.htm>>. Accessed July 2012.
- U.S. Navy 2012c U.S. Navy. 2012a. Heron and Egret Management Plan for Installations of the Navy Metro Area on the San Diego Bay, San Diego, CA. June 2012.
- U.S. Navy 2012d U.S. Navy 2012d. Draft Report Heron and Egret Surveys for Navy Bases in the San Diego Metropolitan Area, San Diego, California. December 2012.
- U.S. Navy et al. 2011a Department of Navy (DoN), Southwest Division (SWDIV), and San Diego Unified Port District (SDUPD). 2011. San Diego Bay Integrated Natural Resources Management Plan, November 2011.
- U.S. Navy et al. 2011b U.S. Navy Region Southwest, San Diego Unified Port District, and Merkel % Associates. 2011. San Diego Bay Eelgrass Inventory Update. December 2011.
- U.S. Navy, U.S. Marine Corps and U.S. Coast Guard 2007 U.S. Navy, U.S. Marine Corps and U.S. Coast Guard. 2007. A Cooperative Strategy for 21st Century Seapower. October 2007.
- USACE 1987 U.S. Army Corps of Engineers (USACE). 1987. Corps of Engineers Wetland Delineation Manual. Technical Report Y-87-1

- USDA-WS 2009 U.S. Department of Agriculture – Wildlife Services (USDA-WS). 2009. About APHIS. Available online <http://www-mirror.aphis.usda.gov/about_aphis/programs_offices/wildlife_services/>. Accessed 22 July 2009.
- USFWS et al. 1991 USFWS, NOAA Fisheries, and CDFG. 1991. Southern California Eelgrass Mitigation Policy (revision 11). Adopted July 31, 1991. Available online <http://swr.nmfs.noaa.gov/hcd/policies/EELPOLrev11_final.pdf>.
- USFWS 2009 U.S. Fish and Wildlife Service (USFWS). 2009. Habitat Conservation Plans Under the Endangered Species Act. May 2009. Available online <<http://www.fws.gov/Endangered/factsheets/hcp.pdf>>. Accessed 24 June 2009.
- USGA 2009 U.S. Golf Association (USGA). 2009. Audubon Sanctuary Program. Available online <<http://www.usga.org/Content.aspx?id=26126>>. Accessed 02 June 2009.
- USGS 2009 USGS. 2009. National Wildlife Health Center: West Nile Virus (WNV). Available online <http://www.nwhc.usgs.gov/disease_information/west_nile_virus/index.jsp>. Accessed on 02 April 2009.
- USGS and USDA NRCS 2009 USGS and USDA, Natural Resources Conservation Service (NRCS). 2009. Federal guidelines, requirements, and procedures for the national Watershed Boundary Dataset: U.S. Geological Survey Techniques and Methods 11–A3, 55 p. 2009.
- Winters, D.S. et al. 2004 Winters, D.S. et al. 2004. Aquatic, Riparian and Wetland Ecosystem Assessment for the Bighorn National Forest. Report 1 of 3. Introduction and Ecological Driver Analysis. Denver: U.S. Department of Agriculture, Forest Service, Rocky Mountain Region. November 2004.

11.2 GIS References

All figures in this INRMP were compiled by HDR, except if noted, using data believed to be accurate at the time of publication. However, a degree of error is inherent in all figures. The figures are distributed “AS-IS,” without warranties of any kind, expressed, or implied, including, but not limited to, warranties of suitability to a particular purpose or use. No attempt has been made in either the design or production of the figures to define the limits or jurisdiction of any Federal, territorial, commonwealth, or local government. The figures are intended for use only at the published scale. Detailed on-the-ground surveys and historical analyses of sites might differ from the figures.

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GIS data sources for constraints/opportunities maps are as follows:

Figure ES-1:

Legend Item	Report Reference
Naval Base San Diego	U.S. Navy 2010b
Black-Crowned Night Heron Rookery	U.S. Navy 2010b
Black-Crowned Night Heron & Snowy Egret Rookery	U.S. Navy 2010b
Estuary Seablite	U.S. Navy 2010b
Non-Wetland Water of the U.S.	U.S. Navy 2010b
Wetland	U.S. Navy 2010b

Figure ES-2:

Legend Item	Report Reference
Mission Gorge Recreational Facility	U.S. Navy 2010b
Cooper’s Hawk Sighting	U.S. Navy 2010b
Yellow-breasted Chat Sighting	U.S. Navy 2010b
Yellow Warbler Sighting	U.S. Navy 2010b
Belding’s Orange-throated Whiptail Sighting	U.S. Navy 2010b
Southern California Rufous-Crowned Sparrow Sighting	U.S. Navy 2010b
American White Pelican Sighting	U.S. Navy 2010b
Coastal California Gnatcatcher Observed Use Area	U.S. Navy 2010b In-House Survey Data
Least Bell’s Vireo Observed Use Area	U.S. Navy 2010b
Palmer’s Grappling Hook	U.S. Navy 2010b
San Diego Barrel Cactus	U.S. Navy 2010b
Spiny Rush	U.S. Navy 2010b
California Box-thorn	U.S. Navy 2010b
San Diego Viguiera	U.S. Navy 2010b
Wetlands	U.S. Navy 2010b

Figure ES-3:

Legend Item	Report Reference
Bayview Hills	U.S. Navy 2011
San Diego Sunflower	U.S. Navy 2011
Coastal California Gnatcatcher Observed Use Area	U.S. Navy 2011
Wetlands	U.S. Navy 2011

Figure ES-4:

Legend Item	Report Reference
Chollas Heights	U.S. Navy 2011
San Diego Barrel Cactus	U.S. Navy 2011
Graceful Tarplant	U.S. Navy 2011
San Diego Button Celery	U.S. Navy 2011
San Diego Fairy Shrimp	U.S. Navy 2011
San Diego Fairy Shrimp Designated Critical Habitat	U.S. Navy 2011
Coastal California Gnatcatcher Observed Use Area	U.S. Navy 2011

Figure ES-5:

Legend Item	Report Reference
Eucalyptus Ridge	U.S. Navy 2011
Coastal California Gnatcatcher Sighting	U.S. Navy 2011
Belding's Orange-throated Whiptail Sighting	U.S. Navy 2011

Figure ES-6:

Legend Item	Report Reference
Home Terrace	U.S. Navy 2011
Nuttall's Scrub Oak	U.S. Navy 2011
San Diego Viguiera	U.S. Navy 2011
San Diego Barrel Cactus	U.S. Navy 2011

Figure ES-7:

Legend Item	Report Reference
Howard Gilmore Terrace	U.S. Navy 2011
San Diego Barrel Cactus	U.S. Navy 2011
San Diego Viguiera	U.S. Navy 2011
Coastal California Gnatcatcher Observed Use Area	U.S. Navy 2011

Figure ES-8:

Legend Item	Report Reference
Murphy Canyon Heights	U.S. Navy 2011
San Diego Barrel Cactus	U.S. Navy 2011
Graceful Tarplant	U.S. Navy 2011
San Diego Goldenstar	U.S. Navy 2011
San Diego Mesa Mint	U.S. Navy 2011
San Diego Viguiera	U.S. Navy 2011
Nuttall's Scrub Oak	U.S. Navy 2011
Coastal California Gnatcatcher Use Area	U.S. Navy 2011
San Diego Fairy Shrimp Designated Critical Habitat	U.S. Navy 2011
Wetlands	U.S. Navy 2011

Figure ES-9:

Legend Item	Report Reference
Terrace View Villas	U.S. Navy 2011
Coastal California Gnatcatcher Observed Use Area	U.S. Navy 2011
Coastal California Gnatcatcher Sighting	U.S. Navy 2011
Belding's Orange-throated Whiptail Sighting	U.S. Navy 2011

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APPENDIX A

ACRONYMS AND ABBREVIATIONS

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Appendix A

Acronyms and Abbreviations

°F	Degrees Fahrenheit
ACSP	Audubon Cooperative Sanctuary Program
AFPMB	Armed Forces Pest Management Board
AOP	Activity Overview Plan
ATFP	Anti Terrorism/Force Protection
BCDC	San Francisco Bay Conservation and Development Commission
BLM	Bureau of Land Management
BMP	Best Management Practice
CAC	Common Access Card
CA-CESU	California Cooperative Ecosystems Studies Unit
Cal/EPA	California Environmental Protection Agency
Cal-IPC	California Invasive Plant Council
CA-NRCS	California Natural Resources Conservation Service
CA MIL	California Management of Fish and Wildlife on Military Lands
CA Native	California Native Species Conservation and Enhancement
CBC	California Biodiversity Council
CCC	California Coastal Commission
CCCC	California Climate Change Center
CCCFSP	California Coastal Chaparral Forest Shrub Province
CCE	California Cooperative Extension
CDC	Center for Disease Control and Prevention
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CDWR	California Department of Water Resources
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act
CH	Critical Habitat
CINCPACFLT	Commander, Pacific Fleet
CMP	California's Coastal Zone Management Program
CNIC	Commander of Navy Installations Command
CNO	Chief Naval Operations
CNPS	California Native Plant Society
CNRSW	Commander Navy Region Southwest
CO	Commanding Officer

COMNAVSURFPAC	Commander Naval Surface Force Pacific Fleet
COMTF	California Oak Mortality Task Force
CPS	Coastal Pelagic Species
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
CWD	Chronic Wasting Disease
DoD	Department of Defense
DOE	Department of Energy
DoN	Department of Navy
DUSD(I&E)	Deputy Under Secretary of Defense (Installations and Environment)
EA	Environmental Assessment
EAP	Encroachment Action Plan
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EPRWeb	Navy Environmental Program Requirements Web Database
EQR	Environmental Quality Report
ERDC	U.S. Army Engineer Research and Development Center
ERL	Environmental Readiness Level
ESA	Endangered Species Act
ESI	Extended Site Investigation
ESRI	Environmental Systems Research Institute
EU	Ecological Unit
FFSRA	Federal Facilities Site Remediation Agreement
FISC	Navy Fleet Industrial Supply Center
FMP	Fire Management Plan
FONSI	Finding of No Significant Impact
FS	Feasibility Study
FY	Fiscal Year
FYDP	Future Year Defense Plan
GIS	Geographic Information System
HCP	Habitat Conservation Plan
IAP	Installation Appearance Plan
ICRMP	Integrated Cultural Resources Management Plan
INRMP	Integration Natural Resources Management Plan
IPM	Integrated Pest Management
IPMP	Integrated Pest Management Plan

IRP	Installation Restoration Program
IRWMP	Integrated Regional Water Management Plan
LEED	Leadership in Energy and Environmental Design
LID	Low Impact Development
LTM	Long Term Monitoring
LUCIP	Land Use Control Implementation Plan
MARINe	Multi-Agency Rocky Intertidal Network
MBTA	Migratory Bird Treaty Act
MGRF	Mission Gorge Recreational Facility
MHPA	Multi-Habitat Planning Area
MHPI	Military Housing Privatization Initiative
MILCON	Military Construction
MLLW	Mean Lower Low Water
MMPA	Marine Mammal Protection Act
MOU	Memorandum of Understanding
MSCP	Multiple Species Conservation Program
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
MSL	Mean Sea Level
MTRP	Mission Trails Regional Park
MWR	Morale, Welfare and Recreation
MWWD	San Diego Metropolitan Wastewater Department
NAPPC	North American Pollinator Protection Campaign
NAVFAC SW	Naval Facilities Engineering Command, Southwest
NBII	National Biological Information Infrastructure
NBSD	Naval Base San Diego
NBSD Main Site	Naval Base San Diego, Main Site
NCCP	Natural Community Conservation Plan
NDDB	Natural Diversity Data Base
NEPA	National Environmental Policy Act
NFA	No Further Action
NHPA	National Historic Preservation Act
NMCSO	Naval Medical Center San Diego
NMFWA	National Military Fish and Wildlife Association
NOAA	National Oceanic and Atmospheric Administration
NOAA Fisheries	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System (NPDES)
NRCS	USDA Natural Resources Conservation Service
NRDA	Natural Resources Damage Assessment

NRHP	National Register of Historic Places
NWP	Nationwide Permit Program
O&MN	Operations and Maintenance, Navy
OPNAVINST	Office of the Chief of Naval Operations Instruction
OSD	Office of the Secretary of Defense
OSPR	Office of Spill Prevention & Response
PARC	Partners in Amphibian and Reptile Conservation
PIF	Partners in Flight
POM	Program Objectives Memoranda
PPBES	Planning, Programming, Budget, and Execution System
PPV	Public-Private Venture
PWC	Navy Public Works Center
PWD	Public Works Department
QRP	Qualified Recycling Program
RI	Remedial Investigation
ROD	Record of Decision
RPM	Remedial Project Manager
RWMG	Regional Water Management Group
RWQCB	Regional Water Quality Control Board
Sikes Act	Sikes Act Improvement Act
SARA	Superfund Amendments and Reauthorization Act
SDCWA	San Diego County Water Authority
SDFH	San Diego Family Housing
SDG&E	San Diego Gas & Electric Company
SDMAI	San Diego Metro Area Installations
SDNHM	San Diego Natural History Museum
SDUPD	San Diego Unified Port District
SECNAVINST	Secretary of Navy Instruction
SERDP	Strategic Environmental Research and Development Program
SWMU	Solid Waste Management Unit
SWRCB	State Water Resources Control Board
TMDL	Total Maximum Daily Loads
TNC	The Nature Conservancy
U.S.C.	United States Code
USACE	U.S. Army Corps of Engineers
USDA-WS	U.S. Department of Agriculture – Wildlife Services
USFWS	U.S. Fish and Wildlife Service
USGA	U.S. Golf Association

USGS
WBD
WNV

U.S. Geological Service
Watershed Boundary Dataset
West Nile Virus

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APPENDIX B

**RELEVANT ENVIRONMENTAL LAWS, REGULATIONS, POLICIES, GUIDANCE,
INSTRUCTIONS AND ORDERS**

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Appendix B

List of Relevant Environmental Laws, Regulations, Policies, and Guidance

FEDERAL LAWS, REGULATIONS, AND EXECUTIVE ORDERS

American Indian Religious Freedom Act of 1978 (42 U.S.C. 1996)	Cooperative Conservation (Executive Order 13352)
Anadromous Fish Conservation Act (16 U.S.C. 757)	Council on Environmental Quality Regulations on Implementing NEPA Procedures (40 CFR 1500-1508)
Animal Damage Control Act (7 U.S.C. 426 et seq.)	Curation of Federally Owned and Administered Archaeological Collections (36 CFR 79)
Anti-Deficiency Act (31 U.S.C. 1341 et seq.)	Defense Environmental Restoration Program (10 U.S.C. 2701)
Antiquities Act of 1906 (16 U.S.C. 431 et seq.)	Department of Defense Appropriation Act of 1991 (PL 102-393)
Archaeological Resource Protection Act Regulations (18 CFR 1312)	Determination of Eligibility for Inclusion in the National Register of Historic Places (36 CFR 63)
Archeological and Historical Preservation Act of 1974 (16 U.S.C. 469 et seq.)	Dredge and Fill Nationwide Permit Program (33 CFR 330)
Archeological Resources Protection Act of 1979 (16 U.S.C. 470 et seq.)	Endangered and Threatened Wildlife and Plants (50 CFR 17)
Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.)	Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.)
Base Closure and Realignment Act (Part A of title XXIX of Public Law 101-510; 10 U.S.C. 2687)	Entering Military, Naval, or Coast Guard Property (18 U.S.C. 1382)
Clean Air Act, as amended (42 U.S.C. 7401 et seq.)	Environmental Effects in the United States of Department of Defense Strategies (32 CFR 188)
Clean Water Act (33 U.S.C. 1251 et seq.)	EPA Guidelines for Resource Recovery Facilities (40 CFR 245)
Coastal Barrier Resources (16 CFR 3501)	EPA National Drinking Water Regulations (40 CFR 141-143)
Coastal Barriers Resources Act (16 U.S.C. 1451 et seq.)	EPA National Pollutant Discharge Elimination System Permit Regulations (40 CFR 122)
Coastal Zone Management Act of 1972 (16 U.S.C. 1451-1456)	EPA Regulations Designating Areas for Air Quality Planning (40 CFR 81)
Comprehensive Environmental Response, Compensation and Liability Act of 1980 (42 U.S.C. 9601 et seq.)	EPA Regulations for Ambient Air Monitoring Reference and Equivalent Methods (40 CFR 53)
Conservation and Rehabilitation Program on Military and Public Lands (16 U.S.C. 670 et seq.)	
Conservation and Rehabilitation Programs on Military and Public Lands (Public Law 93-452)	

EPA Regulations for Pesticide Programs (40 CFR 150-186)	Federal Plant Pest Act (7 U.S.C. 150aa et seq.)
EPA Regulations Implementing the Resource Conservation and Recovery Act (40 CFR 260-270)	Federal Water Pollution Control Act (Clean Water Act) (33 U.S.C. 1251 et seq.)
EPA Regulations on Criteria and Standards for the National Pollutant Discharge Elimination System (40 CFR 125)	Fish and Wildlife Conservation Act (16 U.S.C. 2901 et seq.)
EPA Regulations on Discharge of Oil (40 CFR 110)	Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.)
EPA Regulations on Disposal Site Determination under the CWA (40 CFR 231)	Fish and Wildlife Service List of Endangered and Threatened Wildlife (50 CFR 17)
EPA Regulations on Implementation of NEPA Procedures (40 CFR 6)	Fishery Conservation and Management Act of 1976 (16 U.S.C. 1801 et seq.)
EPA Regulations on Insecticide, Fungicide, and Rodenticide Use (40 CFR 162)	Floodplain Management (Executive Order 11988, as amended by Executive Order 12148 and 13286)
EPA Regulations on Land Disposal Restrictions (40 CFR 268)	Forest Resources Conservation and Shortage Relief Act (16 U.S.C. 620 et seq.)
EPA Regulations on National Primary and Secondary Ambient Air Quality Standards (40 CFR 50)	Historic Sites Act of 1935 (16 U.S.C. 461 et seq.)
EPA Regulations on Regional Consistency under the Clean Air Act (40 CFR 56)	Hunting and Fishing on Federal Lands (10 U.S.C. 2671 et seq.)
EPA Requirements for Preparation, Adoption, Submittal, Approval, and Promulgation of Implementation Plans (40 CFR 51-52)	Implementation of Section 311 of the Federal Water Pollution Control Act of October 18, 1972, as amended, and the Oil Pollution Act of 1990 (Executive Order 13423, as amended by Executive Order 13514)
EPA Requirements for Water Quality Planning and Management (40 CFR 130)	Interagency Cooperation Endangered Species Act of 1973 (50 CFR 402)
EPA Special Exemptions from Requirements of the Clean Air Act (40 CFR 69)	Invasive Species (Executive Order 13112)
Estuary Protection Act (16 U.S.C. 1221)	Lacey Act (16 U.S.C. 701) and Lacey Act Amendments of 1981 (16 U.S.C. 3371–3378)
Farmland Protection Act (7 U.S.C. 4201 et seq.)	Land and Water Conservation Act of 1965 (16 U.S.C. 4601 et seq.)
Federal Compliance with Pollution Control Standards (42 U.S.C. 4321)	Legacy Resource Protection Program Act (PL 101–511)
Federal Consistency with Approved Coastal Management Programs (15 CFR 930)	Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801)
Federal Insecticide, Fungicide, and Rodenticide Act, as amended (7 U.S.C. 136 et seq.)	Marine Mammal Protection Act of 1972 (16 U.S.C. 1361 et seq.)
Federal Land Policy and Management Act (43 U.S.C. 1701)	Marine Protected Areas (Executive Order 13158)
Federal Noxious Weed Act (7 U.S.C. 2801 et seq.)	Marine Protection, Research, and Sanctuaries Act of 1972 (33 U.S.C. 1401 et seq.)

Migratory Bird Conservation Act (16 U.S.C. 715 et seq.)	National Register of Historic Places, current edition (36 CFR 60 78, 79, 800, and 1228)
Migratory Bird Treaty Act (16 U.S.C. 703–711)	National Trails System Act of 1968 (16 U.S.C. 1271)
Migratory Birds List (50 CFR 10.13)	Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. 3001-3013)
Military Construction Authorization Act of 1956 - Leases; non-excess property (10 U.S.C. 2667)	Natural Resources Management Program (32 CFR 190)
Military Construction Authorization Act of 1956 - Sale of Certain Interests in Lands; Logs (10 U.S.C. 2665)	Neotropical Migratory Bird Conservation Act (16 U.S.C. 6101 et seq.)
Military Construction Authorization Act of 1956- Military Reservations and Facilities: Hunting, Fishing, and Trapping (10 U.S.C. 2671)	Nonindigenous Aquatic Nuisance Prevention and Control Act as amended (16 U.S.C. 4701 et seq.)
Military Construction Authorization Act of 1975 (10 U.S.C. 2665)	North American Wetlands Conservation Act (16 U.S.C. 4401 et seq.)
Military Reservation and Facilities: Hunting, Fishing and Trapping (10 U.S.C. 2671)	Noxious Plant Control Act (43 U.S.C. 1241).
Multiple-Use Sustained Yield Act (16 U.S.C. 528)	Ocean Dumping Regulations and Criteria (40 CFR 220, 227)
National Defense Authorization Act for Fiscal Year 1999 (PL 105-261)	Off-Road Vehicles Use on Public Lands (Executive Order 11989)
National Defense Authorization Act for Fiscal Year 2003 (PL 107-314)	Oil Pollution Control Act of 1990 (33 U.S.C. 2701 et seq.)
National Defense Authorization Act for Fiscal Year 2004 (PL 108-136)	Outdoor Recreation - Federal/State Program Act (16 U.S.C. 4601 et seq.)
National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 et seq.)	Outer Continental Shelf Air Regulations (40 CFR 55)
National Heritage Policy Act of 1979 (16 U.S.C. 470)	Partners for Fish and Wildlife Act (16 U.S.C. 3771 et seq.)
National Historic Landmarks Program (36 CFR 65)	Plant Quarantine Act (7 U.S.C. 151-167)
National Historic Preservation Act of 1966 (16 U.S.C. 470 et seq.)	Pollution Prevention Act (42 U.S.C. 13101 et seq.)
National Historic Preservation Act Regulations for the Protection of Historic Properties (36 CFR 800)	Protection and Enhancement of Environmental Quality (Executive Order 11514, as amended by Executive Order 11541 and 11991)
National Oceanic and Atmospheric Administration Coastal Zone Management Program Development and Approval Regulation (15 CFR 923)	Protection and Enhancement of the Cultural Environment (Executive Order 11593)
National Register of Historic Places (36 CFR 60)	Protection of Wetlands (Executive Order 11990, amended by Executive Order 12608)
	Recreational Fisheries (Executive Order 13423, as amended by Executive Order 13514)

Regulations Concerning Marine Mammals (50 CFR 10)
Regulations Concerning Marine Mammals (50 CFR 18, 216, 228)
Resource Conservation and Recovery Act (42 U.S.C. 6901 et seq.)
Responsibilities of Federal Agencies to Protect Migratory Birds (Executive Order 13186)
Rivers and Harbors Act of 1899 (33 U.S.C. 403 et seq.)
Safe Drinking Water Act (42 U.S.C. 300(f) et seq.)
Sales of Forest Products on Federal Lands (10 U.S.C. 2665 et seq.)
Salmon and Steelhead Conservation and Enhancement Act (16 U.S.C. 3301-3345)

Sikes Act Improvement Act of 1997 (16 U.S.C. 670a et seq.)
Soil and Water Conservation Act (16 U.S.C. 2001 et seq.)
Soil Conservation (16 U.S.C. 5901)
Strengthening Federal Environmental, Energy, and Transportation Management (Executive Order 13423)
USACE Final Compensatory Mitigation Rule 33 CFR 325 and 332)
Water Pollution Prevention and Control (33 U.S.C. 1251 et seq.)
Wetland Resources (16 U.S.C. 3901)
Wild and Scenic River Act (16 U.S.C. 1274)
Youth Conservation Corps Act of 1972 (16 U.S.C. 1701)

FEDERAL GUIDELINES

Cooperative Agreement between the Department of Defense and The Nature Conservancy for Assistance in Natural Resources Inventory
Memorandum of Agreement for Federal Neotropical Migratory Bird Conservation Program and Addendum (Partners in Flight-Aves De Las Americas) among the Department of Defense, through Each of the Military Services, and Over 110 Other Federal and State Agencies and Nongovernmental Organizations
Memorandum of Agreement for Professional and Technical Assistance Conducting Biological Surveys, Research and Related Activities between the Department Of Defense and the National Biological Service of the Department of the Interior
Memorandum of Understanding between Department of Defense, U.S. Fish and Wildlife Service, and the International Association of Fish and Wildlife Agencies

for a Cooperative Integrated Natural Resources Management Program on Military Installations
Memorandum of Understanding between the Environmental Protection Agency and the Department of Defense with Respect to Integrated Pest Management
Memorandum of Understanding for Watchable Wildlife Programs
Protecting America's Wetlands: A Fair, Flexible, and Effective Approach. White House Office on Environmental Policy, August 24, 1993.
Reaffirmation of the Presidential Wetland Policy. White House Office on Environmental Policy, 1995
USACE 1987 Wetland Delineation Manual.
Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)

DEPARTMENT OF DEFENSE POLICY, REGULATIONS AND GUIDANCE

Department of Navy Procedures for
Implementing NEPA (32 CFR 775)

Deputy Under Secretary of Defense
Memorandum, *Integrated Natural Resource
Management Plan Template*

DoD Directive 3200.15, *Sustainment of Ranges
and Operating Areas*

DoD Instruction 4001.01, *Installation Support*

DoD Directive 4140.1, *Material Management
Policy*

DoD Instruction 4150.07, *DoD Pest
Management Program*

DoD Instruction 4165.57, *Air Installations
Compatible Use Zones*

DoD Instruction 4165.59, *DoD Implementation
of the Coastal Zone Management Act*

DoD Instruction 4700.2, *Secretary of Defense
Award for Natural Resources and
Environmental Management*

DoD Directive 4700.4, *Natural Resources
Management Program*

DoD Directive 4705.1, *Management of Land-
Based Water Resources in Support of Joint
Contingency Operations*

DoD Directive 4710.1, *Archaeological and
Historic Resources Management*

DoD Directive 4715.01, *Environmental Security*

DoD Instruction 4715.03, *Natural Resources
Conservation Program*

DoD Instruction 4715.4, *Pollution Prevention*

DoD Instruction 4715.6, *Environmental
Compliance*

DoD Instruction 4715.7, *Environmental
Restoration Program*

DoD Instruction 4715.9, *Environmental
Planning and Analysis*

DoD Directive 5030.41, *Oil and Hazardous
Substance Pollution Prevention and
Contingency Program*

DoD Directive 6050.1, *Environmental Effects in
the U.S. of DoD Strategies*

DoD Directive 6050.15, *Prevention of Oil
Pollution from Ships Owned or Operated by
the Department of Defense*

DoD Directive 6050.2 (as amended), *Use of Off-
Road Vehicles on DoD Lands*

DoD Directive 6050.4, *Marine Sanitation
Devices for Vessels Owned or Operated by
DoD*

DoD Instruction 6050.05, *DoD Hazard
Communication Program*

DoD INRMP Handbook, *Resources for INRMP
Implementation*

DoD Instruction 5000.13, *Natural Resources -
The Secretary of Defense Natural Resource
Conservation Award*

DoD Instruction 6055.6, *DoD Fire and
Emergency Services Program*

DoD Memorandum on Implementation of
Ecosystem Management in DoD

DoD Urban Forestry Manual

NAVFAC P-73, *Real Estate Manual P-73*

NAVFACINST 11010.45, *Regional Shore
Infrastructure Planning*

NAVFACINST 11012.111A, *Land Use
Conservation Planning*

NAVFACINST 6250.3H, *Applied Biology
Program Services and Training*

NBPLINST 5090.1, *Base Fishing Regulations*

NBPLINST 5090.2, *Policy and Procedures for
Conducting Environmental Review Process
at Naval Base Point Loma, San Diego*

OPNAVINST 11000.17, *National Preservation
Act Consultations Related to Base
Realignment and Closure Strategies*

OPNAVINST 11010.20F, *Facilities Projects
Manual*

OPNAVINST 5090.1D, *Environmental Readiness Program Manual*

OPNAVINST 5750.13, *Historical Properties of the Navy*

OPNAVINST 6250.4B, *Pest Management Program*

OPNAVINST 8000.16, *Environmental Security Management*

OPNAVINST 8026.2A, *Navy Munitions Disposition Policy*

SECNAVINST 4000.35, *Department of the Navy Cultural Resources Program*

SECNAVINST 5090.8, *Policy for Environmental Protection, Natural Resources, Cultural Resources Program*

SECNAVINST 5100.13E, *Navy and Marine Corps Tobacco Policy*

SECNAVINST 6240.6E, *Implementation of DoD Directives under DoD Instruction 4700.4*

APPLICABLE STATE AND LOCAL REGULATION

Aquatic Invasive Species (Fish & Game Code 2300-2302)

Ballast Management for Control of Nonindigenous Species Act of 1999 (California Public Resources Code 71200-71271)

Birds (Fish & Game Code 3500-3864)

California Coastal Act (Public Resources Code 30000-30900)

California Endangered Species Act (Fish & Game Code 2050 et seq.)

California Environmental Quality Act (Public Resources Code 21000-21177)

California Harbors and Navigation Code (Division 1.5 Sections 90-153, Division 2 Sections 240-308, Division 3 Sections 650-685, and Division 6 Sections 1690-3980)

California Ocean Protection Act (Public Resources Code 35500-35650)

California Riparian Habitat Conservation Program (Fish & Game Code 1385-1391)

California Waterfowl Habitat Program (Fish & Game Code 3460-3467)

California Watershed Protection and Restoration Act (Public Resources Code 5808-5808.2)

California Wildlife Protection Act (Fish & Game Code 2780-2799.6)

California Wildlife, Coastal, and Park Land Conservation Act (Public Resources Code 5900 et seq.)

Coastal Ecosystems Protection Act of 2006 (California Public Resources Code 71205.3)

Cobey-Alquist Flood Management Act (Water Code 8400-8415)

Conservation and Management of Marine Living Resources (Fish & Game Code 7050-7090)

Conservation of Aquatic Resources (Fish & Game Code 1700)

Conservation of Wildlife Resources (Fish & Game Code 1801-1802)

Conservation, Development, and Utilization of State Water Resources (Water Code 10004-10013)

Fish (Fish & Game Code 6400-6930)

Fish and Wildlife Habitat Enhancement Act of 1984 (Fish & Game Code 2600-2651)

Fish and Wildlife Protection and Conservation (Fish & Game Code 1600-1616)

Inland Wetlands Conservation Program (Fish & Game Code 1400-1431)

Mammals (Fish & Game Code 4150-4904)

Management of Fish and Wildlife on Military Lands (Fish & Game Code 3450-3453)

Marine Invasive Species Act of 2003 (California Public Resources Code 71200)

Marine Life Protection Act (Fish & Game Code 2850-2863)

Native Plant Protection (Fish & Game Code 1900-1913)

Native Species Conservation and Enhancement
(Fish & Game Code 1750-1772)

Natural Community Conservation Planning Act
(Fish & Game Code 2800-2835)

Ocean Use Planning (Public Resources Code
30960)

Pesticides and Pest Control Operations (Food
and Agriculture Code 6000 et seq.)

Porter-Cologne Water Quality Control Act
(Water Code 13000 et seq.)

Refuges (Fish & Game Code 10500-10932)

Reptiles and Amphibians (Fish & Game Code
5000-5050)

San Diego County Zoning Ordinance (Section
4000 – 4920)

Stream Alteration Controls (Water Code 5653,
1601 et seq.)

The Safe Drinking Water, Water Quality and
Supply, Flood Control, River and Coastal
Protection Bond Act of 2006 (Public
Resources Code 75001-75130)

Urban Forestry (Public Resources Code
4799.06-4799.12)

Watershed, Clean Beaches, and Water Quality
Act (Public Resources Code 30901-30960)

Wetlands Mitigation Banking (Fish & Game
Code 1850-1852)

Wetlands Preservation (Public Resources Code
5810-5818.2)

Wildlife and Natural Areas Conservation
Program (Fish & Game Code 2700-2729)

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Additional Information on Relevant Environmental Laws, Regulations, Policies, Guidance, Instructions and Orders

Threatened, Endangered, and Other Special Status Species

An installation's overall ecosystem management strategy must provide for protection and recovery of threatened and endangered species. Under the ESA, an "endangered species" is defined as any species that is in danger of extinction throughout all or a significant portion of its range. A "threatened species" is defined as any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Other special status species include federally listed candidate species; state listed species; migratory birds and birds listed on the Birds of Conservation Concern list; and CNPS ranked 1 or 2 species. The USFWS has also presented an updated list of species that are regarded as candidates for possible listing under the ESA. Although candidate species receive no statutory protection under the ESA, the USFWS believes it is important to advise government agencies, industry, and the public that these species are at risk and could warrant protection under the Act.

An illustration of the hierarchy for special status species as used in this INRMP is shown in **Figure B-1**.

General management actions for listed species include the following:

1. Preparation and implementation of specific management actions for listed species that include protocols for monitoring surveys and for site marking of sensitive areas
2. Maintaining GIS data on the distribution and habitat availability for listed species and sharing this information with the California Natural Diversity Database (CNDDDB)
3. Implement Environmental Review requirements in accordance with OPNAVINST 5090.1D
4. Conduct Environmental Awareness briefings as necessary
5. Minimization and conservation measures aimed at reducing the potential for accidental take
6. Investigating and implementing research projects to better understand ecological requirements of special status species.
7. Investigation and implementation of habitat improvement and nonnative species control to conserve listed species.

If threatened, endangered, or other special status species are discovered on the installation during a biotic inventory, species information and management actions should be incorporated into the INRMP. **Figure B-2** presents an endangered species coordination decision chart that should be used as part of the planning process for projects that could impact known or potential future populations of threatened or endangered species on the installation.

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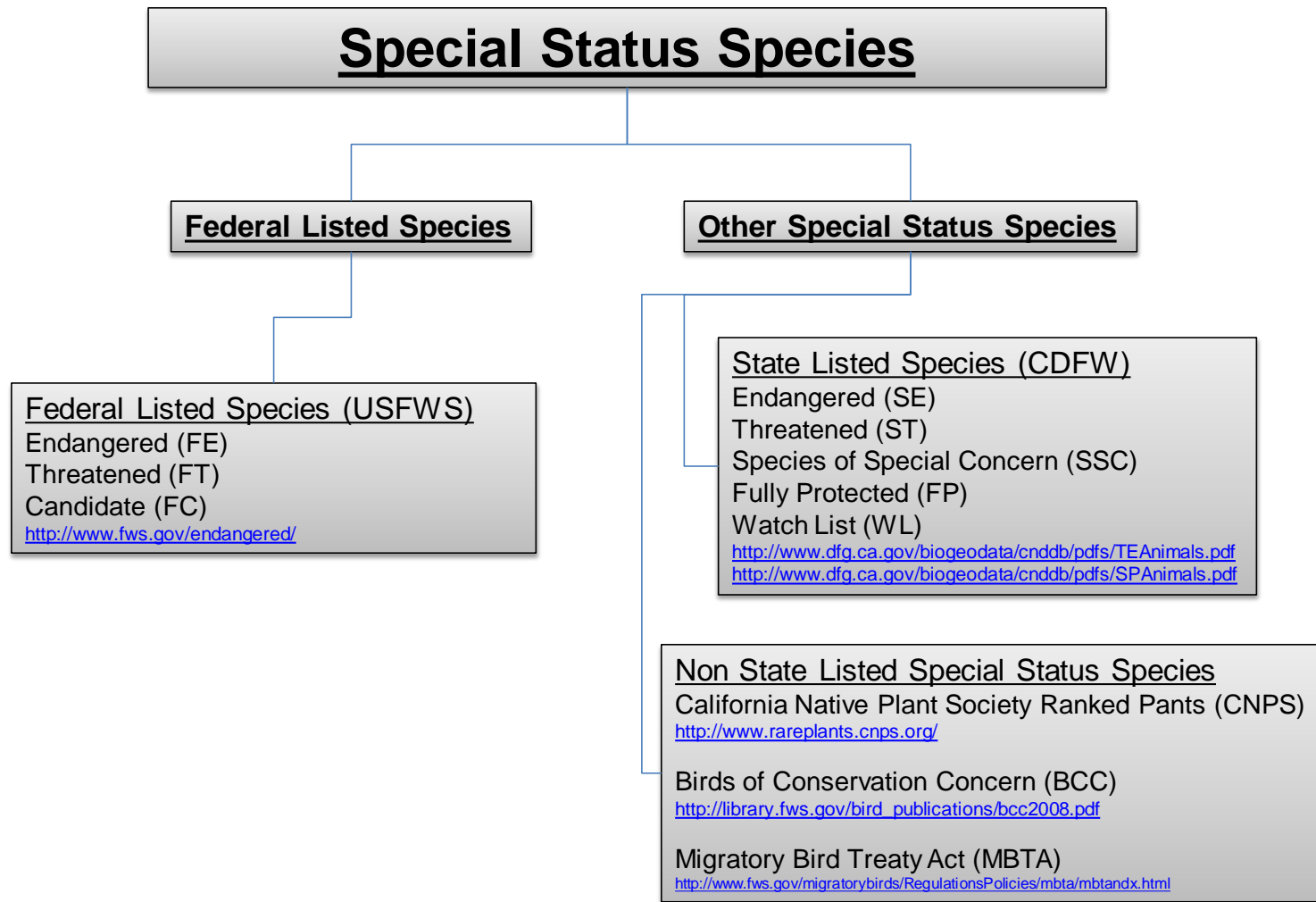


Figure B-1: Special Status Species Designations Used in this INRMP

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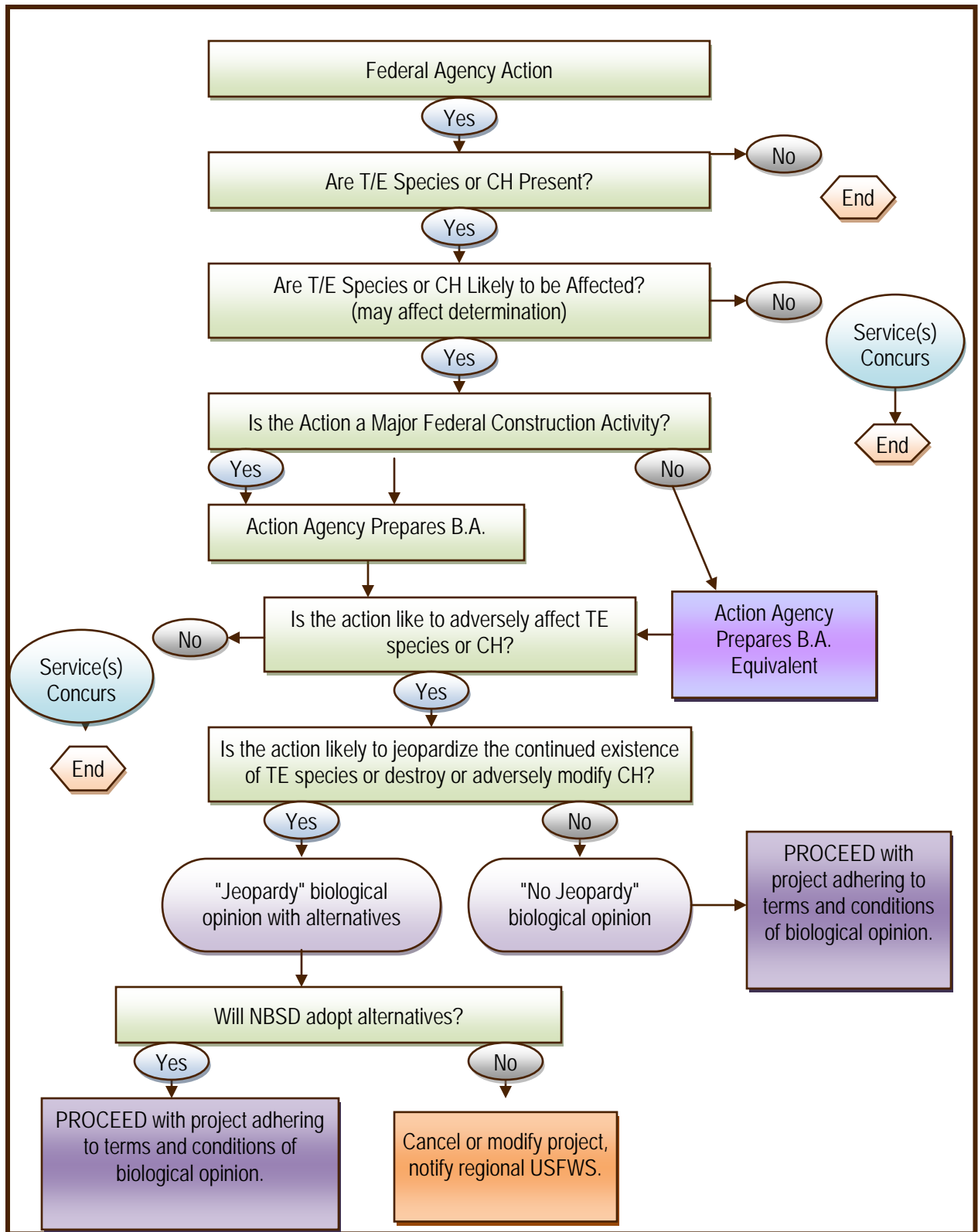


Figure B-2: Federally-Listed Species Coordination

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Wetlands and Waters of the United States

Figure B-3 presents the regulatory jurisdictions that must be considered for any activities that may occur in the San Diego Bay.

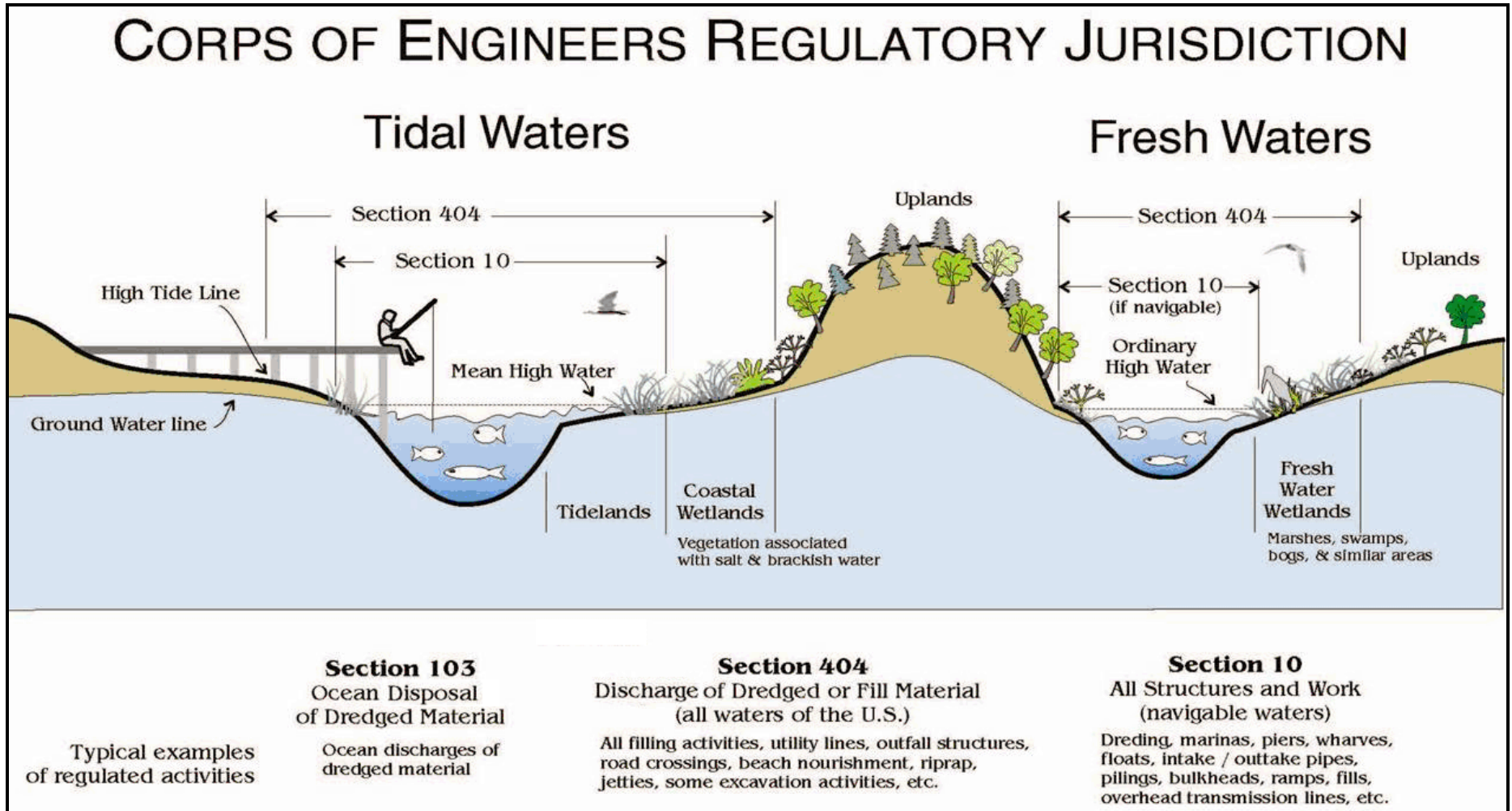


Figure B-3: Regulatory Jurisdictions for Activities within San Diego Bay

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Habitat Management

Habitat loss has a direct correlation to a decline or loss of fish and wildlife populations. Installation INRMPs are meant to be used as tools in operational, training, and construction planning endeavors to minimize or prevent loss of habitat, thus preserving species diversity and populations at respective installations. The following management criteria will ensure that the installation provides wise stewardship ethics in managing the fish and wildlife resources:

Program and Project Review: The installation natural resources manager is part of the planning teams and reviews all proposed projects, operations, and training plans for possible impacts on habitat and fish and wildlife. If impacts on habitat or fish and wildlife are identified, the natural resources manager provides recommendations to the program/project managers so that changes or mitigation can be considered early in the planning process. The recommendations might include, but are not limited to, construction BMPs for erosion control, changing the aspect or placement of a new building to protect trees, identifying wetlands and wetland buffers that must be protected, or other recommendations that will help an installation preserve its fish and wildlife habitats. The natural resources manager is also available to help decide on the best mitigation designs if habitat loss is unavoidable.

Habitat Inspections: The natural resources manager frequently drives and walks throughout the installation, inspecting various habitats for unauthorized encroachment or impacts, and stays familiar with fish and wildlife use of these areas. The natural resources manager has the ability to elevate concerns about habitat impacts on the installation to the Installation Commander.

Habitat Management – Developed Areas: The following items will enhance wildlife habitat:

- *Where feasible, reduce the mowed areas.* Reducing areas that are mowed will allow native vegetation to grow, enhancing wildlife habitat, and can also result in a maintenance cost savings for NBSD.
- *Use native vegetation for landscaping around buildings.* Native vegetation is well suited to local conditions and will require less maintenance to keep healthy. Native vegetation provides better wildlife habitat than exotic, nonnative plants and trees.
- *Reduce pesticide/herbicide/fertilizer use.* Reducing the use of chemicals will help protect surface and groundwater quality at the installation.

Pest Management: Management of Feral Animals

Responsible pet ownership is the key to eliminating feral animal populations. Installations shall implement appropriate pet management measures to preclude establishment of feral cat and dog populations. The Handbook for Residents of Navy Region Southwest Military Family Housing (CNRSW P11101.43E) outlines the following measures for each installation:

1. Installation residents should keep and feed pet animals indoors and under close supervision
2. Support programs to neuter or spay animals before they reach reproductive age
3. Require routine vaccinations for rabies and other diseases
4. Require microchipping registration of all pets brought onto installations
5. Prohibit the feeding of feral animals on the installation
6. Provide educational materials to pet owners regarding installation regulations and general pet management
7. Never abandon animals
8. Comply with all humane and animal control regulations at the Federal, state, and local level.

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APPENDIX C

NATURAL RESOURCES MANAGER DESIGNATION LETTER



DEPARTMENT OF THE NAVY

COMMANDING OFFICER
NAVAL BASE SAN DIEGO
3455 SENN ROAD
SAN DIEGO, CALIFORNIA 92136-5084

IN REPLY REFER TO:
1500
Ser N00/0359
28 Mar 12

From: Commanding Officer, Naval Base San Diego
To: Mr. Andrew Wastell, NAVFAC SW

Subj: DESIGNATION AS NAVAL BASE SAN DIEGO NATURAL RESOURCES
COORDINATOR

Ref: OPNAVINST 5090.1C, Chapter 24, Section 13.5(e)

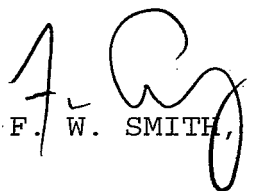
1. Reference (a) requires Commanding Officers (CO) of shore activities holding Class 1 plant accounts to appoint, by letter, an installation Natural Resources (NR) Manager/Coordinator. By notice of this letter, you are appointed to this position for Naval Base San Diego.

2. Your responsibilities as NR Coordinator are as follows:

a. Prepare and maintain the NBSD Integrated Natural Resources Management Plan (INRMP) including updates.

b. Ensure the NBSD CO and NBSD Installation Environmental Program Director are informed of NR issues, conditions of natural resources on NBSD, objectives of the NBSD INRMP, potential or actual conflicts between mission requirements and natural resources mandates.

3. Your appointment and responsibilities, as the NBSD NR Coordinator, will continue until formally notified.


F. W. SMITH, JR.

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APPENDIX D

INRMP PROJECTS, SCHEDULES, AND IMPLEMENTATION TABLE

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Appendix D

NBSD INMRP Projects, Schedules, and Implementation Table

Tables D-1 through D-5 contain natural resources projects proposed for NBSD facilities and projects to meet sustainability objectives. The projects contained within the tables may be revised over time and new projects may be added as new natural resources management priorities or needs arise. The tables include the INRMP subject area, the funding source, EPR project number, a project description, the ERL priority number, the corresponding law or regulation, proposed frequency and fiscal years for implementing each recommendation, and associated Navy Natural Resources Metrics based on Chief of Naval Operations guidance for preparing, implementing, and revising INRMPs in April 2006.

The projects presented in **Tables D-2 through D-6** strive to enhance natural resources on NBSD, without impacting other installation plans and activities. Achieving these recommendations will require development to be conducted in an environmentally sensitive way (i.e., smart growth) and requires cooperation between the installation garrison, environmental offices, facilities and maintenance, and operations. Any future changes in mission, training activity, or technology should be analyzed to assess their impact on natural resources. As new installation plans and DoN guidance and regulations are developed, they should be integrated with the goals and management actions resulting from this INRMP.

Project priority within this INRMP is initially determined by funding classification, as defined in Department of Defense Instruction 4715.03, *Natural Resources Conservation Program* (DoD 2011). **Table 9-1** of this INRMP summarizes Class 0, 1, 2 and 3 funding classes for the recurring and non-recurring conservation requirements in Department of Defense Instruction 4715.03.

To further facilitate project funding, the Navy has developed four Environmental Readiness Levels (ERLs) that also used to determine project priority (DoN 2011). The projects tables in this appendix include the appropriate ERL level for each project prescribed within this INRMP.

Table D-1: Naval Base San Diego, INRMP Project Codes and Project Titles Crosswalk

EPR Project Code	EPR Project Title
00245MAR01	Green Sea Turtle Monitoring
00245NN614	CHS EO 13112 SW NBSD - CAGN/LBVI MGRF Invasive Plant Species Control
00245NR001	INRMP - Biological Surveys NBSD
00245NR002	1 CP SW NBSD - MGRF Endangered Species Habitat Protection Signs
00245NR003	ARCHIVE CHS SW NBSD - Species Database INRMP
00245NR004	INRMP - Conservation Mapping NBSD
00245NR005	INRMP - Long-Term Ecological Trend Monitoring NBSD

EPR Project Code	EPR Project Title
00245NR006	CHS SW NBSD- Natural Resources Inventory
00245NR007	CWA SW NBSD MGRF - Wetland Delineation Update
00245NR008	SW, NBSD - MGRF Outdoor Recreation Plan
00245NR012	MBTA SW NBSD - Pest/Nuisance Wildlife Management
00245NR102	INRMP - Vegetation Management Plan NBSD
00245NR105	CHS EO13112 SW NBSD - CAGN/LBVI/SAFA/SAMM/SABU Invasive Plant Species Control
00245NR106	SWCA SW NBSD - Erosion Control Plan & Implementation
00245NR106	SWCA SW NBSD - Erosion Control Plan & Implementation
00245NR107	SW NBSD - Fire Management Plan Update & Implementation
00245NR201	4 SAR SW NBSD- MGRF Bat Surveys
00245NR202	SW, NBSD - NBSD and MGRF Bird Boxes
00245NR203	SW, NBSD Pollinator/Bee Boxes
00245NR204	SIKES SW NBSD - Pollinator Surveys
00245NR205	SW NBSD - Exotic Species Management
00245NR206	1 S SW NBSD Federally listed Species Survey
00245NR209	SW, NBSD, Endangered Species required training and certification

Table D-2: Naval Base San Diego, General INRMP Projects and Implementation Table¹

INRMP Section	Funding Source	EPR Project Code ²	Project Description	ERL Priority	Legal Driver ³	Implementation		2010 Natural Resources Metrics Focus Areas
						Frequency	Fiscal Year ⁴	
Watershed Management								
4.2.2 6.2.2 7.3.1	O&MN Env.	00245NR106	Monitor and rehabilitate degraded soil resources. Conduct surveys to determine whether activities on NBSD are adversely impacting soil and water resources on NBSD through erosion and sedimentation. Surveys will be conducted once every 5 years, and survey results will be analyzed to assist with identification of degraded soil or eroded areas.	4	Sikes Act, CWA, DoD Inst. 4715.03, OPNAVINST 5090.1D	Once every 5 years	2015	1, 5 and 7
4.2.2 6.2.2 7.3.1	O&MN Env.	00245NR106	Develop and implement an Erosion Control Plan for NBSD. The plan should include monitoring protocols and BMPs for prevention of erosion and sedimentation on NBSD.	4	Sikes Act, CWA, DoD Inst. 4715.03, OPNAVINST 5090.1D	Once every 5 years	All	1, 5 and 7
4.2.2 6.2.2 7.3.1	CNIC.	In-house	Periodically review erosion control BMPs to ensure that they are still adequate to control adverse erosion and sedimentation on NBSD. Conduct surveys to determine whether activities on NBSD are adversely impacting soil and water resources on NBSD through erosion and sedimentation.	4	Sikes Act, CWA, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 5 and 7
Habitat Management								
Terrestrial Habitats and Vegetation Communities								
4.2.3.1 6.2.3.1 7.3.2.1	O&MN Env.	00245NR005	Conduct long-term resource monitoring to detect changes caused by military activities.	4	Sikes Act, CA MIL, CA Habitat Enhancement Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Biennial	2014, 2016, 2018	1, 5, 6 and 7

Table D-2: Naval Base San Diego, General INRMP Projects and Implementation Table¹

INRMP Section	Funding Source	EPR Project Code ²	Project Description	ERL Priority	Legal Driver ³	Implementation		2010 Natural Resources Metrics Focus Areas
						Frequency	Fiscal Year ⁴	
4.2.3.1 6.2.3.1 7.3.2.1	CNIC.	In-house	Develop specifications and standards for reseeded/revegetation of disturbed sites for use in contracts, maintenance, and other projects.	4	Sikes Act, CA MIL, CA Habitat Enhancement Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 5, 6 and 7
4.2.3.1 6.2.3.1 7.3.2.1	O&MN Env.	00245NR106	Survey areas where soil erosion and compaction might occur to ensure that BMPs within the Erosion Control Plan are implemented and effective.	4	Sikes Act, CA Habitat Enhancement Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Biennial	2014, 2016, 2018	1, 5, 6 and 7
4.2.3.1 6.2.3.1 7.3.2.1	Undetermined O&MN Env.	00245NR005	Conduct long-term ecological trend monitoring of terrestrial habitats and vegetation communities.	4	Sikes Act, CA Habitat Enhancement Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 5, and 6
4.2.3.1 6.2.3.1 7.3.2.1	O&MN Env	00245NR102	Develop and implement a comprehensive management plan for vegetation at NBSD. Plan will identify vegetation goals for different areas and develop strategies to attain those goals, including substrate enhancement, invasive non-native plant control, planting and/or seeding, maintenance and monitoring.	4	Sikes Act, CA Habitat Enhancement Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Once every 5 years	2014	1, 5, 6 and 7
Wetlands and Floodplains								

Table D-2: Naval Base San Diego, General INRMP Projects and Implementation Table¹

INRMP Section	Funding Source	EPR Project Code ²	Project Description	ERL Priority	Legal Driver ³	Implementation		2010 Natural Resources Metrics Focus Areas
						Frequency	Fiscal Year ⁴	
4.2.3.2 6.2.3.2 7.2.3.2	O&MN Env.	00245NR007	Maintain and update wetland inventory data, including wetland distribution and categories.	4	Sikes Act, CWA, CA Wetlands Preservation, DoD Inst. 4715.03, OPNAVINST 5090.1D	Once every 5 years	All	1, 5 and 7
4.2.3.2 6.2.3.2 7.2.3.2	CNIC	In-house	Implement erosion control BMPs to ensure adverse environmental impacts to wetlands do not occur.	4	Sikes Act, CWA, CA Wetlands Preservation, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 5 and 7
Fish and Wildlife Management								
4.2.4 6.2.4 7.3.3	O&MN Env.	00245NR006	Survey for and monitor herpetofauna populations using guidelines recommended by Partners in Amphibian and Reptile Conservation (PARC). Once finalized, implement DoD PARC Strategic Plan.	4	Sikes Act, CA MIL, DoD Inst. 4715.03, OPNAVINST 5090.1D	Once every 5 years	2014, 2016, 2018	1, 4, 5 and 6
4.2.4 6.2.4 7.3.3	O&MN Env.	00245NR202	Install bird and bat boxes on NBSD.	1	Sikes Act, CA MIL, DoD Inst. 4715.03, OPNAVINST 5090.1D	Once	2013	1, 2, 4, 5 and 6

Table D-2: Naval Base San Diego, General INRMP Projects and Implementation Table¹

INRMP Section	Funding Source	EPR Project Code ²	Project Description	ERL Priority	Legal Driver ³	Implementation		2010 Natural Resources Metrics Focus Areas
						Frequency	Fiscal Year ⁴	
4.2.4 6.2.4 7.3.3	CNIC.	In-house	Determine if actions require an MBTA permit, and develop effective management for minimizing the unintentional take of migratory birds.	4	Sikes Act, MBTA, DoD Inst. 4715.03, OPNAVINST 5090.1D, Navy MBTA Guidance	Annually	All	1, 5 and 6
4.2.4 6.2.4 7.3.3	O&MN Env.	00245NR006	Conduct regular surveys (e.g., every 5 years when the baseline inventories are scheduled to be repeated) to determine what species of migratory birds may have potential to be on NBSD.	4	Sikes Act, MBTA, DoD Inst. 4715.03, OPNAVINST 5090.1D, Navy MBTA Guidance	Once every 5 years	2015	1, 5 and 6
4.2.4 6.2.4 7.3.3	CNIC.	In-house	Once finalized, implement monitoring protocols contained within the DoD Coordinated Bird Monitoring Plan. Contribute to date to the Coordinated Bird Monitoring Database.	3	Sikes Act, MBTA, DoD Inst. 4715.03, OPNAVINST 5090.1D, Navy MBTA Guidance	Annually	All	1, 5 and 6
4.2.4 6.2.4 7.3.3	CNIC	In-house	Develop migratory bird specific BMPs and ensure these BMPs are included in project plans.	4	Sikes Act, MBTA, DoD Inst. 4715.03, OPNAVINST 5090.1D, Navy MBTA Guidance	Once	2013	1, 5 and 6

Table D-2: Naval Base San Diego, General INRMP Projects and Implementation Table¹

INRMP Section	Funding Source	EPR Project Code ²	Project Description	ERL Priority	Legal Driver ³	Implementation		2010 Natural Resources Metrics Focus Areas
						Frequency	Fiscal Year ⁴	
4.2.4 6.2.4 7.3.3	O&MN Env.	00245NR204	Conduct surveys to determine what pollinators are on NBSD. Ensure inventory data is included in GeoBase.	3	Sikes Act, CA MIL, DoD Inst. 4715.03, OPNAVINST 5090.1D	Biennial	2014, 2016, 2018	1, 5 and 6
4.2.4 6.2.4 7.3.3	O&MN Env.	00245NR004	Conduct conservation mapping at NBSD.	4	Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Once	2014	1, 5 and 6
4.2.4 6.2.4 7.3.3	Undetermined O&MN Env.	00245NR005	Conduct long-term ecological trend monitoring of fish and wildlife on NBSD.	4	Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 5, and 6
Special Status Species (Federally Listed and Other Special Status Species)								
4.2.5 6.2.5 7.3.4	CNIC	In-house	Investigate the need for implementing research projects to understand ecological requirements of special status species.	4	Sikes Act, ESA, CESA, CA MIL, DoD Inst. 4715.03, OPNAVINST 5090.1D	Once	2013	1, 2, 4, 5, 6 and 7
4.2.5 6.2.5 7.3.4	O&MN Env.	00245NR003	Review and update species lists to reflect presence of threatened, endangered, and other species status species.	4	Sikes Act, ESA, CESA, CA MIL, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 4, and 5

Table D-2: Naval Base San Diego, General INRMP Projects and Implementation Table¹

INRMP Section	Funding Source	EPR Project Code ²	Project Description	ERL Priority	Legal Driver ³	Implementation		2010 Natural Resources Metrics Focus Areas
						Frequency	Fiscal Year ⁴	
4.2.5 6.2.5 7.3.4	O&MN Env.	00245NR206	Conduct regular (approximately every 2 years) surveys for special status species that may be present on NBSD. Once surveys are completed, incorporated survey data into this INRMP. Ensure that inventory data is digitized and incorporated into the GeoBase database for NBSD.	4	Sikes Act, ESA, CESA, CA MIL, DoD Inst. 4715.03, OPNAVINST 5090.1D	Biennial	2014, 2016, 2018	1, 4 and 5
4.2.5 6.2.5 7.3.4	O&MN Env.	00245NR006	Continue monitoring special status species as described in this INRMP and adapt monitoring and management actions as needed. Use monitoring information and other information to guide adaptive management.	4	Sikes Act, ESA, CESA, CA MIL, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 3, 4, 5, 6 and 7
4.2.5 6.2.5 7.3.4	O&MN Env.	00245NR106 In-house	Implement erosion control BMPs to ensure adverse environmental impacts to special status species habitat do not occur.	4	Sikes Act, ESA, CESA, CA MIL, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 4, 5 and 6
4.2.5 6.2.5 7.3.4	O&MN Env.	00245EPRNBSD	Perform a vulnerability assessment to assess threats to existing populations.	4	Sikes Act, ESA, CESA, CA MIL, DoD Inst. 4715.03, OPNAVINST 5090.1D	Once	2014	1, 5 and 6
4.2.5 6.2.5 7.3.4	CNIC	In-house	Revegetate with native species included on the NAVFAC SW recommended plant list. Include sensitive plant species in the NAVFAC SW recommended plant list.	4	Sikes Act, EO 13112, CA MIL, CA Native, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 3, 4, 5, 6 and 7

Table D-2: Naval Base San Diego, General INRMP Projects and Implementation Table¹

INRMP Section	Funding Source	EPR Project Code ²	Project Description	ERL Priority	Legal Driver ³	Implementation		2010 Natural Resources Metrics Focus Areas
						Frequency	Fiscal Year ⁴	
4.2.5 6.2.5 7.3.4	CNIC	In-house	Coordinate with USFWS to identify actions that adversely impact training capabilities, and identify activities that could adversely affect listed species. Adapt measures as warranted and consult with USFWS to receive incidental take coverage where appropriate.	4	Sikes Act, EO 13112, CA MIL, CA Native, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 3, 4, 5, 6 and 7
4.2.5 6.2.5 7.3.4	O&MN Env.	00245NR006	Conduct periodic monitoring (recommend at least every 5 years) to determine existing population health. Once surveys are completed, incorporated survey data into this INRMP.	4	Sikes Act, ESA, CESA, CA MIL, DoD Inst. 4715.03, OPNAVINST 5090.1D	Once	2015	1, 3, 4, 5, 6 and 7
4.2.5 6.2.5 7.3.4	Undetermined O&MN Env.	00245NR002	Install educational interpretive panels in areas where Special Status Species are known to occur.	4	Sikes Act, EO 13112, CA MIL, CA Native, DoD Inst. 4715.03, OPNAVINST 5090.1D	Once	2014	1, 4 and 7
Exotic and Invasive Species Management								
4.2.6 6.2.6 7.3.5	CNIC.	In-house	Annually review and update recommended plant list.	4	Sikes Act, EO 13112, CA MIL, CA Native, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 3, 4, 5, 6 and 7

Table D-2: Naval Base San Diego, General INRMP Projects and Implementation Table¹

INRMP Section	Funding Source	EPR Project Code ²	Project Description	ERL Priority	Legal Driver ³	Implementation		2010 Natural Resources Metrics Focus Areas
						Frequency	Fiscal Year ⁴	
4.2.6 6.2.6 7.3.5	O&MN Env.	00245NR102	Develop and implement an Vegetation Management Plan to control the spread of invasive species on NBSD. The plan should include specific prescriptions to evaluate individual invasive species, to identify targeted species, to control further spread of targeted species, and to develop and implement a program to monitor species abundance.	4	Sikes Act, EO 13112, CA MIL, CA Native, DoD Inst. 4715.03, OPNAVINST 5090.1D	Once every 5 years	2013	1, 4, 5, 6 and 7
4.2.6 6.2.6 7.3.5	O&MN Env.	00245NR105	Conduct surveys annually to determine whether controls on existing infestations of species have been effective, and whether new populations have become established.	4	Sikes Act, EO 13112, CA MIL, CA Native, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 4, 5, 6 and 7
4.2.6 6.2.6 7.3.5	CNIC.	In-house	Develop and implement a review process for all projects that include a landscaping component to ensure nonnative species are not introduced.	4	Sikes Act, EO 13112, CA MIL, CA Native, DoD Inst. 4715.03, OPNAVINST 5090.1D	Once	2013	1, 4, 5, 6 and 7
4.2.6 6.2.6 7.3.5	CNIC.	in-house	Coordinate with the Natural History Museum to identify unknown species that may be invasive.	4	Sikes Act, EO 13112, CA MIL, CA Native, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1 and 2

Table D-2: Naval Base San Diego, General INRMP Projects and Implementation Table¹

INRMP Section	Funding Source	EPR Project Code ²	Project Description	ERL Priority	Legal Driver ³	Implementation		2010 Natural Resources Metrics Focus Areas
						Frequency	Fiscal Year ⁴	
4.2.6 6.2.6 7.3.5	O&MN Env.	00245EPRNBSD	Develop outreach and education materials for distribution within the NBSD community.	4	Sikes Act, EO 13112, CA MIL, CA Native, DoD Inst. 4715.03, OPNAVINST 5090.1D	Once	2013	1, 2, 4, 5, 6 and 7
4.2.6 6.2.6 7.3.5	O&MN Env.	00245NR205	Conduct exotic species management on NBSD.	4	Sikes Act, EO 13112, CA MIL, CA Native, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	2016	1, 4, 5, 6 and 7
Grounds and Landscape Maintenance								
4.2.7 4.2.6 7.3.6	CNIC	In-house	Develop and implement BMPs for grounds maintenance at NBSD (e.g., water conservation). Periodically review the Landscape Management Plan to ensure plan BMPs still meet installation needs.	4	Sikes Act, EO 13112, CA MIL, CA Native, DoD Inst. 4715.03, OPNAVINST 5090.1D	Biennial	2014, 2016, 2018	1, 4, 5 and 6
4.2.6 6.2.7 7.3.6	CNIC	In-house	Develop monitoring metrics, and set targets to ensure management strategies are meeting goals and objectives.	4	Sikes Act, EO 13112, CA MIL, CA Native, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 4, 5 and 6
Pest Management								
4.2.8 6.2.8 7.3.7	O&MN Env.	NAVFAC Applied biologist	Develop monitoring metrics, and set targets to ensure management strategies are meeting goals and objectives.	4	Sikes Act, EO 13112, CA MIL, CA Native, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 4, 5 and 6

Table D-2: Naval Base San Diego, General INRMP Projects and Implementation Table¹

INRMP Section	Funding Source	EPR Project Code ²	Project Description	ERL Priority	Legal Driver ³	Implementation		2010 Natural Resources Metrics Focus Areas
						Frequency	Fiscal Year ⁴	
4.2.8 6.2.8 7.3.7	O&MN Env.	NAVFAC Applied biologist	Update the SDMAI as necessary to ensure that the plan reflects changes in pest populations and current management issues. Incremental updates to the plan will be conducted annually.	4	Sikes Act, EO 13112, CA MIL, CA Native, CA Pest Management, DoD Inst. 4715.03, DoD Inst. 4150.7, OPNAVINST 5090.1D	Annually	All	1, 4. 5 and 6
4.2.8 6.2.8 7.3.7	O&MN Env.	NAVFAC Applied biologist	Monitor pest and invasive species populations. Track usage of active ingredients and man-hours spent controlling pest and invasive species during implementation to ensure that the management strategies are sufficient.	4	Sikes Act, EO 13112, CA MIL, CA Native, CA Pest Management, DoD Inst. 4715.03, DoD Inst. 4150.7, OPNAVINST 5090.1D	Annually	All	1, 4. 5 and 6
4.2.8 6.2.8 7.3.7	O&MN Env.	NBSD Integrated Pest Management Plan	Develop and implement a program to control feral animals on NBSD. Control populations of feral animals on NBSD.	4	Sikes Act, EO 13112, CA MIL, CA Native, CA Pest Management, DoD Inst. 4715.03, DoD Inst. 4150.7, OPNAVINST 5090.1D	Once	2013	1, 4. 5 and 6

Table D-2: Naval Base San Diego, General INRMP Projects and Implementation Table¹

INRMP Section	Funding Source	EPR Project Code ²	Project Description	ERL Priority	Legal Driver ³	Implementation		2010 Natural Resources Metrics Focus Areas
						Frequency	Fiscal Year ⁴	
4.2.8 6.2.8 7.3.7	O&MN Env.	00245EPRNBSD	Conduct surveys to determine impact of feral animals on native species on NBSD.	4	Sikes Act, EO 13112, CA MIL, CA Native, CA Pest Management, DoD Inst. 4715.03, DoD Inst. 4150.7, OPNAVINST 5090.1D	Biennial	2014, 2016, 2018	1, 4, 5 and 6
Outdoor Recreation and Public Access								
4.2.9 6.2.9 7.3.9	O&MN Env.	00245NR008	Develop an outdoor recreation plan for NBSD. Seek opportunities for natural resources-based outdoor recreation to improve quality of life for Navy personnel, allow close partnership with the local community, and improve knowledge of the natural world and the Navy's stewardship of natural resources.	3	Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Once	2013	1, 2, 3 and 6
4.2.9 6.2.9 7.3.9	O&MN Env.	00245NR008	Identify and evaluate suitable outdoor recreation opportunities for installation personnel in undeveloped areas that do not contain or have the potential to impact sensitive species.	2	Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 2, 3 and 6
Law Enforcement and Natural Resources Laws and Regulations								
4.2.10 6.2.10 7.3.10	CNIC	In-house	Provide training to personnel responsible for enforcement of applicable laws and regulations.	4	Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 3, 4, 6 and 7

Table D-2: Naval Base San Diego, General INRMP Projects and Implementation Table¹

INRMP Section	Funding Source	EPR Project Code ²	Project Description	ERL Priority	Legal Driver ³	Implementation		2010 Natural Resources Metrics Focus Areas
						Frequency	Fiscal Year ⁴	
4.2.10 6.2.10 7.3.10	CNIC	In-house	Cooperate with other agencies, particularly the USFWS and CDFW, to ensure that natural resources laws are adequately enforced.	4	Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 2, 3, 4, 5, 6 and 7
4.2.10 6.2.10 7.3.10	CNIC	In-house	Periodically review and update outreach and education materials to ensure that each is still current.	3	Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Biennial	2014, 2016, 2018	1, 2, 3, 4, 5, 6 and 7
Environmental Awareness and Outreach								
4.2.11 6.2.11 7.3.11	O&MN Env.	In-house	Establish a watchable wildlife program at NBSD.	2	Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Once	2013	1, 5 and 6
4.2.11 6.2.11 7.3.11	O&MN Env.	In-house 00245EPRNBSD	Educate the local community, as well as installation personnel and tenants about the installation natural resources program. Develop and distribute educational materials about the NBSD natural resources program to stakeholders near NBSD (e.g. neighborhoods, county, etc.).	4	Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 2, 3, 4, 5, 6 and 7
Geographic Information Systems Management, Database Management, Data Integration, Access and Reporting								
4.2.12 6.2.12 7.3.11	O&MN Env.	0024298019	Annually review GIS data to advise resource managers of needs to update data sets during budget planning and programming.	4	Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 3, 4, 5, 6 and 7
4.2.12 6.2.12 7.3.11	O&MN Env.	In-house	Develop specific language that will be included in all contracts to ensure all spatial data produced are fully compatible with the installation GIS database.	4	Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Once	2013	1, 3, 4, 5, 6 and 7

Table D-2: Naval Base San Diego, General INRMP Projects and Implementation Table¹

INRMP Section	Funding Source	EPR Project Code ²	Project Description	ERL Priority	Legal Driver ³	Implementation		2010 Natural Resources Metrics Focus Areas
						Frequency	Fiscal Year ⁴	
4.2.12 6.2.12 7.3.11	O&MN Env.	00245EPRNBSD In-house	Develop a standardized system for recording and mapping significant resource observations (e.g., plants, wildlife, erosion, damage) when incidentally encountered.	4	Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Once	2013	1, 3, 4, 5, 6 and 7
4.2.12 6.2.12 7.3.11	O&MN Env.	00245EPRNBSD	Provide annual funding for one person to be responsible for updating and maintaining the GIS database. This should include the necessary hardware, software, and training for the use of GIS.	4	Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 3, 4, 5, 6 and 7
Navy Projects within the San Diego Metro Area								
	O&MN Env.	00242NR020	Southwest metro area wildlife assist support (Metro EPR included by NAVFAC SW)					
	O&MN Env.	00242NR026	Earth Day / international migratory bird day (Metro EPR included by NAVFAC SW)					
	O&MN Env.	00242NR033	Southwest metro area project wildlife support (Metro EPR included by NAVFAC SW)					
	O&MN Env.	00242NR041	Southwest metro area migratory bird surveys and management (Metro EPR included by NAVFAC SW)					
	O&MN Env.	00242NR042	Southwest metro area migratory bird mitigation (Metro EPR included by NAVFAC SW)					

Table D-2: Naval Base San Diego, General INRMP Projects and Implementation Table¹

INRMP Section	Funding Source	EPR Project Code ²	Project Description	ERL Priority	Legal Driver ³	Implementation		2010 Natural Resources Metrics Focus Areas
						Frequency	Fiscal Year ⁴	

Notes:

¹ These projects are applicable only to Naval Base San Diego Main Site, Broadway Complex, Mission Gorge Recreational Facility, and the Navy retained parcels within the Housing Areas.

² Projects listed with the following description are placeholder projects to be entered into the EPR system in the future: 00245NRXX.

³ This is not a comprehensive list of applicable regulations, other regulations, policy, or guidance may apply. Please review **Appendix B** for a comprehensive list of laws, policies or guidance for management of natural resources.

⁴ Cost estimates are on the Navy Conservation Website and are available during annual reviews with USFWS and CDFW.

Key Legal Driver:

- CA MIL = CA Mgmt of Fish and Wildlife on Military Lands (CA MIL)
- CESA = California Endangered Species Act
- ESA = Endangered Species Act
- CA Native = CA Native Spp. Conservation and Enhancement
- CWA = Clean Water Act
- MBTA = Migratory Bird Treaty Act
- OPNAVINST = Chief of Naval Operational Instruction 5090.1D

Key Metrics:

1. INRMP Implementation
2. Partnerships/Cooperation and Effectiveness
3. Team Adequacy
4. Status of Federally Listed Species and Critical Habitat (CH)
5. Ecosystem Integrity
6. Fish and Wildlife Management and Public Use
7. INRMP Impact on the Installation Mission.

Table D-3: Naval Base San Diego, Main Site INRMP Projects and Implementation Table

INRMP Section	Funding Source	EPR Project Code ¹	Project Description	ERL Priority	Legal Driver ²	Implementation		2010 Natural Resources Metrics Focus Areas
						Frequency	Fiscal Year ³	
Watershed Management								
4.2.2	O&MN Env.	NBSD Facilities	Conduct surveys of Chollas and Paleta creeks to identify erosion, sediment accumulations, or other threats to stream stability.	4	Sikes Act, CWA, CA Wetlands Preservation, DoD Inst. 4715.03, OPNAVINST 5090.1D	Once	2013	1, 5 and 7
4.2.2	O&MN Env.	NBSD Facilities	Develop actions specific to each unstable stream reach that can be undertaken to assist with stream recovery.	4	Sikes Act, CWA, CA Wetlands Preservation, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 5 and 7
4.2.2	O&MN Env.	NBSD Facilities	As funding allows, undertake natural channel design principles to restore stream reaches with highly unstable conditions.	3	Sikes Act, CWA, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 5 and 7
Fish and Wildlife Management								
4.2.4	O&MN Env.	00242NRC22	Finalize and implement Heron and Egret Management Plan and incorporate appropriate managements strategies into this INRMP.	3	Sikes Act, MBTA, DoD Inst. 4715.03, OPNAVINST 5090.1D, Navy MBTA Guidance	Once	2012	1, 5 and 6
Special Status Species (Federally Listed and Other Special Status Species)								

Table D-3: Naval Base San Diego, Main Site INRMP Projects and Implementation Table

INRMP Section	Funding Source	EPR Project Code ¹	Project Description	ERL Priority	Legal Driver ²	Implementation		2010 Natural Resources Metrics Focus Areas
						Frequency	Fiscal Year ³	
4.2.5	Undetermined O&MN Env.	00245MAR01	Conduct green sea turtle monitoring in the bayside areas of NBSD Main Site.	4	Sikes Act, EO 13112, CA MIL, CA Native, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 3, 4, 5, 6 and 7
Geographic Information Systems Management, Database Management, Data Integration, Access and Reporting								
4.2.12	O&MN Env.	0024298019	Annually review GIS data to advise resource managers of needs to update data sets during budget planning and programming.	4	Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 3, 4, 5, 6 and 7
4.2.12	O&MN Env.	In-house	Develop specific language that will be included in all contracts to ensure all spatial data produced are fully compatible with the installation GIS database.	4	Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Once	2013	1, 3, 4, 5, 6 and 7
4.2.12	O&MN Env.	00245EPRNBSD In-house	Develop a standardized system for recording and mapping significant resource observations (e.g., plants, wildlife, erosion, damage) when incidentally encountered.	4	Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Once	2013	1, 3, 4, 5, 6 and 7
Navy Projects within the San Diego Metro Area								
	O&MN Env.	00242NR027	Southwest metro area heron and egret surveys (Metro EPR included by NAVFAC SW)					

Table D-3: Naval Base San Diego, Main Site INRMP Projects and Implementation Table

INRMP Section	Funding Source	EPR Project Code ¹	Project Description	ERL Priority	Legal Driver ²	Implementation		2010 Natural Resources Metrics Focus Areas
						Frequency	Fiscal Year ³	

Notes:

¹Projects listed with the following description are placeholder projects to be entered into the EPR system in the future: 00245NRXX.

²This is not a comprehensive list of applicable regulations, other regulations, policy, or guidance may apply. Please review **Appendix B** for a comprehensive list of laws, policies or guidance for management of natural resources.

³ Cost estimates are on the Navy Conservation Website and are available during annual reviews with USFWS and CDFW.

Key Legal Driver:

- CA MIL = CA Mgmt of Fish and Wildlife on Military Lands (CA MIL)
- CEA = California Endangered Species Act
- ESA = Endangered Species Act
- CA Native = CA Native Spp. Conservation and Enhancement
- CWA = Clean Water Act
- MBTA = Migratory Bird Treaty Act
- OPNAVINST = Chief of Naval Operational Instruction 5090.1D

Key Metrics:

- 8. INRMP Implementation
- 9. Partnerships/Cooperation and Effectiveness
- 10. Team Adequacy
- 11. Status of Federally Listed Species and Critical Habitat (CH)
- 12. Ecosystem Integrity
- 13. Fish and Wildlife Management and Public Use
- 14. INRMP Impact on the Installation Mission.

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Table D-4: Mission Gorge Recreational Facility INRMP Projects and Implementation Table

INRMP Section	Funding Source	EPR Project Code ¹	Project Description	ERL Priority	Legal Driver ²	Implementation		2010 Natural Resources Metrics Focus Areas
						Frequency	Fiscal Year ³	
Watershed Management								
Wildland Fire Management								
6.2.3.4	O&MN Env.	00245NR107	Develop and implement an FMP for MGRF. The purpose of the FMP is to reduce wildfire potential, protect Navy assets, protect and enhance natural resources, and implement goals and objectives for the wildland fire management program. The FMP should also describe fire attributes and fuels for lands on and surrounding MGRF, and guidance for managing fire at MGRF.	4	Sikes Act, CA MIL, CA Habitat Enhancement Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 5, 6 and 7
6.2.3.4	O&MN Env.	00245NR107 In-house	Educate the MGRF community about wildland fire. This can be accomplished through posting fire prevention signs around MGRF, and developing fire prevention messages and handouts for Navy personnel.	4	Sikes Act, CA Habitat Enhancement Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Biennial	2014, 2016, 2018	1, 5, 6 and 7
Fish and Wildlife Management								
6.2.4	O&MN Env.	00245NR201	Conduct bat surveys at MGRF.	4	Sikes Act, CA MIL, DoD Inst. 4715.03, OPNAVINST 5090.1D	Once every 5 years	2014, 2016	
Special Status Species (Federally Listed and Other Special Status Species)								
6.2.5	CNIC	In-house	Establish an education program for Navy personnel who might have contact with the Least Bell's Vireo, their habitat, or nests.	4	Sikes Act, ESA, CESA, CA MIL, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 3, 4, 5, 6 and 7
6.2.5	O&MN Env.	00245NR206	Conduct regular (approximately every 2 years) surveys for Least Bell's Vireo individuals, or nests, that may be present on MGRF. Once surveys are completed, incorporated survey data into this INRMP.	4	Sikes Act, ESA, CESA, CA MIL, DoD Inst. 4715.03, OPNAVINST 5090.1D	Biannually	2014, 2016, 2018	1, 3, 4, 5, 6 and 7

Table D-4: Mission Gorge Recreational Facility INRMP Projects and Implementation Table

INRMP Section	Funding Source	EPR Project Code ¹	Project Description	ERL Priority	Legal Driver ²	Implementation		2010 Natural Resources Metrics Focus Areas
						Frequency	Fiscal Year ³	
6.2.5	O&MN Env.	00245NR105 00245NN614	Perform invasive species control in Least Bell's Vireo nesting and foraging sites.	4	Sikes Act, EO 13112, CA MIL, CA Native, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 3, 4, 5, 6 and 7
6.2.5	CNIC	In-house	Establish an education program for Navy personnel who might have contact with the Coastal California Gnatcatcher, their habitat, or nests.	4	Sikes Act, ESA, CESA, CA MIL, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 3, 4, 5, 6 and 7
6.2.5	O&MN Env.	00245NR206	Conduct regular (approximately every 2 years) surveys for Coastal California Gnatcatcher individuals, or nests, that may be present on MGRF. Once surveys are completed, incorporated survey data into this INRMP.	4	Sikes Act, ESA, CESA, CA MIL, DoD Inst. 4715.03, OPNAVINST 5090.1D	Biannually	2014, 2016, 2018	1, 3, 4, 5, 6 and 7
6.2.5	O&MN Env.	00245NR105 00245NN614	Perform invasive species control in Coastal California Gnatcatcher nesting and foraging sites.	4	Sikes Act, EO 13112, CA MIL, CA Native, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 3, 4, 5, 6 and 7
6.2.5	CNIC	In-house	Establish an education program for Navy personnel on the Hermes copper butterfly.	4	Sikes Act, ESA, CESA, CA MIL, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 3, 4, 5, 6 and 7
6.2.5	O&MN Env.	00245NR105 00245NN614	Perform invasive species control in Hermes copper butterfly habitat.	4	Sikes Act, EO 13112, CA MIL, CA Native, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 3, 4, 5, 6 and 7
6.2.5	O&MN Env.	00245NR204	Conduct a survey to determine Hermes copper presence on MGRF. If surveys determine species presence, include data into this INRMP, update GIS, and develop and implement management strategies for maintaining and enhancing the species population (e.g., conduct surveys of species and population every two years).	4	Sikes Act, ESA, CESA, CA MIL, DoD Inst. 4715.03, OPNAVINST 5090.1D	Once then biannually	2014	1, 3, 4, 5, 6 and 7

Table D-4: Mission Gorge Recreational Facility INRMP Projects and Implementation Table

INRMP Section	Funding Source	EPR Project Code ¹	Project Description	ERL Priority	Legal Driver ²	Implementation		2010 Natural Resources Metrics Focus Areas
						Frequency	Fiscal Year ³	
6.2.5	O&MN Env.	00245NR106	Implement erosion control BMPs in known Hermes copper butterfly habitat to reduce habitat degradation.	4	Sikes Act, ESA, CESA, CA MIL, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 3, 4, 5, 6 and 7
6.2.5	O&MN Env.	00245NR002	Develop and install Endangered Species Habitat Protection signs at MGRF.	4	Sikes Act, ESA, CESA, CA MIL, DoD Inst. 4715.03, OPNAVINST 5090.1D	Once	2016	1, 3, 4, 5, 6 and 7
6.2.5	O&MN Env.	00245NR105 00245NN614	Conduct invasive species plant control and habitat enhancement for endangered species.	4	Sikes Act, EO 13112, CA MIL, CA Native, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	2014	1, 3, 4, 5, 6 and 7
Environmental Awareness and Outreach								
6.2.11	O&MN Env.	00245EPRN BSD	Establish a watchable wildlife program at MGRF.	2	Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Once	2013	1, 5 and 6

Notes:

¹Projects listed with the following description are placeholder projects to be entered into the EPR system in the future: 00245NRXX.

²This is not a comprehensive list of applicable regulations, other regulations, policy, or guidance may apply. Please review **Appendix B** for a comprehensive list of laws, policies or guidance for management of natural resources.

³Cost estimates are on the Navy Conservation Website and are available during annual reviews with USFWS and CDFW.

Key Legal Driver:

CA MIL = CA Mgmt of Fish and Wildlife on Military Lands (CA MIL)

CESA = California Endangered Species Act

ESA = Endangered Species Act

CA Native = CA Native Spp. Conservation and Enhancement

CWA = Clean Water Act

MBTA = Migratory Bird Treaty Act

OPNAVINST = Chief of Naval Operational Instruction 5090.1D

Key Metrics:

1. INRMP Implementation
2. Partnerships/Cooperation and Effectiveness
3. Team Adequacy
4. Status of Federally Listed Species and Critical Habitat (CH)
5. Ecosystem Integrity
6. Fish and Wildlife Management and Public Use
7. INRMP Impact on the Installation Mission.

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Table D-5: Naval Base San Diego Housing Areas INRMP Projects and Implementation Table*

INRMP Section	Funding Source	EPR Project Code ¹	Project Description	ERL Priority	Legal Driver ²	Implementation		2010 Natural Resources Metrics Focus Areas
						Frequency	Fiscal Year ³	
Watershed Management								
7.3.1	O&MN Env.	00245NR106	Support PPV personnel at the housing areas to implement management strategies that adhere to Federal and state laws (including but not limited to, the ESA and MBTA) at the NBSD housing areas.	4	Sikes Act, CWA, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 5 and 7
Habitat Management								
Terrestrial Habitat and Vegetation Communities								
7.3.2.1	O&MN Env.	00245NR607	Support PPV personnel at the housing areas to implement management strategies that adhere to Federal and state laws (including but not limited to, the ESA and MBTA) at the NBSD housing areas.	4	Sikes Act, CA MIL, CA Habitat Enhancement Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 5, 6 and 7
Fish and Wildlife Management								
7.3.3	O&MN Env.	00245NR203	Develop and make available outreach and education materials on pollinators to housing residents and PPV staff.	4	Sikes Act, MBTA, DoD Inst. 4715.03, OPNAVINST 5090.1D, Navy MBTA Guidance	Once	2013	1, 5 and 6
7.3.3	O&MN Env.	In-house	Develop and make available outreach and education materials on migratory birds to housing residents and PPV staff.	4	Sikes Act, MBTA, DoD Inst. 4715.03, OPNAVINST 5090.1D, Navy MBTA Guidance	Once	2013	1, 5 and 6

Table D-5: Naval Base San Diego Housing Areas INRMP Projects and Implementation Table*

INRMP Section	Funding Source	EPR Project Code ¹	Project Description	ERL Priority	Legal Driver ²	Implementation		2010 Natural Resources Metrics Focus Areas
						Frequency	Fiscal Year ³	
Special Status Species (Federally Listed and Other Special Status Species)								
7.3.4	O&MN Env.	00245NR607	Develop and implement gnatcatcher-specific conservation and monitoring measures for each housing area where the Coastal California gnatcatcher, or nests, have been observed within Navy retained parcels.	4	Sikes Act, ESA, CESA, CA MIL, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 3, 4, 5, 6 and 7
7.3.4	O&MN Env.	00245NR209	Make available an education program to housing residents and PPV personnel, who might have contact with vernal pools at Chollas Heights and Murphy Canyon Height housing areas. Make available education opportunities to PPV personnel and residents on vernal pools at Chollas Heights and Murphy Canyon Heights including details on their designation as critical habitat for the San Diego fairy shrimp, and how this designation affects some activities conducted at these housing areas.	4	Sikes Act, ESA, CESA, CA MIL, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 3, 4, 5, 6 and 7
7.3.4	O&MN Env.	00242NR010	Develop and implement fairy shrimp-specific conservation and monitoring measures for protecting and enhancing vernal pool habitat at Chollas Heights and Murphy Canyon Heights housing areas.	4	Sikes Act, ESA, CESA, CA MIL, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 3, 4, 5, 6 and 7

Table D-5: Naval Base San Diego Housing Areas INRMP Projects and Implementation Table*

INRMP Section	Funding Source	EPR Project Code ¹	Project Description	ERL Priority	Legal Driver ²	Implementation		2010 Natural Resources Metrics Focus Areas
						Frequency	Fiscal Year ³	
7.3.4	O&MN Env.	00245NR206	Conduct regular (approximately every 2 years) surveys of vernal pools for San Diego fairy shrimp at Chollas Heights, and Murphy Canyon Heights housing areas. Once surveys are completed, incorporated survey data into this INRMP.	4	Sikes Act, ESA, CESA, CA MIL, DoD Inst. 4715.03, OPNAVINST 5090.1D	Biannual	2014, 2016, 2018	1, 3, 4, 5, 6 and 7
7.3.4	O&MN Env.	00245NR105 00242NR010	Conduct vegetation management, including invasive species control, to keep cover down.	4	Sikes Act, EO 13112, CA MIL, CA Native, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 3, 4, 5, 6 and 7
Exotic and Invasive Species Management								
7.3.5	O&MN Env.	00245NR607	Develop and make available to housing residents and PPV personnel an outreach and education materials for distribution within the NBSD community.	4	Sikes Act, EO 13112, CA MIL, CA Native, DoD Inst. 4715.03, OPNAVINST 5090.1D	Once	2013	1, 2, 4, 5, 6 and 7
Grounds and Landscape Maintenance								
7.3.6	O&MN Env.	00245NR607	Provide professional advice to assist the grounds landscaping and maintenance program toward the use of native species as identified in the recommended plant list.	4	Sikes Act, EO 13112, CA MIL, CA Native, DoD Inst. 4715.03, OPNAVINST 5090.1D	Once	2012	1, 2, 4, 5, 6 and 7

Table D-5: Naval Base San Diego Housing Areas INRMP Projects and Implementation Table*

INRMP Section	Funding Source	EPR Project Code ¹	Project Description	ERL Priority	Legal Driver ²	Implementation		2010 Natural Resources Metrics Focus Areas
						Frequency	Fiscal Year ³	
7.3.6	CNIC.	In-house	Develop and implement BMPs for grounds maintenance at NBSD (e.g., water conservation), and make these BMPs available to PPV.	4	Sikes Act, EO 13112, CA MIL, CA Native, DoD Inst. 4715.03, OPNAVINST 5090.1D	Biennial	2014, 2016, 2018	1, 4, 5 and 6
Pest Management								
7.3.7	O&MN Env.	00245NR012	Make available a copy of the SDMAI IPMP to PPV personnel. Implement pest management controls from the SDMAI and other pest-related guidance and plans.	4	Sikes Act, EO 13112, CA MIL, CA Native, DoD Inst. 4715.03, OPNAVINST 5090.1D	Once	2013	1, 2, 4, 5, 6 and 7
Environmental Awareness and Outreach								
7.3.10	O&MN Env.	In-house	Establish a watchable wildlife program where appropriate.	1	Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Once	2013	1, 5 and 6
7.3.10	O&MN Env.	In-house 00245EPRNBSD	Educate the local community, as well as installation personnel and tenants about the installation natural resources program.	4	Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 2, 3, 4, 5, 6 and 7

Table D-5: Naval Base San Diego Housing Areas INRMP Projects and Implementation Table*

INRMP Section	Funding Source	EPR Project Code ¹	Project Description	ERL Priority	Legal Driver ²	Implementation		2010 Natural Resources Metrics Focus Areas
						Frequency	Fiscal Year ³	

Notes: *These Projects and EPR Project Codes are only applicable to the Navy retained parcels of the NBSD Housing Areas and not applicable to the Public Private Venture (PPV) lease areas (see **Section 1.2.4**).

¹Projects listed with the following description are placeholder projects to be entered into the EPR system in the future: 00245NRXX.

²This is not a comprehensive list of applicable regulations, other regulations, policy, or guidance may apply. Please review **Appendix B** for a comprehensive list of laws, policies or guidance for management of natural resources.

³Cost estimates are on the Navy Conservation Website and are available during annual reviews with USFWS and CDFW.

Key Legal Driver:

CA MIL = CA Mgmt of Fish and Wildlife on Military Lands (CA MIL)

CESA = California Endangered Species Act

ESA = Endangered Species Act

CA Native = CA Native Spp. Conservation and Enhancement

CWA = Clean Water Act

MBTA = Migratory Bird Treaty Act

OPNAVINST = Chief of Naval Operational Instruction 5090.1D

Key Metrics:

1. INRMP Implementation
2. Partnerships/Cooperation and Effectiveness
3. Team Adequacy
4. Status of Federally Listed Species and Critical Habitat (CH)
5. Ecosystem Integrity
6. Fish and Wildlife Management and Public Use
7. INRMP Impact on the Installation Mission.

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Table D-6: Sustainability Projects and Implementation Table

INRMP Section	Funding Source	EPR Project Code ¹	Project Description	ERL Priority	Legal Driver ²	Implementation		2010 Natural Resources Metrics Focus Areas
						Frequency	Fiscal Year ³	
Ecosystem Management								
3.3.1	O&MN Env.	00245NR607	Develop a process and schedule for coordinating with agencies to allow for agency comment on management plans.	4	Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 2, 3, 4, 5, 6 and 7
3.3.2	O&MN Env.	00245NR607	Develop new, and enhance existing, databases, and acquire applicable databases from outside sources for application in GIS.	4	Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 2, 3, 4, 5, 6 and 7
3.3.2		00245NRIND	Identify the installation's natural resources, critical indicator species, as well as monitoring programs to determine the health of the ecosystem.	4	Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Once	2013	1, 2, 3, 4, 5, 6 and 7
Sustainability in the Built Environment								
8.1.1		00245NR607	Implement LID practices for protecting water quality.		Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 4, 5, 6 and 7
8.1.1		00245NR607	Develop sustainability indicators and BMPs, to be incorporated into the NBSD planning process. Monitor effectiveness of BMPs and revise as necessary.		Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 4, 5, 6 and 7

Table D-6: Sustainability Projects and Implementation Table

INRMP Section	Funding Source	EPR Project Code ¹	Project Description	ERL Priority	Legal Driver ²	Implementation		2010 Natural Resources Metrics Focus Areas
						Frequency	Fiscal Year ³	
8.1.1		00245NR607	Conduct training in sustainable design criteria in the Navy for engineers, construction and design specialists, water quality specialists, and biologists. This could be web-based training.		Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 4, 5, 6 and 7
Encroachment								
8.1.2		00245NR607	Review proposed new uses or alterations to existing buildings or structures, in consultation with a Navy Archaeologist, to determine the eligibility of affected structures for the National Register of Historic Places (NRHP) contributing elements. As needed, analyze for potential impacts in accordance with guidelines established for NRHP-eligible buildings.		Sikes Act, NHPA, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 4, 5, 6 and 7
8.1.2		00245NR607	Conduct appropriate environmental surveys on any proposed new land use within an undeveloped area to identify sensitive natural and cultural resources, environmental resources, and IRPs (hazardous waste cleanups).		Sikes Act, NHPA, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 4, 5, 6 and 7
Adapting to Effects of Climate Change								
8.1.3		00245NR607	Adapt and mitigate the adverse consequences of climate change, including stresses on infrastructure, aquatic vegetation, erosion, and shifts in distributions of terrestrial endemic species and plant communities.		Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 4, 5, 6 and 7

Table D-6: Sustainability Projects and Implementation Table

INRMP Section	Funding Source	EPR Project Code ¹	Project Description	ERL Priority	Legal Driver ²	Implementation		2010 Natural Resources Metrics Focus Areas
						Frequency	Fiscal Year ³	
8.1.3		00245NR607	Address the anticipated increase in extreme events by emphasizing preventative technologies including complying with guidelines on project siting, improving water conservation, improving stormwater management through use of LID technologies, and improving coordination between natural resources and staff and development project proponents to ensure more energy efficient design features.		Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 4, 5, 6 and 7
8.1.3		00245NR607	Ensure that NBSD personnel have access to climate change education and outreach in order to help minimize forecasts for global warming through modification of individual behavior and lifestyle consumption patterns that contribute to global warming.		Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 4, 5, 6 and 7
Infrastructure and Facilities Management								
8.3.1.1		00245NR607	Develop or use proven BMPs for controlling soil erosion from construction and landscaping sites.		Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 4, 5, 6 and 7

Table D-6: Sustainability Projects and Implementation Table

INRMP Section	Funding Source	EPR Project Code ¹	Project Description	ERL Priority	Legal Driver ²	Implementation		2010 Natural Resources Metrics Focus Areas
						Frequency	Fiscal Year ³	
8.3.1.1		00245NR607	Consult with USFWS on all new construction projects that could potentially affect federally listed or proposed species. Hold meetings early in the planning stages of a project to discuss with USFWS, NOAA Fisheries, CDFW, EPA, RWQCB and CCC to discuss potential environmental issues that need to be addressed.	4	Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 2, 3, 4, 5, 6 and 7
8.3.1.2		00245NR607	Ensure incorporation of erosion control BMPs in the preliminary engineering, design, and construction of facilities involving ground disturbance,		Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 4, 5, 6 and 7
8.3.1.3		00245NR607	Develop a five-to-ten year long-term maintenance plan to prevent delays in performance of routine maintenance (such as culvert replacement or pipeline repair) due to environmental issues under ESA and CWA. A long-term plan will also support a more programmatic approach to consultation with resource agencies.		Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 4, 5, 6 and 7
8.3.1.3		00245NR607	Develop and seek funding for an infrastructure replacement schedule that establishes and maintains an equipment management program to ensure that necessary items are procured and properly maintained, an inventory readiness list of all emergency response equipment including their location, and a preventative maintenance schedule to ensure equipment readiness is maintained		Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 4, 5, 6 and 7

Table D-6: Sustainability Projects and Implementation Table

INRMP Section	Funding Source	EPR Project Code ¹	Project Description	ERL Priority	Legal Driver ²	Implementation		2010 Natural Resources Metrics Focus Areas
						Frequency	Fiscal Year ³	
8.3.1.4		00245NR607	Develop and implement protocols for conducting maintenance activities on roads. Provide training on protocols to applicable personnel. Reduce mowing frequency and intensity where possible based on ecological considerations (e.g., annual nesting season).		Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 4, 5, 6 and 7
Stormwater Management								
8.4		00245NR607	Implement Erosion Control Plan BMPs.		Sikes Act, CWA, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 4, 5, 6 and 7
8.4		00245NR607	Investigate the use of LID for future development projects to minimize adverse impacts of surface runoff from impervious areas.		Sikes Act, CWA, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 4, 5, 6 and 7
8.4		00245NR607	Develop an improved training program for appropriate government employees. These workshops should provide training on the need, design, and implementation of BMPs, and on LID.		Sikes Act, CWA, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 4, 5, 6 and 7
Communication Towers, Wind Farms and Power Lines								
8.5		00245NR607	Develop and implement an avian protection plan using information from the DoD PIF, and USFWS.		Sikes Act, MBTA, ST 5090.1D	Annually	All	1, 2, 3, 4, 5, 6 and 7

Table D-6: Sustainability Projects and Implementation Table

INRMP Section	Funding Source	EPR Project Code ¹	Project Description	ERL Priority	Legal Driver ²	Implementation		2010 Natural Resources Metrics Focus Areas
						Frequency	Fiscal Year ³	
Oil Spill and Hazardous Substance Prevention and Cleanup								
8.8		00245NR607	Update GIS layers of natural resources to support preparedness planning, integrate baseline ecological surveys into preparedness planning, and integrate invasive exotic species response planning with oil spill contingency plans.		Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 2, 3, 4, 5, 6 and 7
8.8		00245NR607	Implement policies to include specific environmental compliance actions in all outgrants issued aboard NBSD.		Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 2, 3, 4, 5, 6 and 7
8.8		00245NR607	Examine all current NBSD leases for compatibility with current management direction of this INRMP. All actions should be coordinated through NAVFAC SW and the Public Works Department.		Sikes Act, DoD Inst. 4715.03, OPNAVINST 5090.1D	Annually	All	1, 2, 3, 4, 5, 6 and 7

Notes:

¹ Projects listed with the following description are placeholder projects to be entered into the EPR system in the future: 00245NRXX.

² This is not a comprehensive list of applicable regulations, other regulations, policy, or guidance may apply. Please review **Appendix B** for a comprehensive list of laws, policies or guidance for management of natural resources.

³ Cost estimates are on the Navy Conservation Website and are available during annual reviews with USFWS and CDFW.

Key Legal Driver:

CWA = Clean Water Act
 MBTA = Migratory Bird Treaty Act
 NHPA = National Historic Preservation Act
 OPNAVINST = Chief of Naval Operational Instruction 5090.1D

Key Metrics:

1. INRMP Implementation
2. Partnerships/Cooperation and Effectiveness
3. Team Adequacy
4. Status of Federally Listed Species and Critical Habitat (CH)
5. Ecosystem Integrity
6. Fish and Wildlife Management and Public Use
7. INRMP Impact on the Installation Mission.

APPENDIX E

BENEFITS FOR ENDANGERED SPECIES

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Appendix E

Benefits for Endangered Species

The objective of this appendix is to identify within the INRMP all management and conservation efforts for a federally listed species that the USFWS and NOAA Fisheries would use to consider when making a determination not to designate critical habitat on an installation. This will speed the review process by identifying upfront potential projects / actions to the installation, USFWS or NOAA Fisheries to obviate the need to designate critical habitat on military installations.

The Endangered Species Act was revised (ESA Section 4(a)(3)(b)(i)) via the National Defense Authorization Act of 2004, which states that, —*The Secretary [of the Interior] shall not designate as critical habitat any lands or other geographical areas owned or controlled by the Department of Defense, or designated for its use, that are subject to an integrated natural resources management plan prepared under section 101 of the Sikes Act (16 U.S.C. 670a), if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation.* The USFWS has determined that, where applicable, federal critical habitat designation is not warranted if the INRMP includes the following three criteria DoD 2002):

1. **The plan provides a benefit to the species.** Cumulative benefits of the management activities identified in a management plan, for the length of the plan, must maintain or provide for an increase in a species' population or the enhancement or restoration of its habitat within the area covered by the plan (e.g., those areas deemed essential to the protection of the species). A benefit may result from reducing fragmentation of habitat, maintaining or increasing populations, ensuring against catastrophic events, enhancing and restoring habitats, buffering protected areas, or testing and implementing new strategies.
2. **The plan provides certainty that the management plan will be implemented.** Persons charged with plan implementation are capable of accomplishing objectives of the management plan and have adequate funding for the management plan. They have the authority to implement the plan and have obtained all necessary authorizations or approvals. An implementation schedule (including completion dates) for the management effort is provided in the plan.
3. **The plan provides certainty that the management effort will be effective.** The following criteria will be considered when determining the effectiveness of the management effort. The plan includes (1) biological goals (broad guiding principles for the program) and objectives (measurable targets for achieving the goals); (2) quantifiable, scientifically valid parameters that will demonstrate achievement of objectives and standards for these parameters by which progress will be measured are identified; (3) provisions for monitoring and, where appropriate, adaptive management; (4) provisions for reporting progress on implementation (based on compliance with the implementation schedule) and effectiveness (based on evaluation of quantifiable parameters) of the management effort are provided; and (5) a duration sufficient to implement the plan and achieve benefits of its goals and objectives.

The NBSD Commanding Officer has the authority to implement the plan, which will be accomplished by the Environmental Chief and environmental staff at NBSD, as scheduled and budgeted. Formal adoption of an INRMP by the commander constitutes a commitment to seek funding and execute, subject to the availability of funding, all Must Fund Projects and activities in accordance with specific timeframes identified in the INRMP. Under the Sikes Act, any natural resources management activity that is specifically addressed in the plan must be implemented (subject to availability of funds). Failure to implement the INRMP is a violation of the Sikes Act. Annual reporting on implementation of the current

INRMP to both the USFWS and CDFW has documented the commitment of NBSD to acquire funding and implement the INRMP.

Management objectives and strategies for management of listed species have been developed for management of special status species and specific projects are outlined in **Appendix D**.

The USFWS Region 8 Navy INRMP Coordinator provided the following template for reporting of Benefits to Endangered Species. Of the federally listed species known or with the potential to occur on NBSD, the Coastal California Gnatcatcher, the Least Bell’s Vireo, and the San Diego fairy shrimp, are discussed in detail below.

USFWS and CDFW has documented the commitment of NBSD to acquire funding and implement the INRMP.

Goals, objectives, and strategies for management of listed species have been developed and are included in sections 4.2.5, 6.2.5, 7.2.1.3 through 7.1.2.16.4, and 7.3.4 of this INRMP.

Projects that are applicable to some or all species are presented in **Table E-1**, these project are not repeated in the species specific project tables. Management objectives and strategies for management of listed species have been developed for management of special status species and specific projects are outlined in **Appendix D, Tables D-1 through D-5**.

Table E-1: Projects Applicable to Some or All Species

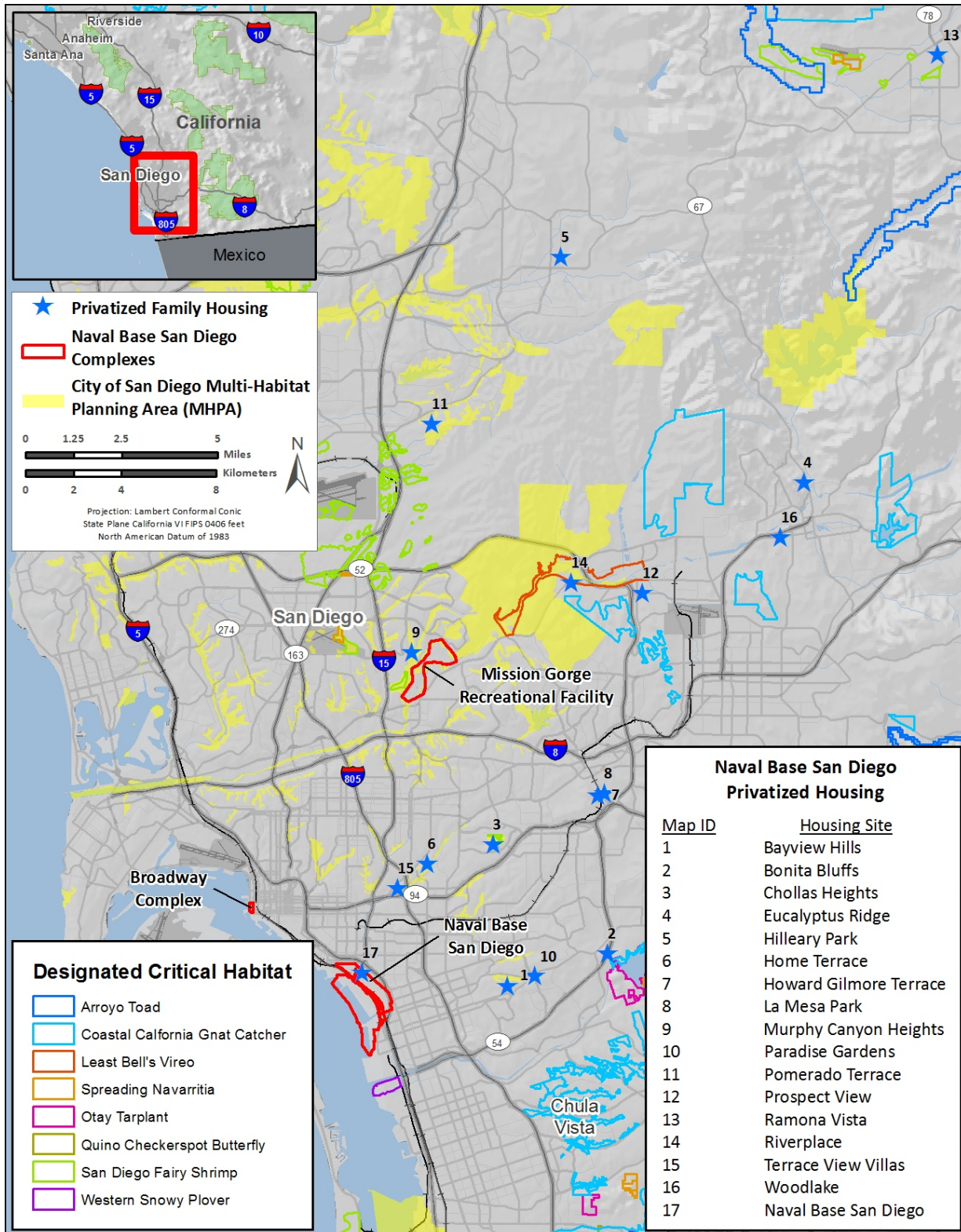
Project	Description	EPR Number	Section in INRMP
NBSD INRMP Implementation	Investigate the need for implementing research projects to understand ecological requirements of special status species.	In-house	4.2.5 6.2.5 7.3.4
NBSD INRMP Implementation	Review and update species lists to reflect presence of threatened, endangered, and other species status species.	00245NR003	4.2.5 6.2.5 7.3.4
NBSD INRMP Implementation	Conduct regular (approximately every 2 years) surveys for special status species that may be present on NBSD. Once surveys are completed, incorporated survey data into this INRMP. Ensure that inventory data is digitized and incorporated into the GeoBase database for NBSD. Continue monitoring special status species as described in this INRMP and adapt monitoring and management actions as needed. Use monitoring information and other information to guide adaptive management.	00245NR206	4.2.5 6.2.5 7.3.4
NBSD INRMP Implementation	Implement erosion control BMPs to ensure adverse environmental impacts to special status species habitat do not occur.	00245NR106 In-house	4.2.5 6.2.5 7.3.4

Project	Description	EPR Number	Section in INRMP
NBSD INRMP Implementation	Revegetate with native species included on the NAVFAC SW recommended plant list. Include sensitive plant species in the NAVFAC SW recommended plant list.	In-house	4.2.5 6.2.5 7.3.4
NBSD INRMP Implementation	Coordinate with USFWS to identify actions that adversely impact training capabilities, and identify activities that could adversely affect listed species. Adapt measures as warranted and consult with USFWS to receive incidental take coverage where appropriate.	In-house	4.2.5 6.2.5 7.3.4
NBSD INRMP Implementation	Conduct periodic monitoring (recommend at least every 5 years) to determine existing population health. Once surveys are completed, incorporated survey data into this INRMP.	00245NR006	4.2.5 6.2.5 7.3.4
NBSD INRMP Implementation	Install educational interpretive panels in areas where Special Status Species are known to occur.	00245NR002	4.2.5 6.2.5 7.3.4

The USFWS Region 8 Navy INRMP Coordinator provided the following template for reporting of Benefits to Endangered Species. Of the federally listed species known or with the potential to occur on NBSD, are discussed in detail below.

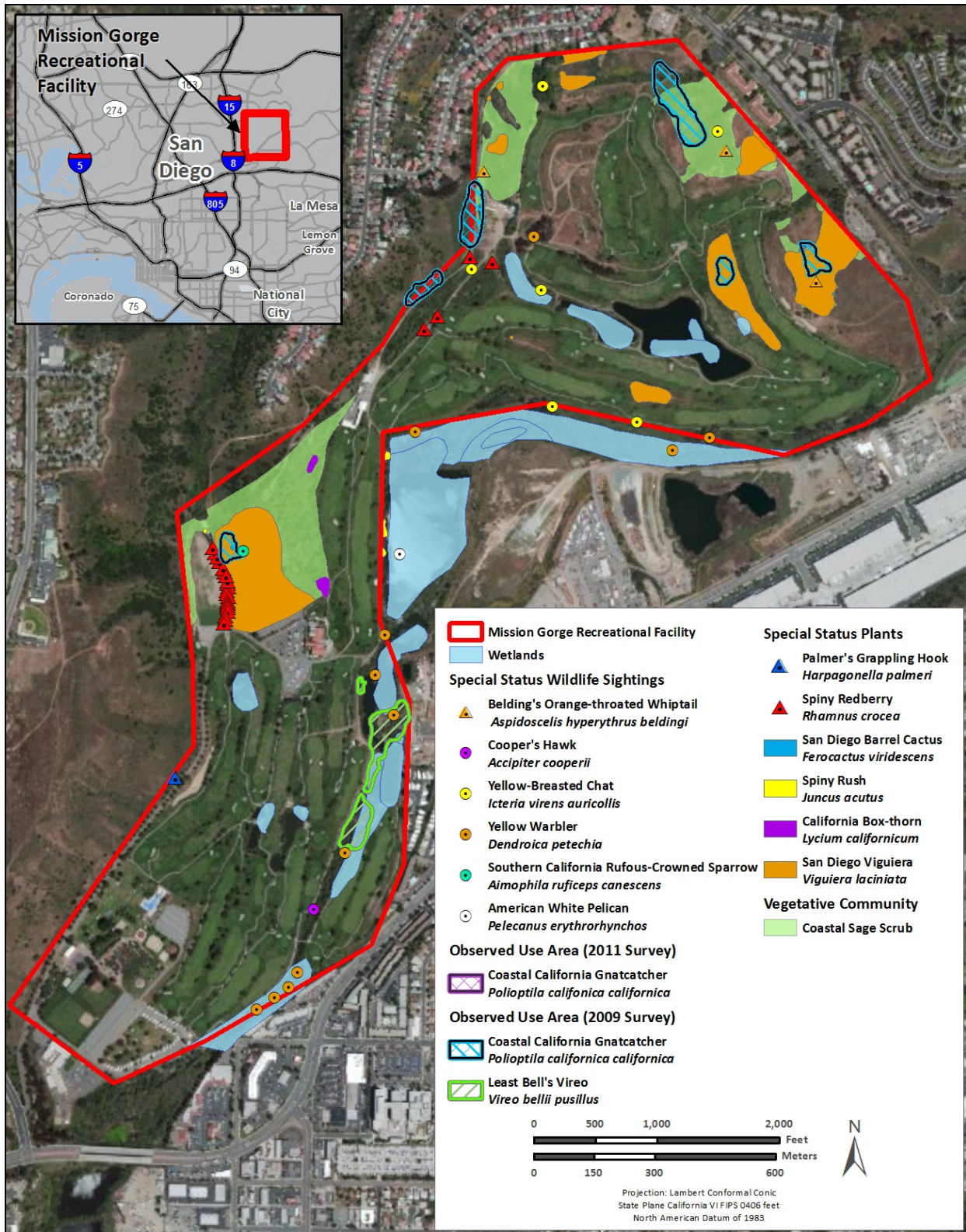
Figures E-1 show designated critical habitat for all species within 5 miles of NBSD installations. Species that occur on NBSD are discussed in detail below.

See **Figures E-2** through **E-5** for all Special Status Species, including Threatened and Endangered Species that occur on NBSD installations.



Source: ESRI StreetMap USA 2007, U.S. Navy 2010b, U.S. Navy 2011, SanGIS 2003.
 Disclaimer: Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure E-1: Designated Critical Habitat Adjacent to Naval Base San Diego and Housing Areas



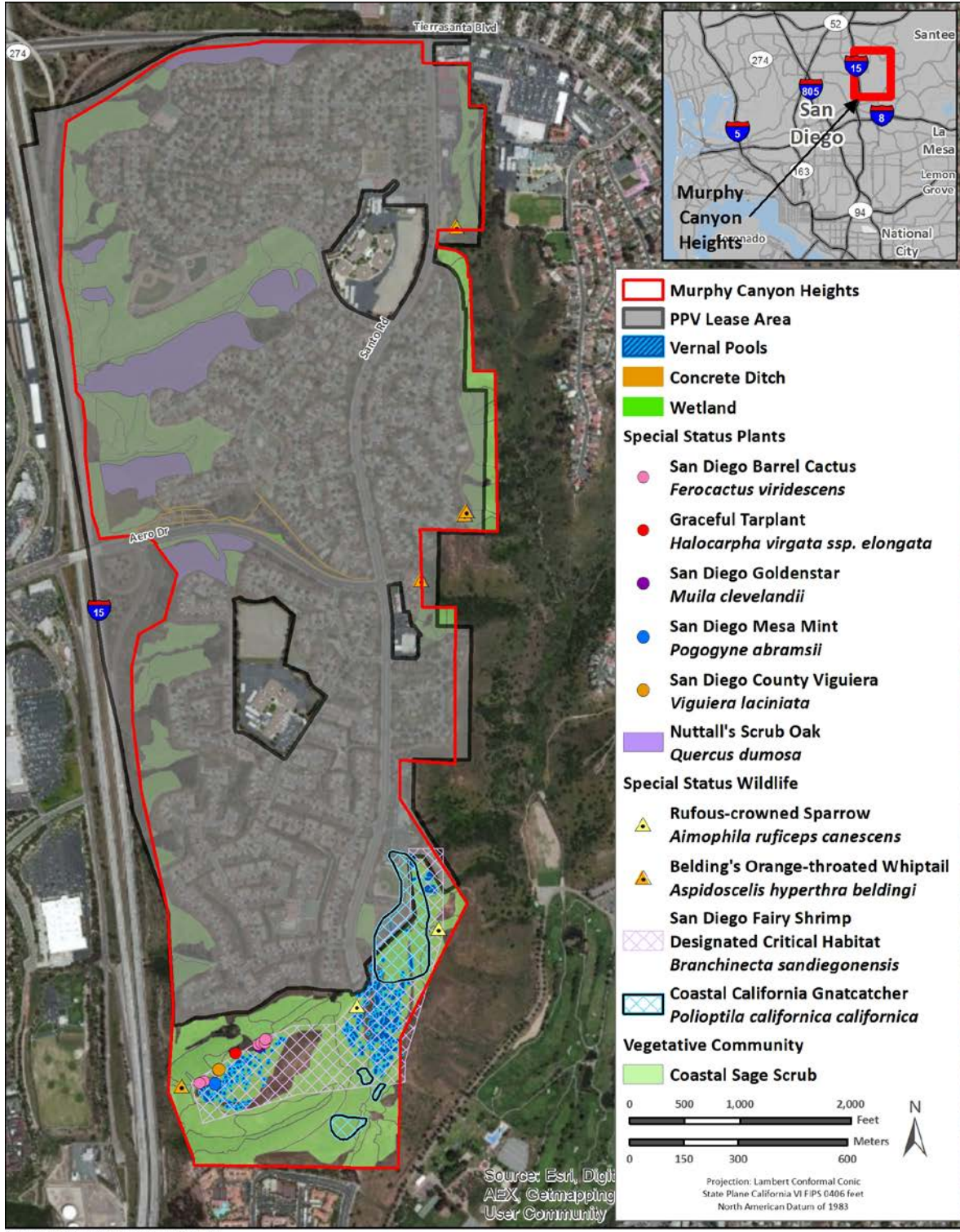
Source: Microsoft Bing Maps 200; U.S. Navy 2010b, In-House Survey Data 2011
Disclaimer: Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure E-2: Special Status Species on Mission Gorge Recreational Facility



Figure E-4: Special Status Species on Eucalyptus Ridge Housing Area*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.



Source: Microsoft Bing Maps 2009; U.S. Navy 2011
Disclaimer: Maps do not represent legal boundaries. Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure E-5: Special Status Species on Murphy Canyon Heights Housing Area*

*This INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods (including Pacific Beacon). These boundaries are not completely exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Any such discrepancies are noted where observed. Overall, this INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.

Coastal California Gnatcatcher (*Poliioptila californica californica*)

Status

- Global -- G4G5T2Q, Imperiled
- Federal -- Threatened
- State -- Species of Special Concern



Related INRMP Sections

U.S. Fish and Wildlife Service

6.2.3.1	Vegetation and Wildlife Habitat
6.2.3.4	Wildland Fire
6.2.3.5	Critical Habitat
6.2.3.6	Other Regulatory or Habitat Planning Designation
6.2.5	Special Status Species Management
6.2.5.1	Federal Listed Species
6.2.5.3	General Management for Special Status Species
6.2.5.4	ESA Consultation and Mission Requirements
6.2.11	Environmental Awareness
7.2.1.4	Special Status Species Management (Bayview Hills)
7.2.3.4	Special Status Species Management (Chollas Heights)
7.2.4.4	Special Status Species Management (Eucalyptus Ridge)
7.2.7.4	Special Status Species Management (Howard Gilmore Terrace)
7.2.9.4	Special Status Species Management (Murphy Canyon Heights)
7.2.15.4	Special Status Species Management (Terrace View Villas)
7.3.2.1	Vegetation and Wildlife Habitat
7.3.2.3	Wildland Fire
7.3.3.3	Birds and Migratory Bird Management
7.3.4	Special Status Species Management
7.3.4.1	Federal Listed Species
7.3.4.3	General Management for Special Status Species
7.3.4.4	ESA Consultation and Mission Requirements
7.3.10	Environmental Awareness

Projects Applicable to Coastal California Gnatcatcher

EPR Number	Project Description
00245NR006	Conduct regular surveys (e.g., 5 years when the baseline inventories are scheduled to be repeated) to determine what species of migratory birds may have potential to be on MGRF.
00245NR003	Investigate the need for implementing research projects to understand ecological requirements of special status species.
00245NR003	Review and update species lists to reflect presence of threatened, endangered, and other species status species.
00245NR206	Conduct regular (approximately every 2 years) surveys for special status species that may be present on MGRF. Once surveys are completed, incorporated survey data into this INRMP. Ensure that inventory data is digitized and incorporated into the GeoBase database for NBSD.
00245NR001	Continue monitoring special status species as described in this INRMP and adapt monitoring and management actions as needed. Use monitoring information and other information to guide adaptive management.
00245NR607	Initiate habitat improvement projects to conserve biodiversity and protect plant and animal habitats, as funding is available and when such projects will not adversely affect the military mission (e.g., noxious weeds, or invasive species removal; habitat disturbance where such disturbance will promote native plant growth; preventing habitat disturbance when this will promote nonnative plant growth; and revegetation with native plants).
00245NR106	Implement erosion control BMPs to ensure adverse environmental impacts to special status species habitat do not occur.
00245NR607	Revegetate with native species included on the NAVFAC SW recommended plant list. Include sensitive plant species in the NAVFAC SW recommended plant list.
00245NR607	Coordinate with USFWS to identify actions that adversely impact training capabilities, and identify activities that could adversely affect listed species. Adapt measures as warranted and consult with USFWS to receive incidental take coverage where appropriate.
00245NR607	Establish an education program for Navy personnel who might have contact with the Coastal California Gnatcatcher, their habitat, or nests.
00245NR206	Conduct regular (approximately every 2 years) surveys for Coastal California Gnatcatcher individuals, or nests, that may be present on MGRF. Once surveys are completed, incorporated survey data into this INRMP.
00245NR105	Perform invasive species control in Coastal California Gnatcatcher nesting and foraging sites.
00245NR607	Perform a vulnerability assessment to assess threats to existing populations.
00245NR209	Make available education opportunities to housing residents and PPV personnel who might have contact with the Coastal California Gnatcatcher, their habitat, or nests.
00245NR607	Develop and implement gnatcatcher-specific conservation and monitoring measures for each housing area where the Coastal California gnatcatcher, or nests, have been observed.
00245NR206	Conduct regular (approximately every 2 years) surveys for Coastal California gnatcatcher individuals, or nests, that may be present on Bayview Hills, Chollas Heights, Eucalyptus Ridge, Howard Gilmore, and Murphy Canyon Heights housing areas. Once surveys are completed, incorporated survey data into this INRMP.

Current Distribution and Status

The entire world's population of the Coastal California Gnatcatcher occurs in Baja California and coastal southern California year-round where it depends on a variety of arid scrub habitats. Limited to coastal sage scrub habitat in California and northern Baja but more widespread in southern Baja. Even in the early 1900's, the population was described as being scarce and irregularly distributed but by the 1940's habitat was noticeably reduced. In the U.S. loss of coastal sage scrub habitat has been estimated to be as much as 70-90%, with approximately 33% lost since 1993 when the species was Federally-listed as threatened. (NatureServe 2012)

The northernmost subspecies was listed in 1993 as Threatened in California under the Endangered Species Act. This decision instigated legislation in California that protects natural communities while allowing continued economic growth. The implementation of this initiative, known as the Natural Community Conservation Planning (NCCP) program, continues to hinge on the conservation of the Coastal California Gnatcatcher. To date, 6 NCCP plans have been approved, conserving 36,279 coastal sage scrub habitat. Most habitat used by the gnatcatcher is under private ownership. (NatureServe 2012)

In 2000, the USFWS designated 13 critical habitat units, encompassing 207,890 hectares, 83% of which was on private lands. Survey protocols have been standardized and long-term monitoring programs implemented to answer research needs and evaluate the effectiveness of some management efforts. Cowbirds are trapped in areas inhabited by gnatcatchers. Habitat restoration is also done as a mitigation effort by developers. It usually takes 4 years for Coastal California Gnatcatchers to return and begin nesting at a restored site. The removal of exotic plants is one method used to restore habitat. (NatureServe 2012)

Change in Distribution and Status

Population in the United States is likely around 3,000 pairs and abundance in Baja California is undetermined, but most of the species' population is in central and southern Baja California and the species is "common" there. Baja populations are characterized as "dense and continuously distributed throughout the peninsula." Thus the breeding population in Baja California is likely to be much larger than 3,000 pairs. (NatureServe 2012)

Relevant Biological Opinions

Reference Number	Authoring Agency	Title	Date
1-6-93-5-33	USFWS	Biological Opinion for Construction of Eucalyptus Hills Family Housing Project (and Modification)	1993 (Modification: April 1996)
1-6-94-F-23	USFWS	Biological Opinion on Permit Application (94-00501) for Construction of Navy Family Housing at the Naval Radio Transmitting Facility, Chollas Heights, San Diego, California (#1-6-94-F-23)	1995
1-94-F-23	USFWS	Chollas Heights Navy Family Housing, San Diego County, California – Request for Re-Initiation of Formal Section 7 Consultation (Biological Opinion No. 1-6-94-F-23)	2002

Reference Number	Authoring Agency	Title	Date
1-6-02-F-3131.2	USFWS	Biological Opinion for Chollas Heights Navy Family Housing Erosion Control Measures, San Diego County, California (FWS Log No. 1-6-02-F-3131.2)	2003
FWS-SDG-08BO150-0810145	USFWS	Section 7 Consultation on the Child Development Center Project at the Murphy Canyon Housing Development, San Diego County, California Amendment to allow munitions and explosive of concern investigation. The USFWS concluded that the munitions and explosive of concern investigation would not adversely affect federally listed species at the Murphy Canyon Housing Development.	2009 (Amended 16 April 2010)

Critical Habitat

Critical habitat was designated for Coastal California Gnatcatcher on October 24, 2000, we published a final rule designating approximately 513,650 acres (207,890 hectares) of land in portions of Los Angeles, Orange, Riverside, San Bernardino, and San Diego Counties (65 FR63680). The 2000 final rule was revised on January 18, 2008 and reduced the designated critical habitat to approximately approximately 197,303 acres (79,846 hectares) of habitat in San Diego, Orange, Riverside, San Bernardino, Los Angeles, and Ventura Counties, California (72 FR 72010). **Figure E-1** shows designated critical habitat in proximity to NBSD. There is no critical habitat for this listed species in NBSD.

Effectiveness of Projects on Species and Habitat

Because NBSD focuses on an ecosystem based approach to natural resources management, many projects have the potential to provide both direct and indirect benefits to Coastal California Gnatcatchers and their habitat. See **Appendix D** for a list of all INRMP projects, schedules, and implementation table.

Results of Past Surveys During the Breeding and Non-breeding Season for Coastal California Gnatcatcher on Naval Base San Diego

Year	Pairs Observed	Source/Location	Comments
1995	3 pairs	Focused surveys for Coastal California Gnatcatcher at MGRF	Detected at five locations, at least three of which were considered paired.
2002	4 pairs	California Gnatcatcher Low-level Breeding Surveys, U.S. Navy Family Housing Areas 2001-2002	Six territories were found at MGRF, including two unpaired males and four pairs. Three fledglings were observed with one of the pairs.
2002	4 pairs	Federally Listed Bird Surveys at Mission Gorge Recreational Facility	A total of six singing males, four pairs, and three fledglings were observed onsite.
2007	5 pairs	Natural Resources Inventory for Naval Base San Diego (U.S. Navy 2010b)	Observed five pairs, fledglings with three of the pairs.
2009	Multiple	Natural Resources Inventory for San	Two pairs were observed in two distinct

	locations (refer to reference for additional details and sighting maps)	Diego Metro Area Naval Housing (U.S. Navy 2011)	locations at Bayview Hills. Chollas Heights supports several pairs. Two individuals were detected at Eucalyptus Ridge during a survey conducted in August. Howard Gilmore Terrace supported two pairs. At Murphy Canyon a total of 9 locations were mapped and four use areas were detected during the focused surveys. None were detected on the open space at Terrace View Villas. However, a family of at least four gnatcatchers was detected on the adjacent property.
2011	8 pairs	In-house Surveys Conducted for Coastal California Gnatcatcher at Mission Gorge Recreational Facility	Observations on multiple survey dates identified 9-10 discrete territories and 40+ sightings (which likely include repeated sightings of same individuals).

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Least Bell's Vireo (*Vireo bellii pusillus*)

Status

- Global -- G5T2, Imperiled
- Federal -- Endangered
- State -- Endangered



U.S. Fish and Wildlife Service

Related INRMP Sections

6.2.3.1	Vegetation and Wildlife Habitat
6.2.3.4	Wildland Fire
6.2.3.5	Critical Habitat
6.2.3.6	Other Regulatory or Habitat Planning Designation
6.2.5	Special Status Species Management
6.2.5.1	Federal Listed Species
6.2.5.3	General Management for Special Status Species
6.2.5.4	ESA Consultation and Mission Requirements
6.2.11	Environmental Awareness

Projects Applicable to Least Bell Vireo

EPR Number	Project Description
00245NR006	Conduct regular surveys (e.g., 5 years when the baseline inventories are scheduled to be repeated) to determine what species of migratory birds may have potential to be on MGRF.
00245NR003	Investigate the need for implementing research projects to understand ecological requirements of special status species.
00245NR003	Review and update species lists to reflect presence of threatened, endangered, and other species status species.
00245NR206	Conduct regular (approximately every 2 years) surveys for special status species that may be present on MGRF. Once surveys are completed, incorporated survey data into this INRMP. Ensure that inventory data is digitized and incorporated into the GeoBase database for NBSD.
00245NR001	Continue monitoring special status species as described in this INRMP and adapt monitoring and management actions as needed. Use monitoring information and other information to guide adaptive management.

00245NR607	Initiate habitat improvement projects to conserve biodiversity and protect plant and animal habitats, as funding is available and when such projects will not adversely affect the military mission (e.g., noxious weeds, or invasive species removal; habitat disturbance where such disturbance will promote native plant growth; preventing habitat disturbance when this will promote nonnative plant growth; and revegetation with native plants).
00245NR106	Implement erosion control BMPs to ensure adverse environmental impacts to special status species habitat do not occur.
00245NR607	Revegetate with native species included on the NAVFAC SW recommended plant list. Include sensitive plant species in the NAVFAC SW recommended plant list.
00245NR607	Coordinate with USFWS to identify actions that adversely impact training capabilities, and identify activities that could adversely affect listed species. Adapt measures as warranted and consult with USFWS to receive incidental take coverage where appropriate.
00245NR607	Establish an education program for Navy personnel who might have contact with the Least Bell's Vireo, their habitat, or nests.
00245NR206	Conduct regular (approximately every 2 years) surveys for Least Bell's Vireo individuals, or nests, that may be present on MGRF. Once surveys are completed, incorporated survey data into this INRMP.
00245NR105	Perform invasive species control in Least Bell's Vireo nesting and foraging sites.
00245NR607	Perform a vulnerability assessment to assess threats to existing populations.

Current Distribution and Status

The Least Bell's vireo occupies riparian vegetation along meandering river and was historically common in the San Joaquin, Sacramento, Santa Clara, and Owens valleys, where as much as 80% of the population nested. Other locations included the Salinas River Valley, and along the Amargosa River. The breeding population of this vireo north of the U.S. - Mexican border now numbers only about 400 breeding pairs. It breeds only in a few scattered areas of riparian habitat in southern California, primarily along the coast and the western edge of the Mojave Desert. The Santa Margarita River in San Diego County supports nearly half of the U.S. population. Other sites are located in Inyo, Santa Barbara, Ventura, Riverside, Orange, San Bernardino, and San Diego counties.

Change in Distribution and Status

Land development, water diversion, recreational activities, and excessive grazing continue to impact the remaining riparian systems that support Least Bell's vireos. As a result, the birds are forced into marginal nesting areas, where they are more vulnerable to parasitism by the brown-headed cowbird, a brood parasite. Vireo reproductive success improved in areas where cowbirds have been trapped and removed (CDFW and USFWS).

Relevant Biological Opinions

None.

Critical Habitat

Critical habitat was designated for Least Bell's Vireo on February 2, 1994, and included approximately 15,200 hectares (38,000 acres) of habitat in Santa Barbara, Ventura, Los Angeles, San Bernardino, Riverside, and San Diego counties (72 FR 72009–72213). **Figure D-1** shows designated critical habitat in proximity to NBSD. There is no critical habitat for this listed species in NBSD.

Effectiveness of Projects on Species and Habitat

Because NBSD focuses on an ecosystem based approach to natural resources management, many projects have the potential to provide both direct and indirect benefits to Least Bell's Vireo and their habitat. See **Appendix D** for a list of all INRMP projects, schedules, and implementation table.

Results of Past Surveys During the Breeding and Non-breeding Season for Least Bell's Vireo on Naval Base San Diego

Year	Number Observed	Source	Comments
1995		Focused surveys for Least Bell's Vireo at MGRF	Four territories observed
2002	2	Federally Listed Bird Surveys at Mission Gorge Recreational Facility	Three territories were detected and two male sightings were made.
2007	2	Natural Resources Inventory for Naval Base San Diego (U.S. Navy 2010b)	Four territories observed at MGRF. One pair with fledging and one individual male.
2009	1	Natural Resources Inventory for San Diego Metro Area Naval Housing (U.S. Navy 2011)	One Least Bell's Vireo male was observed and heard singing at Chollas Heights. (<i>see Figure 7-7 in INRMP</i>)
2011	1	In-house Surveys Conducted for Least Bell's Vireo at Mission Gorge Recreational Facility	One vireo was detected on all eight surveys at MGRF.

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San Diego Fairy Shrimp (*Branchinecta sandiegonensis*)

Status

- Global -- G2, Imperiled
- Federal -- Endangered
- State -- None



U.S. Fish and Wildlife Service

Related INRMP Sections

7.2.3.4	Special Status Species Management (Chollas Heights)
7.2.9.4	Special Status Species Management (Murphy Canyon Heights)
7.3.2.1	Vegetation and Wildlife Habitat
7.3.2.2	Wetlands and Floodplains
7.3.4	Special Status Species Management
7.3.4.1	Federal Listed Species
7.3.4.3	General Management for Special Status Species
7.3.4.4	ESA Consultation and Mission Requirements
7.3.10	Environmental Awareness

Projects Applicable to San Diego Fairy Shrimp

EPR Number	Project Description
00245NR003	Investigate the need for implementing research projects to understand ecological requirements of special status species.
00245NR003	Review and update species lists to reflect presence of threatened, endangered, and other species status species.
00245NR206	Conduct regular (approximately every 2 years) surveys for special status species that may be present on the NBSD housing areas. Once surveys are completed, incorporated survey data into this INRMP. Ensure that inventory data is digitized and incorporated into the GeoBase database for NBSD.
00245NR001	Continue monitoring special status species as described in this INRMP and adapt monitoring and management actions as needed. Use monitoring information and other information to guide adaptive management.
00245NR607	Initiate habitat improvement projects to conserve biodiversity and protect plant and animal habitats, as funding is available and when such projects will not adversely affect the military mission (e.g., noxious weeds, or invasive species removal; habitat disturbance where such disturbance will promote native plant growth; preventing habitat disturbance when this will promote nonnative plant growth; and revegetation with native plants).

00245NR106	Implement erosion control BMPs to ensure adverse environmental impacts to special status species habitat do not occur.
00245NR607	Revegetate with native species included on the NAVFAC SW recommended plant list. Include sensitive plant species in the NAVFAC SW recommended plant list.
00245NR607	Coordinate with USFWS to identify actions that adversely impact training capabilities, and identify activities that could adversely affect listed species. Adapt measures as warranted and consult with USFWS to receive incidental take coverage where appropriate
00245NR209	Make available an education program to housing residents and PPV personnel, who might have contact with vernal pools at Chollas Heights and Murphy Canyon Height housing areas. Make available education opportunities to PPV personnel and residents on vernal pools at Chollas Heights and Murphy Canyon Heights including details on their designation as critical habitat for the San Diego fairy shrimp, and how this designation affects some activities conducted at these housing areas.
00245NR607	Develop and implement fairy shrimp-specific conservation and monitoring measures for protecting and enhancing vernal pool habitat at Chollas Heights and Murphy Canyon Heights housing areas.
00245NR206	Conduct regular (approximately every 2 years) surveys of vernal pools for San Diego fairy shrimp at Chollas Heights, and Murphy Canyon Heights housing areas. Once surveys are completed, incorporated survey data into this INRMP.
00245NR607	Perform a vulnerability assessment to assess threats to existing populations.
00245NR105	Conduct vegetation management, including invasive species control, to keep cover down.

Current Distribution and Status

California, Orange and San Diego Counties. This species occurs in vernal pools and similar ephemeral wetland types, including artificial habitats. Habitat is typically shallow (<30 cm). All known localities below 701 meters elevation and within 64 km of the Pacific Ocean. The species is generally found in vernal pool complexes, which average 5 to 50 pools, although some contain as few as 2 and a few contain several hundred, which are generally hydrologically connected.

San Diego fairy shrimp is present in fewer than 70 vernal pools within 11 vernal pool complexes in San Diego County. Unknown how many in Mexico. Number of pools now appears to be around 137, up from 25 when federally listed, but it is believed these are not range expansions, simply pools missed previously due to inadequate survey effort.

Change in Distribution and Status

At the time of federal listing in 1997, it inhabited a minimum of 25 vernal pool complexes in coastal areas of San Diego, Orange, and Santa Barbara Cos., and northwestern Baja California, Mexico. Currently 137 occupied complexes have been identified in the U.S. (likely missed in previous surveys, not new range expansions), 28 have been partially lost due to development, and an additional 3 have been extirpated completely; thus range has not increased or decreased recently. Surveying occurrences for changes in numbers of individuals and demographic trends over time is not possible due to the small size and life history traits. Population trends are determined indirectly by assessing changes in the amount of habitat occupied by the species over time. Although there are more known occupied locations now than were known at the time of listing, the additional occupied pools were likely in existence (though undocumented) when the species was listed. Additionally, most losses due to development since the

species was listed have been, or will be, offset via vernal pool preservation, restoration, and enhancement. Abundance, therefore, has not increased or decreased substantially since listing. (NatureServe 2012)

Relevant Biological Opinions

Reference Number	Authoring Agency	Title	Date
FWS-SDG-08BO150-0810145	USFWS	Section 7 Consultation on the Child Development Center Project at the Murphy Canyon Housing Development, San Diego County, California Amendment to allow munitions and explosive of concern investigation. The USFWS concluded that the munitions and explosive of concern investigation would not adversely affect federally listed species at the Murphy Canyon Housing Development.	2009 (Amended 16 April 2010)
1-6-94-F-23	USFWS	Biological Opinion on Permit Application (94-00501) for Construction of Navy Family Housing at the Naval Radio Transmitting Facility, Chollas Heights, San Diego, California (#1-6-94-F-23) Modification email received on 12 March 2012 (FWS-SDG-12B0144-1210239) to conservation measure (#21) to allow use of herbicides within the Chollas Heights Vernal Pool Preserve. USFWS concurred with Navy’s proposed action to allow herbicide use within the upland areas in accordance with the authorization email.	1995 (Modification 12 March 2012)

Critical Habitat

Critical habitat was designated for San Diego fairy shrimp on December 12, 2007, and included approximately 6,098 acres (2,468 hectares) of habitat in Orange and San Diego counties, California (72 FR 70647–70714). **Figure D-1** shows designated critical habitat in proximity to NBSD.

Effectiveness of Projects on Species and Habitat

Because NBSD focuses on an ecosystem based approach to natural resources management, many projects have the potential to provide both direct and indirect benefits to San Diego Fairy Shrimp and their habitat. See **Appendix D** for a list of all INRMP projects, schedules, and implementation table.

Results of Past Surveys for San Diego Fairy Shrimp

Year	Source	Results
1996	Murphy Canyon Vernal Pool Preserve Mitigation Plan , Vernal Pool Creation and Restoration, Mitigation at Murphy Canyon for Impacts at Chollas Heights Navy Family Housing	
1997-	Murphy Canyon/Chollas Heights Naval Family Housing	Murphy Canyon consists of 228

1998	Vernal Pool Preserve Fairy Shrimp Surveys: 1997-1998	vernal pools on two mesas and Chollas Heights consists of 23 vernal pools. At Murphy Canyon, 120 pools were found to contain San Diego fairy shrimp and at Chollas Heights, 17 pools contained the species. No other fairy shrimp species were observed.
2009	Natural Resources Inventory for San Diego Metro Area Naval Housing (U.S. Navy 2011)	San Diego fairy shrimp were observed in nine vernal pools within the northern preserve in the Chollas Heights open space over the two sampling periods.

San Diego Mesa Mint (*Pogogyne abramsii*)

Status

- Global -- Unknown
- Federal -- Endangered
- State -- Endangered

Related INRMP Sections

7.2.9.4	Special Status Species Management (Murphy Canyon Heights)
7.3.2.1	Vegetation and Wildlife Habitat
7.3.4	Special Status Species Management
7.3.4.1	Federal Listed Species
7.3.4.3	General Management for Special Status Species
7.3.4.4	ESA Consultation and Mission Requirements
7.3.10	Environmental Awareness



Credit: Barry Du Bois-CalPhotos

Projects Applicable to San Diego Mesa Mint

EPR Number	Project Description
00245NR003	Investigate the need for implementing research projects to understand ecological requirements of special status species.
00245NR003	Review and update species lists to reflect presence of threatened, endangered, and other species status species.
00245NR206	Conduct regular (approximately every 2 years) surveys for special status species that may be present on the NBSD housing areas. Once surveys are completed, incorporated survey data into this INRMP. Ensure that inventory data is digitized and incorporated into the GeoBase database for NBSD.
00245NR001	Continue monitoring special status species as described in this INRMP and adapt monitoring and management actions as needed. Use monitoring information and other information to guide adaptive management.
00245NR607	Initiate habitat improvement projects to conserve biodiversity and protect plant and animal habitats, as funding is available and when such projects will not adversely affect the military mission (e.g., noxious weeds, or invasive species removal; habitat disturbance where such disturbance will promote native plant growth; preventing habitat disturbance when this will promote nonnative plant growth; and revegetation with native plants).
00245NR106	Implement erosion control BMPs to ensure adverse environmental impacts to special status species habitat do not occur.
00245NR607	Revegetate with native species included on the NAVFAC SW recommended plant list. Include sensitive plant species in the NAVFAC SW recommended plant list.
00245NR607	Coordinate with USFWS to identify actions that adversely impact training capabilities, and identify activities that could adversely affect listed species. Adapt measures as warranted and consult with USFWS to receive incidental take coverage where appropriate.

00245NR206	Conduct periodic monitoring (recommend at least annually) to determine existing population health.
00245NR105	Conduct vegetation management, including invasive species control, to keep cover down.
00245NR607	Perform a vulnerability assessment to assess threats to existing populations.

Current Distribution and Status

San Diego County; Baja California, Mexico. This small annual is restricted to Vernal Pools. Redding cobbly loams are the preferred soil type near Miramar. Oftentimes this mint blooms profusely following heavy inundation and standing water in the pools; sometimes blanketing pool basins with flowers. Individual flowers may bloom late well into the summer. During drought years only sporadic portions of the pool basins may exhibit coverage with this mint. Growing sympatrically with this species are usually *Downingia cuspidata* and *Eryngium aristulatum* ssp. *parishii*. An unusually open Chamise Chaparral often occurs on the periphery of the pools and typically includes the Coast Scrub Oak. Sometimes habitat can be identified from aerial photographs by searching for Mima Mound topography; on the surface these small mounds are quite distinctive and may harbor vernal pools in the low-lying, intervening areas between the mounds (NatureServe 2012).

Change in Distribution and Status

San Diego Mesa Mint is slowly declining in San Diego County owing to a multitude of direct and secondary impacts from urban development pressures. Loss of watershed for individual pools, despite pool basin preservation, is a concern. Federal Endangered status substantially slowed the continued loss of San Diego Mesa Mint. The strong minty odor of this species sometimes reveals its presence during the fall when it is partially decomposed and not readily identifiable. It may be difficult to adequately census for in late fall and winter, or during droughts. All populations should be protected (NatureServe 2012).

Relevant Biological Opinions

None.

Critical Habitat

No critical habitat rules have been published for this species.

Effectiveness of Projects on Species and Habitat

Because NBSD focuses on an ecosystem based approach to natural resources management, many projects have the potential to provide both direct and indirect benefits to San Diego mesa mint and their habitat. See **Appendix D** for a list of all INRMP projects, schedules, and implementation table.

Results of Past Surveys for San Diego Mesa Mint

Year	Source	Results
2009	Natural Resources Inventory for San Diego Metro Area Naval Housing (U.S. Navy 2011)	Within Murphy Canyon, San Diego mesa mint was exclusively restricted to vernal pools on the western mesa where ryegrass was not mapped as a dominant or commonly found. The Murphy Canyon San Diego mesa

		mint population was estimated at 1,238 individual plants within 14 vernal pools totaling 0.08 acre.
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San Diego Button Celery (*Eryngium aristulatum parishii*)

Status

- Global -- G5T2, Imperiled
- Federal -- Endangered
- State -- Endangered



Credit: Greg mason-CalPhotos

Related INRMP Sections

7.2.3.4	Special Status Species Management (Chollas Heights)
7.3.2.1	Vegetation and Wildlife Habitat
7.3.4	Special Status Species Management
7.3.4.1	Federal Listed Species
7.3.4.3	General Management for Special Status Species
7.3.4.4	ESA Consultation and Mission Requirements
7.3.10	Environmental Awareness
7.2.9.4	Special Status Species Management (Murphy Canyon Heights)
7.3.2.1	Vegetation and Wildlife Habitat

Projects Applicable to San Diego Button Celery

EPR Number	Project Description
00245NR003	Investigate the need for implementing research projects to understand ecological requirements of special status species.
00245NR003	Review and update species lists to reflect presence of threatened, endangered, and other species status species.
00245NR206	Conduct regular (approximately every 2 years) surveys for special status species that may be present on the NBSD housing areas. Once surveys are completed, incorporated survey data into this INRMP. Ensure that inventory data is digitized and incorporated into the GeoBase database for NBSD.
00245NR001	Continue monitoring special status species as described in this INRMP and adapt monitoring and management actions as needed. Use monitoring information and other information to guide adaptive management.

00245NR607	Initiate habitat improvement projects to conserve biodiversity and protect plant and animal habitats, as funding is available and when such projects will not adversely affect the military mission (e.g., noxious weeds, or invasive species removal; habitat disturbance where such disturbance will promote native plant growth; preventing habitat disturbance when this will promote nonnative plant growth; and revegetation with native plants).
00245NR106	Implement erosion control BMPs to ensure adverse environmental impacts to special status species habitat do not occur.
00245NR607	Revegetate with native species included on the NAVFAC SW recommended plant list. Include sensitive plant species in the NAVFAC SW recommended plant list.
00245NR607	Coordinate with USFWS to identify actions that adversely impact training capabilities, and identify activities that could adversely affect listed species. Adapt measures as warranted and consult with USFWS to receive incidental take coverage where appropriate
00245NR206	Conduct periodic monitoring (recommend at least annually) to determine existing population health.
00245NR105	Conduct vegetation management, including invasive species control, to keep cover down.
00245NR607	Perform a vulnerability assessment to assess threats to existing populations.

Current Distribution and Status

Riverside County, San Diego County; Baja California, Mexico. Vernal Pools or mima mound areas with vernal moist conditions are the preferred habitat for San Diego Button Celery. Redding gravelly loams appear to provide optimal soils for the populations at Miramar Mounds. This species is somewhat more tolerant of peripheral vernal pool habitat than most obligate vernal pool species such as *Pogogyne abramsii* with which it sometimes grows (NatureServe 2012).

This herbaceous biennial is usually restricted to vernal pools and has been radically depleted in numbers over the last two decades on Kearny Mesa. It is still locally common within some of the remaining pools. It grows in "J" series pools on Otay Mesa and near Wruck Canyon, but was recently extirpated from many locales in this region by unchecked grading and discing following a "land rush" to develop the mesa. Three plants were seen in the now heavily degraded and recently disced vernal pools in downtown San Marcos east of Pacific Street (NatureServe 2012).

It is found along the railroad tracks and in the adjacent field west of Interstate 5 and north of Poinsettia Lane despite regular discing (possibly *Eryngium armatum* at this locale). Recent reports are from upper Proctor Valley at the R3+ pool and at the K5 pools south of Otay Lake; an older report is from 0.75 mile north of the Mission Valley Shopping Center. In southern Camp Pendleton several small populations occur at Wire Mountain in isolated vernal pools (NatureServe 2012).

Change in Distribution and Status

San Diego Button Celery is severely declining with continued losses despite its State Endangered status. The number of known sites listed above is misleading; many of these locations are remnant colonies of once larger populations that included several of the reported sites, and it is presumed that most U.S. sites for this species have already been discovered. All populations should be fully protected with adequate buffers. The *Eryngium* found on grasslands (Huerhuero loam) near ocean bluffs at Camp Pendleton may represent *Eryngium armatum* (disjunct from the Santa Barbara region), or an as yet unidentified and related entity. Further taxonomic work is needed. Hundreds grow in an atypical habitat of vernal moist

grasslands north of Mass 3 Road (also possibly representing a new taxon); thousands occur on the grassland/beach bluffs north and immediately south of Cocklebur Creek, northward to Las Flores Creek and the lagoon. This still extensive habitat is primarily established within a corridor extending 50 yards back from the beach bluffs, with many plants growing in dense patches in open grassland. Presumably, the occasional fogs create moist seasonal conditions (NatureServe 2012).

Relevant Biological Opinions

Reference Number	Authoring Agency	Title	Date
1-6-94-F-23	USFWS	Biological Opinion on Permit Application (94-00501) for Construction of Navy Family Housing at the Naval Radio Transmitting Facility, Chollas Heights, San Diego, California (#1-6-94-F-23) Modification email received on 12 March 2012 (FWS-SDG-12B0144-1210239) to conservation measure (#21) to allow use of herbicides within the Chollas Heights Vernal Pool Preserve. USFWS concurred with Navy’s proposed action to allow herbicide use within the upland areas in accordance with the authorization email.	1995 (Modification 12 March 2012)

Critical Habitat

No critical habitat rules have been published for this species.

Effectiveness of Projects on Species and Habitat

Because NBSD focuses on an ecosystem based approach to natural resources management, many projects have the potential to provide both direct and indirect benefits to San Diego button celery and its habitat. See **Appendix D** for a list of all INRMP projects, schedules, and implementation table.

Results of Past Surveys for San Diego Button Celery

Year	Source	Results
2009	Natural Resources Inventory for San Diego Metro Area Naval Housing (U.S. Navy 2011)	San Diego button-celery was observed on the northern open space of the Chollas Heights housing open space; approximately 1,200 individual plants were found within 0.36 acres.

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APPENDIX F

MIGRATORY BIRD MANAGEMENT

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Appendix F

Migratory Bird Management

The Migratory Bird Treaty Act (MBTA) of 1918 is the United States law resulting from the 1916 treaty with Great Britain (for Canada), and subsequent signatories, to protect migratory birds. Executive Order 13186 identifies the responsibilities of Federal agencies to further implement the MBTA. Integrated Natural Resource Management Plans (INRMP) are required to address the protection and conservation of migratory birds and their habitats in order to comply with the MBTA as outlined by EO 13186. It is Navy policy to discuss with the USFWS, during annual INRMP reviews, the implementation and effectiveness of migratory bird protection and conservation programs in avoiding, minimizing or mitigating the take of migratory birds.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) of 1918 protects migratory birds and implements the United States' commitment to international conventions for the protection of migratory birds. The original treaty was signed between the United States and Great Britain (for Canada), but subsequent amendments covered agreements between the United States and Mexico, Japan and the Soviet Union (now Russia). The MBTA prohibits unless permitted by regulations to pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird, their parts, next, or eggs (16U.S.C. 703). The list of birds protected by the MBTA includes game birds outside of legal hunting seasons and within stated regulations such as bag limits. Bird species not protected by the MBTA include species not native to the U.S. or species belonging to taxonomic families which are not covered by the MBTA. The MBTA provides the U.S. Fish and Wildlife Service an opportunity to comment on projects that may potentially affect migratory bird species that are not otherwise protected by the Endangered Species Act. Violations of the MBTA are punishable by up to \$2,000 in fines or two years in prison. All projects with the potential to impact bird species protected by the MBTA should be reviewed by a qualified biologist to determine if the action has the potential to violate the MBTA.

Executive Order 131186

Executive order 131186 – Responsibilities of Federal Agencies to Protect Migratory Birds identifies the framework for Federal agencies to comply with the requirements of the MBTA. The EO directs Federal agencies with the potential to negatively affect migratory bird populations to develop and implement a Memorandum of Understanding (MOU) with the USFWS designed to promote the conservation of migratory bird populations. The MOU addresses DoD activities not associated with military readiness activities in accordance with EO 13186.

DoD Migratory Bird Rule

The MBTA prohibits the taking, killing, or possessing of migratory birds except where permitted by regulation. These regulations are promulgated by the Secretary of the Interior. The view of some courts has been that the prohibitions set forth by the MBTA do not apply to Federal agencies. However, in July 2000, the U.S. Court of Appeals for the District of Columbia Circuit ruled that MBTA prohibitions do apply to Federal agencies and that the taking and killing of migratory birds without a permit at a training facility in the Mariana Islands was a violation of the MBTA. Subsequent to the July 2000 ruling, the 2003 National Defense Authorization Act (Authorization Act) was signed by the President. The

Authorization Act directed the Secretary of the Interior to promulgate regulations to exempt the Armed Forces for the incidental taking of migratory birds during military readiness activities. This task was delegated by the Secretary of the Interior to the USFWS. In signing the Authorization Act, Congress declared that the incidental take of migratory birds during military readiness activities did not contradict the prohibitions under the MBTA. Congress also indicated that the Armed Forces should give due consideration to the protection of migratory birds during the planning of such military readiness activities to the extent that such protections did not diminish the value of the military readiness activities. On February 28, 2007, the USFWS issued a Final Rule authorizing the incidental take of migratory birds as a result of military readiness activities. This rule is referred to as “The Migratory Bird Rule.” If the Armed Forces determine that the proposed military readiness activity has the potential to result in significant adverse effects on a population of migratory birds, then they are required to confer with the USFWS to develop conservation measures to minimize, or mitigate the significant adverse effect.

Migratory Bird Management at NBSD

Many natural resources management activities detailed in this INRMP benefit migratory birds including habitat management, erosion control, habitat restoration and invasive weed management. In addition, USFWS Birds of Conservation Concern and California Department of Fish and Wildlife Species of Special Concern that use NBSD natural resources are identified. The following management measures are implemented by this INRMP:

Management Objective and Strategy

Objective: Maintain and enhance populations, and nesting and foraging habitats of migratory birds.

Strategies:

1. Assess the effects of all projects on migratory birds during NEPA process. Ensure compliance with MOU between USFWS/DoD on the Conservation of Migratory Birds and the “Migratory Bird Rule.”
2. Identify any actions that require an MBTA permit and, if necessary, obtain appropriate permit for intentional take of migratory birds.
3. Develop effective management for minimizing the unintentional take of migratory birds.
4. Conduct regular surveys (e.g., every 5 years when the baseline inventories are scheduled to be repeated) to determine what species of migratory birds may have potential to be on NBSD.
5. Once finalized, implement monitoring protocols contained within the DoD Coordinated Bird Monitoring Plan. Contribute data to the Coordinated Bird Monitoring Database.
6. Continue monitoring listed species as described in this INRMP and adapt monitoring and management actions as needed.
7. Develop migratory bird specific BMPs and ensure these BMPs are included in project plans (e.g., plan all tree trimming during the non-nesting season).
8. Develop and distribute outreach and education materials on migratory birds.
9. Revegetate with native species contained on the NAVFAC SW recommended plant list.
10. Participate in DoD Partners in Flight initiative.
11. Ensure feral cats and cat colonies are eliminated from NBSD per Secretary of Naval Instruction (SECNAVINST) 6401.1A.

APPENDIX G

SPECIES LISTS

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Appendix G

Species Lists

The following tables provide a summary of species observed or noted as likely to occur during the surveys performed on NBSD as part of the 2010 Natural Resources Inventory (U.S. Navy 2010b) and on the housing areas as part of the 2011 Natural Resources Inventory (U.S. Navy 2011). More detailed information on the potential to occur for other species is available in those respective reports.

Table G-1: Species Observed or with the Potential to Occur at Naval Base San Diego Main Site, Broadway Complex, and Mission Gorge Recreation Facility

Scientific Name	Common Name ^{(N)*}	Location	Special Status Designation
INVERTEBRATES			
<i>Branchinecta sandiegonensis</i>	San Diego fairy shrimp	MGRF	FE
<i>Panoquina errans</i>	Salt marsh or wandering skipper	NBSD	
<i>Hermelycaena hermes</i>	Hermes copper	MGRF, not expected at NBSD	
<i>Euphydryas editha quino</i>	Quino checkerspot butterfly	MGRF outside survey area	FE
FISH			
<i>Gambusia affinis</i>	Mosquitofish ^N		
AMPHIBIANS			
<i>Anaxyrus boreas halophilus</i>	California (= western) toad	MGRF	
<i>Pseudacris hypochondriaca hypochondriaca</i>	Baja California treefrog	MGRF	
<i>Rana catesbeiana</i>	Bullfrog	MGRF, NBSD	
<i>Spea hammondi</i>	Western spadefoot	MGRF	SSC
<i>Xenopus laevis</i>	African clawed frog	MGRF	
REPTILES			
<i>Phrynosoma blainvillii</i>	Blainville's horned Lizard (Coast horned lizard)	MGRF	SCC
<i>Sceloporus occidentalis longipes</i>	Great Basin fence lizard	MGRF, NBSD	
<i>Uta stansburiana elegans</i>	Western side-blotched lizard	MGRF	
<i>Eumeces skiltonianus interparietalis</i>	Coronado skink	MGRF	SSC
<i>Aspidoscelis hyperythrus beldingi</i>	Belding's orange-throated whiptail	MGRF	SSC
<i>Aspidoscelis tigris stejnegeri</i>	Coastal whiptail	MGRF potential	
<i>Anniella pulchra</i>	California legless lizard	MGRF	SSC
<i>Elgaria multicarinata webbi</i>	San Diego alligator lizard	MGRF	
<i>Diadophis punctatus similis</i>	San Diego ringneck snake	MGRF	

Table G-1: Species Observed or with the Potential to Occur at Naval Base San Diego Main Site, Broadway Complex, and Mission Gorge Recreation Facility

Scientific Name	Common Name ^{(N)*}	Location	Special Status Designation
<i>Lampropeltis getula californiae</i>	California kingsnake	MGRF	
<i>Masticophis lateralis lateralis</i>	Chaparral whipsnake	MGRF	
<i>Thamnophis hammondi</i>	Two-striped gartersnake	MGRF	SSC
<i>Crotalus ruber</i>	Red diamond rattlesnake	MGRF	SSC
<i>Crotalus viridis helleri</i>	Southern pacific rattlesnake	MGRF	
BIRDS			
<i>Accipiter cooperii</i>	Cooper's hawk	MGRF, NBSD	WL
<i>Accipiter striatus velox</i>	Sharp-shinned hawk	MGRF	SSC
<i>Actitis macularia</i>	Spotted sandpiper	NBSD	
<i>Aechmophorus occidentalis</i>	Western grebe	NBSD*	
<i>Agelaius phoeniceus</i>	Red-winged blackbird	MGRF	
<i>Aimophila ruficeps canescens</i>	Southern California rufous-crowned sparrow	MGRF	WL
<i>Anas acuta acuta</i>	Northern pintail	MGRF	
<i>Anas americana</i>	American wigeon	MGRF	
<i>Anas clypeata</i>	Northern shoveler	MGRF	
<i>Anas cyanoptera septentrionalium</i>	Cinnamon teal	MGRF	
<i>Anas discors</i>	Blue-winged teal	NBSD	
<i>Anas platyrhynchos platyrhynchos</i>	Mallard	MGRF	
<i>Anas strepera strepera</i>	Gadwall	MGRF	
<i>Aphelocoma californica</i>	Western scrub-jay	MGRF	
<i>Archilochus alexandri</i>	Black-chinned hummingbird	MGRF	
<i>Ardea alba egretta</i>	Great egret	MGRF	
<i>Ardea herodias wardi</i>	Great blue heron	NBSD, MGRF	
<i>Aythya affinis</i>	Lesser scaup	NBSD, MGRF	
<i>Aythya americana</i>	Redhead	NBSD	
<i>Aythya collaris</i>	Ring-necked duck	MGRF	
<i>Aythya marila</i>	Greater scaup	MGRF	
<i>Bombycilla cedrorum</i>	Cedar waxwing	MGRF	
<i>Bubo virginianus</i>	Great horned owl	MGRF	
<i>Bucephala albeola</i>	Bufflehead	NBSD, MGRF	
<i>Bucephala clangula americana</i>	Common goldeneye	MGRF	

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Scientific Name	Common Name ^{(N)*}	Location	Special Status Designation
<i>Buteo jamaicensis calurus</i>	Red-tailed hawk	MGRF	
<i>Buteo lineatus elegans</i>	Red-shouldered hawk	MGRF	
<i>Butorides striatus</i>	Green heron	MGRF	
<i>Calidris mauri</i>	Western sandpiper	NBSD	
<i>Calidris minutilla</i>	Least sandpiper	NBSD	
<i>Callipepla californica californica</i>	California quail	MGRF	
<i>Calypte anna</i>	Anna's hummingbird	NBSD, MGRF	
<i>Calypte costae</i>	Costa's hummingbird	MGRF	BCC
<i>Campylorhynchus brunneicapillus sandiegensis</i>	Coastal cactus wren	Potential to occur at MGRF	SSC, BCC
<i>Carduelis psaltria hesperophilus</i>	Lesser goldfinch	MGRF	
<i>Carduelis tristis salicamans</i>	American goldfinch	MGRF	
<i>Carpodacus mexicanus frontalis</i>	House finch	NBSD, MGRF	
<i>Cathartes aura</i>	Turkey vulture	MGRF	
<i>Catharus guttatus</i>	Hermit thrush	NBSD, MGRF	
<i>Catharus ustulatus</i>	Swainson's thrush	MGRF	
<i>Catoptrophorus semipalmatus</i>	Willet	NBSD	
<i>Ceryle alcyon</i>	Belted kingfisher	MGRF	
<i>Chaetura vauxi vauxi</i>	Vaux's swift	MGRF	SSC
<i>Chamaea fasciata henshawi</i>	Wrentit	MGRF	
<i>Charadrius vociferus vociferus</i>	Killdeer	NBSD, MGRF	
<i>Circus cyaneus hudsonius</i>	Northern harrier	MGRF	SSC
<i>Cistothorus palustris</i>	Marsh wren	MGRF	
<i>Colaptes auratus</i>	Northern flicker	MGRF	
<i>Columbina livia</i>	Rock dove ^N	NBSD, MGRF, BC	
<i>Contopus borealis</i>	Olive-sided flycatcher	MGRF	
<i>Contopus sordidulus</i>	Western wood pewee	MGRF	
<i>Corvus brachyrhynchos hesperis</i>	American crow	NBSD, MGRF	
<i>Corvus corax clarionensis</i>	Common raven	NBSD, MGRF	
<i>Dendroica coronata</i>	Yellow-rumped warbler	NBSD, MGRF	
<i>Dendroica petechia</i>	Yellow warbler	MGRF	SSC
<i>Dendroica townsendi</i>	Townsend's warbler	MGRF	
<i>Egretta thula thula</i>	Snowy egret	NBSD, MGRF	

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Scientific Name	Common Name ^{(N)*}	Location	Special Status Designation
<i>Elanus leucurus</i>	White-tailed kite	MGRF	CFP
<i>Empidonax difficilis</i>	Pacific slope flycatcher	NBSD, MGRF	
<i>Empidonax traillii extimus</i>	Southwestern willow flycatcher	Not detected at MGRF	FE, SE
<i>Eremophila alpestris actia</i>	California horned lark	Potential forage at NBSD and MGRF	SSC
<i>Euphagus cyanocephalus</i>	Brewer's blackbird	NBSD, MGRF	
<i>Falco peregrinus anatum</i>	Peregrine falcon	NBSD	FE, SE, CFP, BCC, CITES
<i>Falco sparverius sparverius</i>	American kestrel	NBSD	
<i>Fulica americana americana</i>	American coot	MGRF	
<i>Gallinula chloropus cachimmans</i>	Common moorhen	MGRF	
<i>Geothlypis trichas</i>	Common yellowthroat	MGRF	BCC
<i>Himantopus mexicanus</i>	Black-necked stilt	NBSD	
<i>Hirundo rustica erythrogaster</i>	Barn swallow	MGRF	
<i>Icteria virens auricollis</i>	Yellow-breasted chat	MGRF	SSC
<i>Icterus bullockii</i>	Bullock's oriole	MGRF	
<i>Icterus cucullatus nelsoni</i>	Hooded oriole	MGRF	
<i>Icterus galbula</i>	Northern oriole	MGRF	
<i>Ixobrychus exilis hesperis</i>	Western least bittern	MGRF	SSC
<i>Junco hyemalis</i>	Dark-eyed junco	MGRF	
<i>Lanius ludovicianus</i>	Loggerhead shrike	NBSD, MGRF	SSC, BCC
<i>Larus californicus</i>	California gull	NBSD, BC	SSC
<i>Larus delawarensis</i>	Ring-billed gull	NBSD, MGRF	
<i>Larus heermanni</i>	Heermann's gull	NBSD, BC	
<i>Larus occidentalis wymani</i>	Western gull	NBSD, MGRF, BC	
<i>Larus philadelphia</i>	Bonaparte's gull	MGRF	
<i>Limosa fedoa</i>	Marbled godwit	NBSD	BCC
<i>Lonchura punctulata</i>	Nutmeg mannikin	MGRF	
<i>Melospiza melodia</i>	Song sparrow	NBSD, MGRF	BCC
<i>Mergus serrator</i>	Red-breasted merganser	MGRF	
<i>Mimus polyglottos polyglottos</i>	Northern mockingbird	NBSD, MGRF	
<i>Molothrus ater</i>	Brown-headed cowbird	MGRF	
<i>Myiarchus cinerascens cinerascens</i>	Ash-throated flycatcher	MGRF	

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Scientific Name	Common Name ^{(N)*}	Location	Special Status Designation
<i>Numenius americanus</i>	Long-billed curlew	NBSD	SSC, BCC
<i>Nycticorax nycticorax hoactli</i>	Black-crowned night heron	NBSD, MGRF	
<i>Otus kennicottii cardonensis</i>	Western screech owl	MGRF	
<i>Oxyura jamaicensis rubida</i>	Ruddy duck	MGRF	
<i>Pandion haliaetus</i>	Osprey (nesting)	MGRF	SSC
<i>Passer domesticus</i>	House sparrow ^N	NBSD, MGRF	
<i>Passerina caerulea salicaria</i>	Blue grosbeak	MGRF	
<i>Pelecanus erythrorhynchos</i>	American white pelican	MGRF	SSC
<i>Pelecanus occidentalis californicus</i>	California brown pelican	NBSD	FE, SE, CFP
<i>Petrochelidon pyrrhonota tachina</i>	Cliff swallow	MGRF	
<i>Phainopepla nitens lepida</i>	Phainopepla	MGRF	
<i>Phalacrocorax auritus albociliatus</i>	Double-crested cormorant	MGRF, BC	SSC
<i>Pheucticus melanocephalus maculatus</i>	Black-headed grosbeak	MGRF	
<i>Picoides nuttallii</i>	Nuttall's woodpecker	MGRF	BCC
<i>Picoides pubescens turati</i>	Downy woodpecker	MGRF	
<i>Pipilo crissalis</i>	California towhee	MGRF	
<i>Pipilo maculatus</i>	Spotted towhee	MGRF	BCC
<i>Piranga ludoviciana</i>	Western tanager	MGRF	
<i>Piranga rubra rubra</i>	Summer tanager (nesting)	Potential to occur at NBSD during migration.	SSC
<i>Podiceps nigricollis californicus</i>	Eared grebe	NBSD, MGRF	
<i>Podilymbus podiceps podiceps</i>	Pied-billed grebe	NBSD, MGRF	
<i>Polioptila caerulea</i>	Blue-gray gnatcatcher	MGRF	
<i>Polioptila californica californica</i>	Coastal California gnatcatcher	MGRF	FT, SSC
<i>Porzana carolina</i>	Sora	MGRF	
<i>Psaltriparus minimus minimus</i>	Bushtit	MGRF	
<i>Quiscalus mexicanus</i>	Great-tailed grackle	MGRF	
<i>Regulus calendula calendula</i>	Ruby-crowned kinglet	MGRF	
<i>Riparia riparia</i>	Bank swallow (nesting)	Potential to forage at MGRF	ST
<i>Sayornis nigricans semiatra</i>	Black phoebe	MGRF	
<i>Sayornis saya</i>	Say's phoebe	MGRF	
<i>Selasphorus rufus</i>	Rufous hummingbird	MGRF	

Table G-1: Species Observed or with the Potential to Occur at Naval Base San Diego Main Site, Broadway Complex, and Mission Gorge Recreation Facility

Scientific Name	Common Name ^{(N)*}	Location	Special Status Designation
<i>Sialia mexicana occidentalis</i>	Western bluebird	MGRF	
<i>Sitta carolinensis aculeata</i>	White-breasted nuthatch	MGRF	
<i>Stelgidopteryx serripennis</i>	Northern rough-winged swallow	NBSD, MGRF	
<i>Sterna antillarum browni</i>	California least tern	MGRF, BC	FE,SE, CFP
<i>Sterna caspia</i>	Caspian tern	MGRF	
<i>Sterna forsteri</i>	Forster's tern	MGRF	
<i>Sturnella neglecta</i>	Western meadowlark	MGRF	
<i>Sturnus vulgaris</i>	European starling ^N	NBSD, MGRF	
<i>Tachycineta bicolor</i>	Tree swallow	MGRF	
<i>Tachycineta thalassina lepida</i>	Violet-green swallow	MGRF	
<i>Thyromanes bewickii</i>	Bewick's wren	MGRF	
<i>Toxostoma redivivum redivivum</i>	California thrasher	MGRF	
<i>Troglodytes aedon parkmanii</i>	House wren	MGRF	
<i>Turdus migratorius</i>	American robin	MGRF	
<i>Tyrannus verticalis</i>	Western kingbird	MGRF	
<i>Tyrannus vociferans vociferans</i>	Cassin's kingbird	MGRF	
<i>Vermivora celata</i>	Orange-crowned warbler	MGRF	
<i>Vireo bellii pusillus</i>	Least Bell's vireo	MGRF	FE, SE
<i>Vireo gilvus swainsonii</i>	Warbling vireo	MGRF	
<i>Wilsonia pusilla</i>	Wilson's warbler	MGRF	
<i>Zenaida macroura marginella</i>	Mourning dove	NBSD, MGRF, BC	
<i>Zonotrichia atricapilla</i>	Golden-crowned sparrow	MGRF	
<i>Zonotrichia leucophrys</i>	White-crowned sparrow	NBSD, MGRF	
MAMMALS			
<i>Eumops perotis californicus</i>	Western mastiff bat	Potential to occur a MGRF	SSC
<i>Nyctinomops femorosaccus</i>	Pocketed free-tailed bat	Known to occur upstream of MGRF	SSC
<i>Nyctinomops macrotis</i>	Big free-tailed bat	Known to occur along the San Diego River at MTRP	SSC
<i>Lasiurus blossevillii</i>	Western red bat	Detected east of MGRF along the San Diego River; moderate potential to occur.	SSC

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Scientific Name	Common Name ^{(N)*}	Location	Special Status Designation
<i>Myotis yumanensis</i>	Yuma myotis	Potential to forage; moderate potential to occur at MGRF.	SSC
<i>Didelphis virginiana</i>	Opossum	MGRF	
<i>Lepus californicus bennettii</i>	San Diego black-tailed jackrabbit	MGRF	SSC
<i>Sylvilagus audubonii</i>	Desert cottontail rabbit	MGRF	
<i>Spermophilus beecheyi</i>	California ground squirrel	MGRF	
<i>Thomomys bottae</i>	Southwestern pocket gopher	MGRF	
<i>Chaetodipus californicus</i>	California pocket mouse	MGRF	
<i>Neotoma lepida intermedia</i>	San Diego desert woodrat	MGRF	SSC
<i>Neotoma fuscipes</i>	Dusky-footed woodrat	MGRF	
<i>Peromyscus californicus</i>	California mouse	MGRF	
<i>Peromyscus eremicus</i>	Cactus mouse	MGRF	
<i>Peromyscus maniculatus</i>	Deer mouse	MGRF	
<i>Mus musculus</i>	House mouse ^N	NBSD	
<i>Rattus rattus</i>	Black rat ^N	NBSD	
<i>Canis latrans</i>	Coyote	MGRF	
<i>Urocyon cinereoargenteus</i>	Gray fox	NBSD	
<i>Procyon lotor</i>	Raccoon	MGRF	
<i>Mephitis mephitis</i>	Striped skunk	MGRF	
<i>Lynx rufus</i>	Bobcat	MGRF	
<i>Odocoileus hemionus</i>	Mule deer	MGRF	
PLANTS			
<i>Abronia umbellate</i>	Sand verbena	NBSD*	
<i>Acacia farnesiana</i> [=minuta] var. <i>farnesiana</i>	Sweet acacia ^N	MGRF, NBSD	
<i>Acacia longifolia</i>	Acacia ^N	MGRF, NBSD	
<i>Acanthomintha ilicifolia</i>	San Diego thornmint	MGRF	FT, SE
<i>Adolphia californica</i>	California adolphia	NBSD	
<i>Allium praecox</i>	Wild onion	MGRF*	
<i>Amblyopappus pusillus</i>	Pineapple weed	MGRF	
<i>Ambrosia psilostachya</i>	Western ragweed	MGRF, NBSD, Bayview	
<i>Ambrosia pumila</i>	San Diego ambrosia	MGRF	FE
<i>Amsinckia menziesii</i>	Rancher's fireweed	MGRF	

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Scientific Name	Common Name ^{(N)*}	Location	Special Status Designation
<i>Anagallis arvensis</i>	Scarlet pimpernel, poor-man's weatherglass ^N	MGRF, NBSD	
<i>Anemopsis californica</i>	Yerba mansa	MGRF	
<i>Apium graveolens</i>	Celery ^N	MGRF	
<i>Artemisia californica</i>	California sagebrush	MGRF	
<i>Artemisia douglasiana</i>	Mugwort	MGRF	
<i>Artemisia palmeri</i>	San Diego sagewort	MGRF	
<i>Arundo donax</i>	Giant reed ^N	NBSD, MGRF	
<i>Astragalus trichopodus</i> var. <i>lonchus</i>	Coast locoweed	MGRF*	
<i>Atriplex canescens</i>	Fourwing saltbush, shad-scale	MGRF	
<i>Atriplex pacifica</i>	South coast salt scale	NBSD	
<i>Atriplex patula</i>	Wild Orache*	NBSD	
<i>Atriplex semibaccata</i>	Australian saltbush ^N	NBSD, MGRF	
<i>Avena barbata</i>	Slender wild oat ^N	MGRF	
<i>Avena fatua</i>	Wild oat ^N	NBSD, MGRF	
<i>Baccharis pilularis</i>	Coyote bush	MGRF	
<i>Baccharis salicifolia</i>	Mule fat, seep-willow	NBSD, MGRF	
<i>Baccharis sarothroides</i>	Broom baccharis	NBSD, MGRF, Bayview	
<i>Batis maritima</i>	Saltwort, beachwort	NBSD	
<i>Brassica nigra</i>	Black mustard ^N	MGRF	
<i>Brodiaea orcuttii</i>	Orcutt's brodiaea	MGRF	CNPS Rank 1B.1
<i>Bromus diandrus</i>	Ripgut grass ^N	MGRF	
<i>Bromus hordeaceus</i>	Smooth brome ^N	MGRF	
<i>Bromus madritensis</i> ssp. <i>rubens</i>	Foxtail chess ^N	MGRF	
<i>Calystegia macrostegia</i>	Chaparral morning-glory	MGRF	
<i>Camissonia bistorta</i>	California sun cup	MGRF	
<i>Carduus pycnocephalus</i>	Italian thistle ^N	MGRF, Bayview	
<i>Carpobrotus edulis</i>	Hottentot fig ^N	NBSD, MGRF	
<i>Castilleja foliolosa</i>	Woolly Indian paintbrush	MGRF*	
<i>Centaurea melitensis</i>	tocolote, star-thistle thistle ^N	MGRF, Bayview	
<i>Centaurea solstitialis</i>	Yellow star-thistle ^N	MGRF*	
<i>Chaenactis glabriuscula</i>	Yellow pincushion	MGRF	

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Scientific Name	Common Name ^{(N)*}	Location	Special Status Designation
<i>Chaenactis glabriuscula</i> var. <i>orcuttiana</i>	Orcutt's pincushion	NBSD	
<i>Chamaesyce</i> sp.	Prostrate spurge	MGRF	
<i>Chenopodium album</i>	Lamb's quarters, pigweed ^N *	MGRF	
<i>Chlorogalum parviflorum</i>	Amole, soap plant	MGRF	
<i>Chorizanthe fimbriata</i>	Fringed spineflower	MGRF	
<i>Chorizanthe procumbens</i>	Prostrate spineflower	MGRF	
<i>Conium maculatum</i>	Poison hemlock ^N	MGRF	
<i>Conyza canadensis</i>	Horseweed	MGRF	
<i>Cortaderia jubata</i>	Pampas grass ^N	NBSD, MGRF	
<i>Crassula aquatica</i>	Stone-crop	MGRF*	
<i>Croton</i> [= <i>Eremocarpus</i>] <i>setigerus</i>	Dove weed	MGRF*	
<i>Cryptantha</i> sp.	Cryptantha		
<i>Cuscuta californica</i>	Dodder	MGRF	
<i>Cylindropuntia</i> [= <i>Opuntia</i>] <i>prolifera</i>	Cholla	MGRF	
<i>Cynodon dactylon</i>	Bermuda gras ^N	MGRF	
<i>Cyperus eragrostis</i>	Tall flatsedge	MGRF	
<i>Cyperus</i> sp.	Nutsedge	NBSD	
<i>Datura wrightii</i>	Jimson weed	MGRF	
<i>Deinandra</i> [= <i>Hemizonia</i>] <i>fasciculata</i>	Golden tarplant	MGRF	
<i>Delairea odorata</i> [= <i>Senecio mikanioides</i>]	German ivy ^N	MGRF	
<i>Dichelostemma capitatum</i>	Blue dicks	MGRF	
<i>Dichondra occidentalis</i>	Western dichondra	MGRF	
<i>Distichlis spicata</i>	Saltgrass	NBSD, MGRF	
<i>Dodecatheon clevelandii</i> ssp. <i>clevelandii</i>	Shooting star	MGRF*	
<i>Dudleya edulis</i>	Lady fingers	MGRF	
<i>Dudleya pulverulenta</i> ssp. <i>pulverulenta</i>	Chalk lettuce	MGRF	
<i>Dudleya variegata</i>	Variegated dudleya	MGRF	
<i>Encelia californica</i>	Common encelia	MGRF	
<i>Encelia farinosa</i>	Brittlebush, incienso	MGRF	
<i>Eriogonum fasciculatum</i> var. <i>fasciculatum</i>	California buckwheat	NBSD, MGRF	
<i>Eriophyllum confertiflorum</i> var. <i>confertiflorum</i>	Golden-yarrow	MGRF	
<i>Erodium botrys</i>	Pin-clover ^N	MGRF	

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Scientific Name	Common Name ^{(N)*}	Location	Special Status Designation
<i>Erodium cicutarium</i>	White-stemmed filaree ^N	MGRF	
<i>Erodium moschatum</i>	Green-stemmed filaree ^N	MGRF*	
<i>Eucalyptus globulus</i>	Blue gum ^N	MGRF, NBSD	
<i>Eucalyptus</i> spp.	Eucalyptus ^N	MGRF, NBSD, BC	
<i>Euphorbia misera</i>	Cliff spurge	NBSD	
<i>Ferocactus viridescens</i>	San Diego barrel cactus	MGRF	
<i>Ficus</i> sp.	Fig ^N	NBSD	
<i>Foeniculum vulgare</i>	Fennel ^N	NBSD, MGRF	
<i>Frankenia salina</i>	Alkali heath	NBSD	
<i>Fritillaria biflora</i>	Chocolate lily, mission bells	MGRF*	
<i>Galium angustifolium</i> ssp. <i>angustifolium</i>	Narrow-leaf bedstraw	MGRF	
<i>Glebionis coronaria</i> [= <i>Chrysanthemum coronarium</i>]	Garland, crown daisy ^N	NBSD, MGRF	
<i>Gnaphalium californicum</i>	Green everlasting	MGRF	
<i>Gutierrezia californica</i>	California matchweed	MGRF	
<i>Harpagonella palmeri</i>	Palmer's grappling hook	MGRF*	
<i>Hedera helix</i>	English ivy ^N	NBSD	
<i>Heliotropium curassavicum</i>	Chinese pusley	MGRF	
<i>Heterotheca grandiflora</i>	Telegraph weed	NBSD, MGRF	
<i>Isocoma menziesii</i>	Coast goldenbush	MGRF	
<i>Isomeris arborea</i>	Bladderpod*	MGRF	
<i>Jaumea carnosa</i>	Jaumea	NBSD	
<i>Jepsonia parryi</i>	Mesa saxifrage	MGRF*	
<i>Juncus acutus</i> ssp. <i>leopoldii</i>	Spiny rush	MGRF	
<i>Juncus bufonius</i>	Toad rush	MGRF	
<i>Lamarckia aurea</i>	Goldentop ^N	MGRF*	
<i>Lasthenia californica</i>	Goldfields	MGRF	
<i>Lepidium lasiocarpum</i> var. <i>lasiocarpum</i>	Sand peppergrass	MGRF	
<i>Limonium californicum</i>	Western marsh-rosemary	NBSD	
<i>Lolium multiflorum</i>	Italian ryegrass ^N	MGRF	
<i>Lotus nuttallianus</i>	Nuttall's louts	NBSD	CNPS Rank 1B.1
<i>Lotus scoparius</i> var. <i>scoparius</i>	California broom	MGRF	
<i>Ludwigia peploides</i>	Yellow water primrose	MGRF	

Table G-1: Species Observed or with the Potential to Occur at Naval Base San Diego Main Site, Broadway Complex, and Mission Gorge Recreation Facility

Scientific Name	Common Name ^{(N)*}	Location	Special Status Designation
<i>Lupinus sparsiflorus</i> ssp. <i>sparsiflorus</i>	Coulter lupine	MGRF*	
<i>Lupinus succulentus</i>	Arroyo lupine	MGRF*	
<i>Lycium californicum</i>	California box-thorn	MGRF	
<i>Lythrum californicum</i>	California loosestrife	MGRF*	
<i>Lythrum hyssopifolia</i>	Grass poly ^N	MGRF	
<i>Malacothamnus fasciculatus</i>	Chaparral mallow	MGRF	
<i>Malephora crocea</i>	Iceplant ^N	NBSD*	
<i>Malosma laurina</i>	Laurel sumac	MGRF, NBSD	
<i>Malva parviflora</i>	Cheeseweed, little mallow ^N	NBSD, MGRF	
<i>Mammillaria dioica</i>	Fish-hook cactus	MGRF	
<i>Marah macrocarpus</i>	Wild cucumber	MGRF	
<i>Marrubium vulgare</i>	Horehound ^N	MGRF	
<i>Medicago polymorpha</i>	California bur clover ^N	NBSD, MGRF	
<i>Melilotus albus</i>	White sweet clover ^N	MGRF	
<i>Melilotus indicus</i>	Sourclover ^N	MGRF	
<i>Mesembryanthemum crystallinum</i>	Crystalline ice plant ^N	MGRF	
<i>Mesembryanthemum nodiflorum</i>	Slender-leaved ice plant ^N	NBSD	
<i>Mimulus aurantiacus</i>	Low bush monkeyflower	MGRF	
<i>Mirabilis laevis</i> [=californica] var. <i>crassifolia</i>	Wishbone bush	MGRF	
<i>Monanthochloe littoralis</i>	Shoregrass	NBSD	
<i>Muilla clevelandii</i>	San Diego goldenstar	MGRF	CNPS Rank 1B.1
<i>Myoporum laetum</i>	Myoporum, ngaio ^N	NBSD	
<i>Nassella pulchra</i>	Purple needlegrass	MGRF	
<i>Navarretia hamata</i>	Hooked navarretia	MGRF	
<i>Nerium oleander</i>	Oleander ^N	NBSD, MGRF	
<i>Nicotiana glauca</i>	Tree tobacco ^N	NBSD, MGRF	
<i>Oenothera elata</i> ssp. <i>Hirsutissima</i>	Tall yellow evening primrose	NBSD	
<i>Olea europaea</i>	Common olive ^N	MGRF	
<i>Opuntia ficus-indica</i>	Indian fig ^N	MGRF	
<i>Opuntia littoralis</i>	Shore cactus	NBSD, MGRF	
<i>Oxalis pes-caprae</i>	Bermuda buttercup ^N	NBSD	
<i>Pennisetum setaceum</i>	Fountain grass ^N	NBSD, MGRF	

Table G-1: Species Observed or with the Potential to Occur at Naval Base San Diego Main Site, Broadway Complex, and Mission Gorge Recreation Facility

Scientific Name	Common Name ^{(N)*}	Location	Special Status Designation
<i>Phacelia</i> sp.	Phacelia	MGRF*	
<i>Phoenix canariensis</i>	Canary Island date palm ^N	NBSD, MGRF	
<i>Pholistoma racemosum</i>	Pholistoma	MGRF*	
<i>Picris echioides</i>	Bristly ox-tongue ^N	MGRF	
<i>Pinus</i> sp.	Pine ^N	NBSD, MGRF, BC	
<i>Plagiobothrys</i> sp.	Popcornflower	MGRF	
<i>Plantago elongate</i>	Plantain	MGRF	
<i>Platanus acerifolia</i>	London plane tree ^N	BC	
<i>Platanus racemosa</i>	Western sycamore	MGRF	
<i>Pluchea odorata</i>	Salt marsh fleabane	MGRF	
<i>Polypogon monspeliensis</i>	Annual beard grass ^N	MGRF	
<i>Populus fremontii</i> ssp. <i>fremontii</i>	Fremont cottonwood	MGRF	
<i>Porophyllum gracile</i>	Odora	MGRF*	
<i>Psilocarphus brevissimus</i> var. <i>brevissimus</i>	Dwarf woolly-heads	MGRF*	
<i>Raphanus sativus</i>	Radish ^N	NBSD, MGRF	
<i>Rhamnus crocea</i>	Spiny redberry	MGRF	
<i>Rhus integrifolia</i>	Lemonadeberry	MGRF, NBSD	
<i>Ricinus communis</i>	Castor bean ^N	MGRF	
<i>Rumex crispus</i>	Curly dock ^N	NBSD, MGRF	
<i>Salicornia virginica</i>	Pickleweed ^{N*}	NBSD	
<i>Salix exigua</i>	Narrow-leaved willow	MGRF	
<i>Salix gooddingii</i>	Goodding's black willow	MGRF	
<i>Salix lasiolepis</i>	Arroyo willow	MGRF	
<i>Salix</i> sp.	Willow	NBSD*	
<i>Salsola tragus</i>	Russian thistle, tumbleweed ^{N*}	NBSD, MGRF	
<i>Salvia apiana</i>	White sage	MGRF	
<i>Salvia mellifera</i>	Black sage	MGRF	
<i>Sambucus mexicana</i>	Blue elderberry	MGRF	
<i>Schinus molle</i>	Peruvian pepper tree ^N	MGRF	
<i>Schinus terebinthifolius</i>	Brazilian pepper tree ^N	NBSD, MGRF	
<i>Schoenoplectus</i> [= <i>Scirpus</i>] <i>californicus</i>	California bulrush	MGRF	
<i>Selaginella bigelovii</i>	Bigelow spike-moss	MGRF*	

Table G-1: Species Observed or with the Potential to Occur at Naval Base San Diego Main Site, Broadway Complex, and Mission Gorge Recreation Facility

Scientific Name	Common Name ^{(N)*}	Location	Special Status Designation
<i>Selaginella cinerascens</i>	Ashy spike-moss	MGRF	
<i>Silene gallica</i>	Windmill pink ^N	MGRF*	
<i>Silybum marianum</i>	Milk thistle ^N	MGRF*	
<i>Sisymbrium irio</i>	London rocket ^N	MGRF	
<i>Sisyrinchium bellum</i>	Blue-eyed-grass	MGRF*	
<i>Solanum umbelliferum</i>	Purple nightshade	MGRF	
<i>Sonchus asper</i> ssp. <i>asper</i>	Prickly sow thistle ^N	NBSD	
<i>Sonchus oleraceus</i>	Common sow thistle ^N	MGRF, NBSD	
<i>Stellaria media</i>	Common chickweed ^N	MGRF*	
<i>Stephanomeria virgata</i> ssp. <i>virgata</i>	Slender stephanomeria	MGRF	
<i>Suaeda esteroa</i>	Estuary suaeda	NBSD	CNPS Rank 1B.2
<i>Suaeda taxifolia</i>	Woolly seablite	NBSD	
<i>Tamarix</i> sp.	Tamarisk ^N	NBSD	
<i>Toxicodendron diversilobum</i>	Western poison oak	MGRF	
<i>Triglochin concinna</i> var. <i>concinna</i>	Seaside arrow-grass	NBSD	
<i>Typha latifolia</i>	Broad-leaved cattail	NBSD, MGRF	
<i>Typha</i> sp.	Cattail	NBSD, MGRF	
<i>Urtica urens</i>	Dwarf nettle ^N	MGRF	
<i>Viguiera laciniata</i>	San Diego County viguiera	MGRF	
<i>Vulpia myuros</i> var. <i>hirsuta</i>	Rattail fescue ^N	MGRF	
<i>Washingtonia robusta</i>	Washington palm ^N	NBSD, MGRF	
<i>Xanthium strumarium</i>	Cocklebur	NBSD, MGRF	
<i>Zeltnera</i> [= <i>Centaurium</i>] <i>venusta</i>	Canchalagua	MGRF	

Notes: ^N = Nonnative species

* Species was observed during the 1995/1996 RECON surveys and not detected during 2006/2007 surveys.

SITES

MGRF = Mission Gorge Recreational Facility

NBSD = Naval Base San Diego

BC = Broadway Complex

FEDERAL/STATE LISTED

FE = Federally listed endangered
FT = Federally listed threatened
SE = State listed endangered
ST = State listed threatened

OTHER

BCC = U.S. Fish and Wildlife Service Birds of Conservation Concern species
CFP = California Department of Fish and Wildlife fully protected species
WL = California Department of Fish and Wildlife watch list species
SSC = California Department of Fish and Wildlife species of special concern
CITES = Convention on International Trade in Endangered Species of Wild Fauna and Flora

Table G-2. Species Known to Occur or with the Potential to Occur off NBSD (Housing Areas)

Scientific Name	Common Name	Housing Area	Special Status Designation
BIRDS			
<i>Accipiter cooperii</i>	Cooper's Hawk	BH, CH	WL
<i>Aeronautes saxatalis</i>	White-throated swift	MC	
<i>Agelaius phoeniceus</i>	Red-winged blackbird	PT	
<i>Aimophila ruficeps canescens</i>	Southern California Rufous-crowned Sparrow	GT,MC	WL
<i>Amazona viridigenalis</i>	Red-crowned Sparrow ^N	CH	
<i>Aphelocoma californica</i>	Western Scrub-Jay	BH, ER, GT, TV	
<i>Buteo jamaicensis</i>	Red-tailed Hawk	BH, CH, ER, GT, MC, PT	
<i>Callipepla californica californica</i>	California Quail	CH	
<i>Calypte costae</i>	Costa's Hummingbird	CH, GT	
<i>Carduelis psaltria hesperophilus</i>	Lesser Goldfinch	BH, CH, ER, HT, GT, MC, PT, TV	
<i>Carduelis tristis salicamans</i>	American Goldfinch	BH	
<i>Carpodacus mexicanus frontalis</i>	House Finch	BH, CH, ER, HT, GT, MC, TV	
<i>Cathartes aura</i>	Turkey vulture	MC	
<i>Chamaea fasciata henschawi</i>	Wrentit	BH, CH, ER, HT, MC	
<i>Chordeiles acutipennis texensis</i>	Lesser Nighthawk	CH	
<i>Circus cyaneus</i>	Northern harrier	MC	
<i>Colaptes auratus</i>	Northern flicker	BH	
<i>Corvus brachyrhynchos hesperis</i>	American Crow	BH, CH, ER, MC	
<i>Corvus corax clarionensis</i>	Common Raven	BH, CH, HT, GT, MC, TV	
<i>Dendroica coronata</i>	Yellow-rumped Warbler	MC	
<i>Falco sparverius sparverius</i>	American kestrel	CH, MC	
<i>Geococcyx californianus</i>	Greater roadrunner	ER	
<i>Icterus cucullatus nelsoni</i>	Hooded Oriole	BH, ER, GT	
<i>Melospiza melodia</i>	Song Sparrow	BH, ER, MC, PT	BCC
<i>Mimus polyglottos polyglottos</i>	Northern Mockingbird	BH, ER, HT, MC	
<i>Passer domesticus</i>	House Sparrow ^N	ER	
<i>Petrochelidon pyrrhonota tachina</i>	Cliff Swallow	BH, CH, ER, MC	

Table G-2. Species Known to Occur or with the Potential to Occur off NBSD (Housing Areas)

Scientific Name	Common Name	Housing Area	Special Status Designation
<i>Picoides nuttallii</i>	Nuttall's Woodpecker	CH, ER, MC	BCC
<i>Pipilo crissalis</i>	California Towhee	BH, CH, ER, HT, GT, MC, PT, TV	
<i>Pipilo maculatus</i>	Spotted Towhee	BH, ER, GT, MC	BCC
<i>Polioptila caerulea</i>	Blue-gray Gnatcatcher	MC	FT, SSC
<i>Polioptila californica californica</i>	Coastal California Gnatcatcher	BH, CH, ER, GT, MC, TV	
<i>Polioptila melanura</i>	Black-tailed Gnatcatcher	PT	
<i>Psaltriparus minimus minimus</i>	Bushtit	BH, CH, ER, GT, MC, PT, TV	
<i>Sayornis nigricans semiatra</i>	Black Phoebe	BH, CH, ER, HT, GT, MC, PT, TV	
<i>Sayornis saya</i>	Say's Phoebe	BH, GT, MC, PT	
<i>Selasphorus sasin</i>	Anna's Hummingbird	BH, CH, ER, HT, GT, MC, PT, TV	
<i>Sialia mexicana occidentalis</i>	Western bluebird	BH, PT	
<i>Stelgidopteryx serripennis</i>	Northern Rough-winged Swallow	ER, GT	
<i>Thryomanes bewickii</i>	Bewick's Wren	BH, CH, ER, GT, MC	
<i>Toxostoma redivivum redivivum</i>	California Thrasher	BH, ER, MC	
<i>Troglodytes aedon parkmanii</i>	House Wren	HT	
<i>Tyrannus verticalis</i>	Western Kingbird	BH, ER, GT	
<i>Tyrannus vociferans vociferans</i>	Cassin's Kingbird	BH, CH, ER, GT, MC	
<i>Vireo bellii pusillus</i>	Least Bell's Vireo	CH	
<i>Zenaida macroura marginella</i>	Mourning Dove	BH, CH, ER, GT, MC, PT, TV	FE, SE
<i>Zonotrichia leucophrys</i>	White-crowned Sparrow	MC	
INVERTEBRATES			
<i>Apis mellifera</i>	Honey bee	BH, CH, ER, HT, GT, MC, PT	
<i>Apodemia virgulti</i>	Behr's metalmark	CH, ER, MC	
<i>Branchinecta sandiegonensis</i>	San Diego fairy shrimp	CH, MC	FE
<i>Brephidium exile</i>	Western pygmy blue	PT	

Table G-2. Species Known to Occur or with the Potential to Occur off NBSD (Housing Areas)

Scientific Name	Common Name	Housing Area	Special Status Designation
<i>Coenonympha tullia California</i>	California or common ringlet	BH, PT	
<i>Colias eurytherne</i>	Alfalfa or orange sulfur	BH, MC	
<i>Erynnis funeralis</i>	Funereal duskywing	HT, GT	
<i>Everes amyntula</i>	Western tailed blue	ER	
<i>Hylephila phyleus</i>	Fiery skipper	BH, ER	
<i>Icaricia acmon acmon</i>	Acmon blue	BH, ER, PT	
<i>Junonia coenia</i>	Common buckeye	CH, GT	
<i>Leptotes marina</i>	Marine blue	BH	
<i>Linepithema humile</i>	Argentine ants	BH, ER, HT, GT, PT, TV	
<i>Nymphalis antiopa antiopa</i>	Mourning cloak	BH	
<i>Pieris rapae</i>	Cabbage white	PT	
<i>Pogonmyrmex</i> spp.	Harvester ant	ER	
<i>Pontia protodice</i>	Checkered white	CH, MC, TV	
<i>Strymon melinus pudica</i>	Common hairstreak	GT	
Family: Aphididae	Aphids	CH, ER, HT, GT, MC, PT, TV	
Family: Apidae	Bees	BH, CH, ER, HT, GT, MC, PT, TV	
	Bee flies	BH, CH, GT, MC, TV	
	Brown lacewings	HT, MC	
	Ceriths	HT, TV	
Family: Thomisidae	Crab spiders	BH, ER, MC	
Family: Tenebrionidae	Darkling beetles	CH, GT	
	Dermestid flies	CH, MC, TV	
	Flesh flies	HT, GT, MC	
	Fruit flies	BH	
	Fulgorid planthoppers	TV	
	Fungus gnats	CH	
	Hardbacked ticks	BH	
	House flies	BH, CH, ER, MC	
	Jewel beetles	CH, MC	

Table G-2. Species Known to Occur or with the Potential to Occur off NBSD (Housing Areas)

Scientific Name	Common Name	Housing Area	Special Status Designation
Family: Salticidae	Jumping spiders	BH, CH, HT, GT, PT, TV	
	Katydids	BH	
Family: Coccinellidae	Ladybird beetles	BH, GT, MC, PT, TV	
	Leaf beetles	BH, CH, ER, MC, PT	
	Leafcutting bees	BH, CH, ER	
Family: Cicadellidae	Leafhoppers	BH, CH, ER, GT, MC, PT	
	Leafminers	MC	
	Long-legged flies	BH, CH, GT, MC, PT	
Family: Oxyopidae	Lynx spiders	BH, CH, MC, TV	
	Narrow-winged damselflies	BH, CH, MC	
	Orbweavers	MC, TV	
	Plant bugs	CH	
	Pyralid moths	BH, CH	
Family: Scarabaeidae	Scarab beetles	BH, GT, PT	
	Seed bugs	BH, CH, ER, MC	
Family: Acrididae	Shorthorn grasshoppers	CH, ER, HT, GT, PT, TV	
	Skimmers	BH	
Family: Hesperidae	Skippers	BH, ER, MC	
	Sphecid wasps	CH, HT	
	Sphinx moths	TV	
Family: Pompilidae	Spider wasps	CH, GT, MC, PT	
	Spittlebugs	ER, GT	
Family: Mordellidae	Softwinged flower beetles	MC	
	Stink bugs	ER	
Family: Halictidae	Sweat bees	BH, ER, GT	
	Syphid flies	BH	
	Tachinid flies	CH, GT, PT	
Family: Ctenizidae	Trap door spiders	MC	
Family: Vespidae	True wasps	BH, ER, GT, PT	
	Water midges	CH	
Family: Pieridae	Whites and Sulphurs	GT	

Table G-2. Species Known to Occur or with the Potential to Occur off NBSD (Housing Areas)

Scientific Name	Common Name	Housing Area	Special Status Designation
Family: Lycosidae	Wolf spiders	HT, GT	
	Yellow-faced bees	BH, CH, HT, MC	
MAMMALS			
<i>Canis latrans</i>	Coyote	ER, GT, MC, TV	
<i>Mephitis mephitis</i>	Striped skunk	CH	
<i>Neotoma spp.</i>	Woodrat	BH	
<i>Odocoileus hemionus</i>	Southern mule deer	MC	
<i>Procyon lotor</i>	Northern racoon	TV	
<i>Spermophilus beecheyi</i>	California ground squirrel	BH, CH, MC	
<i>Sylvilagus audubonii</i>	Desert cottontail	CH, HT, GT, MC	
REPTILES			
<i>Aspidoscelis hyperythra beldingi</i>	Belding's orange-throated whiptail	ER, GT, MC, TV	SSC
<i>Lampropeltis getula californiae</i>	California kingsnake	BH, CH	
<i>Pseudacris regilla</i>	Pacific treefrog	CH	
<i>Sceloporus occidentalis</i>	Western fence lizard	BH, CH, HT, MC, TV	
<i>Uta stansburiana</i>	Common side-blotched lizard	BH, HT	
PLANTS			
<i>Acacia sp.</i>	Tocolote acacia	ER, MC	
<i>Acacia cyclops</i>	Common olive ^N	BH, ER, MC, PT, TV	
<i>Acacia repens</i>	Eucalyptus acacia ^N	HT	
<i>Achillea millefolium</i>	Yarrow	PT	
<i>Acourtia microcephala</i>	Purple-head	MC	
<i>Adenostoma fasciculatum</i>	Chamise	HT, MC, PT	
<i>Adolphia californica</i>	California adolphia	TV	
<i>Ambrosia ananthicarpa</i>	Annual bur-sage	BH, PT	
<i>Ambrosia psilostachya</i>	Western ragweed	BH, CH, ER, MC, TV	
<i>Anagallis arvensis</i>	Scarlet pimpernel ^N	CH, ER, MC, PT, TV	
<i>Antirrhinum nuttallianum</i>	Snapdragon	GT	
<i>Artemisia californica</i>	California sagebrush	BH, CH, ER, HT, GT, MC, PT, TV	
<i>Astragalus trichopodus var. lonchus</i>	Coast locoweed	MC	

Table G-2. Species Known to Occur or with the Potential to Occur off NBSD (Housing Areas)

Scientific Name	Common Name	Housing Area	Special Status Designation
<i>Atriplex canescens</i>	Fourwing saltbush	MC	
<i>Atriplex semibaccata</i>	Australian saltbush ^N	HT, MC	
<i>Arundo donax</i>	Giant reed ^N	TV	
<i>Asclepias fascicularis</i>	Narrow-leaf milkweed	MC	
<i>Avena barbata</i>	Wild oat ^N	BH, CH, ER, GT, MC, PT, TV	
<i>Baccharis pilularis</i>	Coyote bush	ER, HT, GT, MC, TV	
<i>Baccharis salicifolia</i>	Mule fat	BH, ER, GT, PT, TV	
<i>Baccharis sarothroides</i>	Broom baccharis	BH, CH, HT, MC, PT, TV	
<i>Bloomeria crocea</i>	Common goldenstar	BH, MC	
<i>Brassica nigra</i>	Black mustard	ER, GT, MC, TV	
<i>Brickellia californica</i>	California brickelbush	ER	
<i>Bothriochloa barbinodis</i>	Cane bluestem	CH, MC, PT, TV	
<i>Bromus carinatus</i>	California brome	BH	
<i>Bromus diandrus</i>	Slender wild oat ^N	BH, CH, ER	
<i>Bromus hordeaceus</i>	Ripgut grass ^N	BH, CH, ER, HT, GT, MC, PT, TV	
<i>Bromus madritensis</i>	Foxtail chess ^N	BH, CH, HT, MC, PT, TV	
<i>Bromus madritensis</i> ssp. <i>rubens</i>	Smooth brome ^N	BH, GT, MC, PT	
<i>Calochortus</i> sp.	Mariposa lily	ER	
<i>Calochortus weedii</i> var. <i>weedii</i>	Weed mariposa	GT	
<i>Calystegia macrostegia</i> ssp. <i>arida</i>	Finger leaf morning glory	GT	
<i>Carduus pycnocephalus</i>	Italian thistle ^N	BH	
<i>Carpobrotus edulis</i>	Hottentot fig ^N	HT, MC, PT	
<i>Centaurea melitensis</i>	Tocalote ^N	BH, GT, MC, TV	
<i>Ceanothus</i> sp.	Ceanothus	PT	
<i>Ceanothus tomentosus</i>	Coast blue lilac	PT	
<i>Ceanothus verrucosus</i>	Wart-stemmed ceanothus	MC	
<i>Chamaesyce maculata</i>	Spotted spurge	MC	
<i>Chenopodium album</i>	Lamb's quarters ^N	PT	
<i>Chorizanthe fimbriata</i>	Fringed spineflower	CH, ER, MC	

Table G-2. Species Known to Occur or with the Potential to Occur off NBSD (Housing Areas)

Scientific Name	Common Name	Housing Area	Special Status Designation
<i>Cirsium occidentale</i>	California thistle	BH, MC	
<i>Claytonia paraviflora</i>	Miner's lettuce	BH	
<i>Clematis pauciflora</i>	Ropevine	GT	
<i>Conium maculatum</i>	Poison hemlock ^N	PT	
<i>Conyza bonariensis</i>	Flax leaf fleabane ^N	HT	
<i>Corethrogyne filaginifolia</i>	California aster	BH, MC	
<i>Cortaderia selloana</i>	Selloa pampas grass ^N	ER, HT, MC, PT, TV	
<i>Cotula australis</i>	Australian brass-buttons ^N	PT	
<i>Crassula argentea</i>	Jade plant	HT, MC	
<i>Croton setigerus</i>	Dove weed	CH, MC, TV	
<i>Cryptantha intermedia</i>	Nievita	MC	
<i>Cryptantha</i> sp.	Cryptantha	ER	
<i>Cuscuta californica</i>	Dodder	MC	
<i>Cylindropuntia prolifera</i>	Cholla	CH, MC, TV	
<i>Cynodon dactylon</i>	Bermuda grass ^N	PT	
<i>Cyperus eragrostis</i>	Tall flatsedge	PT, TV	
<i>Cyperus esculentus</i>	Nut-grass	CH	
<i>Deinandra fasciculata</i>	Golden tarplant	CH, MC, PT, TV	
<i>Daucus pusillus</i>	Rattlesnake weed	BH, HT	
<i>Dichelostemma capitatum</i>	Blue dicks	MC, PT, TV	
<i>Digitaria sanguinalis</i>	Crabgrass ^N	HT	
<i>Dipsacus sativus</i>	Fuller's teasel ^N	BH	
<i>Dudleya pulverulenta</i> ssp. <i>pulverulenta</i>	Chalk lettuce	ER, HT	
<i>Eleocharis macrostachya</i>	Pale spikerush	PT	
<i>Eleocharis</i> sp.	Spikerush	BH	
<i>Encelia californica</i>	Common encelia	HT, GT, MC, CH	
<i>Eriodictyon crassifolium</i>	Felt leaved yerba santa	HT, MC	
<i>Eriogonum fasciculatum</i>	California buckwheat	BH, CH, HT, GT, MC	
<i>Eriogonum</i> sp.	Buckwheat	GT	
<i>Erodium botrys</i>	Sourclover ^N	BH	
<i>Erodium cicutarium</i>	Pin clover ^N	BH, CH, ER, HT, MC, TV	

Table G-2. Species Known to Occur or with the Potential to Occur off NBSD (Housing Areas)

Scientific Name	Common Name	Housing Area	Special Status Designation
<i>Erodium moschatum</i>	White stemmed filaree ^N	ER, HT, GT, PT, TV	
<i>Erodium</i> sp.	Filaree ^N	HT, MC, PT	
<i>Eriophyllum confertiflorum</i> var. <i>confertiflorum</i>	Golden yarrow	HT, PT	
<i>Eryngium aristulatum</i> var. <i>parishii</i>	San Diego button celery	CH	FE
<i>Eschscholzia californica</i>	California poppy	GT, PT	
<i>Eucalyptus</i> sp.	Eucalyptus ^N	BH, ER, MC, PT	
<i>Ferocactus viridescens</i>	San Diego barrel cactus	HT, GT, MC, TV	
<i>Fraxinus velutina</i>	Velvet ash	CH	
<i>Fraxinus</i> sp.	Ash	MC	
<i>Foeniculum vulgare</i>	Fennel ^N	BH, HT, GT, MC, PT	
<i>Galium angustifolium</i> ssp. <i>angustifolium</i>	Narrow-leaf bedstraw	MC	
<i>Galium nuttallii</i>	San Diego bedstraw	BH, MC	
<i>Galium</i> sp.	Bedstraw	PT	
<i>Gazania</i> sp.	Gazania ^N	BH, CH, HT	
<i>Gastridium ventricosum</i>	Nit grass	MC	
<i>Geranium dissectum</i>	Cut leaf geranium ^N	PT	
<i>Gilia</i> sp.	Gilia	GT	
<i>Glebionis coronaria</i>	African daisy ^N	BH, HT, ER, GT, MC, TV	
<i>Gnaphalium bicolor</i>	Bicolored cudweed	MC	
<i>Gnaphalium californicum</i>	Green everlasting	BH, CH, HT, PT	
<i>Gnaphalium</i> sp.	Cudweed	HT, PT	
<i>Gutierrezia californica</i>	California matchweed	CH	
<i>Gutierrezia sarothrae</i>	Broom snakeweed	MC	
<i>Hazardia squarrosa</i>	Wild cucumber sawtooth goldenbush	ER, HT, MC	
<i>Hedypnois cretica</i>	Hedypnois	HT	
<i>Heliotropium curassavicum</i>	Chinese pulsey	BH, MC	
<i>Heteromeles arbutifolia</i>	Toyon	BH, CH, HT, MC	
<i>Heterotheca grandiflora</i>	Telegraph weed	PT, TV	
<i>Hirschfeldia incana</i>	Shortpod mustard ^N	BH, ER, GT, PT	
<i>Holocarpha virgata</i> ssp. <i>elongata</i>	Golden tarplant	HT	

Table G-2. Species Known to Occur or with the Potential to Occur off NBSD (Housing Areas)

Scientific Name	Common Name	Housing Area	Special Status Designation
<i>Hordeum marinum</i>	Mediterranean barley ^N	MC	
<i>Hordeum murinum</i>	Wild barley	CH, MC, BH	
<i>Hypochaeris glabra</i>	Smooth cat's ear ^N	BH	
<i>Isocoma menziesii</i>	Coast goldenbush	BH, CH, ER, HT, MC	
<i>Isomeris arborea</i>	Bladderpod	BH, CH	
<i>Juncus dubius</i>	Mariposa rush ^N	PT	
<i>Lactuca serriola</i>	Prickly lettuce ^N	HT, PT	
<i>Lantana</i> sp.	Lantana ^N	HT	
<i>Lepidium</i> sp.	Peppergrass	HT	
<i>Lolium temulentum</i>	Darnel ^N	MC	
<i>Lonicera subspicata</i> var. <i>denudata</i>	Wild honeysuckle	HT, MC	
<i>Lolium multiflorum</i>	Italian ryegrass ^N	BH, CH, ER, HT, PT	
<i>Lotus scoparius</i>	California broom	BH, CH, HT, PT	
<i>Lotus</i> sp.	Trefoil	GT	
<i>Lupinus succulentus</i>	Arroyo lupine	BH	
<i>Lythrum hyssopifolia</i>	Grass poly ^N	MC	
<i>Malaacothamnus fasciculatus</i>	Chaparral mallow	GT, PT, TV	
<i>Marah macrocarpus</i>	Wild cucumber	BH, HT, MC, PT, TV	
<i>Marrubium vulgare</i>	Horehound ^N	GT, MC	
<i>Malosma laurina</i>	Laurel sumac	CH, ER, HT, MC, PT, TV	
<i>Medicago polymorpha</i>	Red eye acacia ^N	BH	
<i>Melica californica</i>	California melic	BH	
<i>Melica imperfecta</i>	California melic	MC	
<i>Melilots</i> sp.	Clover ^N	HT	
<i>Melilotus albus</i>	White sweet clover ^N	ER, MC, PT, TV	
<i>Melilotus indicus</i>	California bur clover ^N	BH, PT, TV	
<i>Mesembryanthemum nodiflorum</i>	Slender-leaved ice plant ^N	BH	
<i>Mimulus aurantiacus</i>	Low bush monkey flower ^N	CH, ER, HT, GT, MC	
<i>Mimulus</i> sp.	Monkey flower	MC	
<i>Mirabilis laevis</i> var. <i>crassifloia</i>	Wishbone bush	ER	
<i>Muhlenbergia rigens</i>	Deergrass	PT	

Table G-2. Species Known to Occur or with the Potential to Occur off NBSD (Housing Areas)

Scientific Name	Common Name	Housing Area	Special Status Designation
<i>Muilla clevelandii</i>	San Diego goldenstar	MC	
<i>Nassella pulchra</i>	Purple needlegrass	BH, CH, HT, MC, PT	
<i>Nassella</i> sp.	Needlegrass	MC, TV	
<i>Nasturtium officinale</i>	Watercress ^N	MC, PT	
<i>Navarretia harnata</i>	Hooked navarretia	BH, GT, MC	
<i>Nemophila menziensis</i>	Baby blue eyes	BH, MC, PT	
<i>Nerium oleander</i>	Oleander ^N	ER, GT	
<i>Nicotiana glauca</i>	Tree tobacco ^N	GT, MC, PT	
<i>Opuntia ficus-indica</i>	Indian fig ^N	HT	
<i>Opuntia littoralis</i>	Shore cactus	BH, CH, HT, GT, MC, PT, TV	
<i>Opuntia oricola</i>	Big coast prickly pear	CH, GT	
<i>Opuntia phaeacantha</i>	Prickly pear	GT	
<i>Pellaea mucronata</i>	Bird's foot fern	GT	
<i>Osmadenia tenella</i>	Osmadenia	BH, MC	
<i>Parkinsonia florida</i>	Palo verde	BH	
<i>Paspalum dilatatum</i>	Dallis grass ^N	PT	
<i>Pennisetum setaceum</i>	Fountain grass ^N	BH, ER, GT, MC, PT, TV	
<i>Pentagramma triangularis</i>	Desert goldenback fern	MC	
<i>Persicaria lapathifolium</i>	Willow weed	PT	
<i>Phacelia</i> sp.	Phacelia	BH, GT	
<i>Phacelia campanularia</i>	Wild Canterbury bells	GT	
<i>Phacelia cictaria</i> var. <i>hispida</i>	Caterpillar phacelia	ER	
<i>Picris echioides</i>	Bristly ox-tongue ^N	MC, PT	
<i>Pinus torreyana</i> ssp. <i>torreyana</i>	Torrey pine	MC	
<i>Pittosporum</i> sp.	Pittosporum ^N	CH, ER	
<i>Piptatherum</i> [= <i>Otyzopsis</i>] <i>miliaceum</i>	Smilo grass	ER, HT, PT, TV	
<i>Plantago erecta</i>	Dot seed plantain	BH	
<i>Plantago major</i>	Common plantain ^N	PT	
<i>Platanus racemosa</i>	Western sycamore	BH, CH, ER, HT, GT, MC, PT	

Table G-2. Species Known to Occur or with the Potential to Occur off NBSD (Housing Areas)

Scientific Name	Common Name	Housing Area	Special Status Designation
<i>Podocarpus gracilator</i>	Fern pine ^N	PT	
<i>Pogogyne abramsii</i>	San Diego mesa mint	MC	FE, SE
<i>Polypogon monspeliensis</i>	Annual beard grass ^N	ER, HT, MC, PT	
<i>Populus fremontii</i> ssp. <i>fremontii</i>	Fremont cottonwood	ER	
<i>Psilocarphus brevissimus</i> var. <i>brevissimus</i>	Dwarf woolly-heads	CH	
<i>Psilocarphus tenellus</i>	Woolly heads	GT	
<i>Quercus agrifolia</i>	Coast live oak	HT, GT, PT	
<i>Quercus berberidifolia</i>	Scrub oak	MC	
<i>Quercus dumosa</i>	Nuttall's scrub oak	HT, MC	
<i>Rafinesquia californica</i>	California chicory	MC	
<i>Raphanus sativus</i>	Radish	PT	
<i>Rumex</i> sp.	Dock	HT, GT, PT	
<i>Rhamnus cmcea</i>	Spiny redberry	ER, MC, PT	
<i>Rhus integrifolia</i>	Lemonadeberry	BH, MC, PT, TV	
<i>Rhynchelytrum repens</i>	Natal grass ^N	ER, TV	
<i>Ricinus communis</i>	Castorbean ^N	BH, ER	
<i>Rumex acetosella</i>	Sheep sorrel	MC	
<i>Rumex crispus</i>	Curly dock ^N	TV	
<i>Rumex salicifolius</i>	Willow dock	BH, CH	
<i>Salix gooddingii</i>	Goodding's black willow	BH, CH, MC, TV	
<i>Salix laevigata</i>	Red willow	BH, MC	
<i>Salix lasiolepis</i>	Arroyo willow	BH, MC, PT, TV	
<i>Salix</i> sp.	Willow	GT, PT	
<i>Salsola tragus</i>	Russian thistle ^N	BH, CH, ER, HT, GT, MC, TV	
<i>Salvia apiana</i>	White sage	CH, ER, GT, MC	
<i>Salvia mellifera</i>	Black sage	HT, MC, PT, TV	
<i>Sambucus mexicana</i>	Blue elderberry	BH, ER, GT, MC	
<i>Schismus barbatus</i>	Mediterranean grass ^N	MC	
<i>Schinus molle</i>	Peruvian pepper tree ^N	MC	
<i>Schinus terebinthifolius</i>	Brazilian pepper tree ^N	BH, HT, MC	

Table G-2. Species Known to Occur or with the Potential to Occur off NBSD (Housing Areas)

Scientific Name	Common Name	Housing Area	Special Status Designation
<i>Schoenoplectus [=Scirpus] californicus</i>	California bulrush	MC, PT, BH	
<i>Scirpus americanus</i>	Three-square	PT	
<i>Scrophularia californica</i>	California figwort	BH, ER, GT	
<i>Selaginella cinerascens</i>	Ashy spike-moss	MC	
<i>Selaginella</i> sp.	Spike moss	GT	
<i>Silene gallica</i>	Windmill pink	MC	
<i>Sisyrinchium bellum</i>	Blue-eyed-grass	BH, MC	
<i>Sisymbrium</i> sp.	Mustard ^N	GT	
<i>Solanum americanum</i>	Nightshade	HT, GT, PT	
<i>Sonchus oleraceus</i>	Common sowthistle ^N	BH, CH, ER, HT, PT	
<i>Stellaria media</i>	Common chickweed ^N	BH	
<i>Stephanomeria</i> sp.	Stephanomeria	GT	
<i>Tamarix</i> sp.	Rattail fescue ^N	BH, GT, MC, PT, TV	
<i>Toxicodendron diversilobum</i>	Western poison oak	MC	
<i>Trichostema lanatum</i>	Woolly bluecurls	GT	
<i>Trifolium</i> sp.	Clover	MC	
<i>Typha domingensis</i>	Cattail southern cattail	BH	
<i>Typha</i> sp.	Cattail	MC, PT, TV	
<i>Ulmus parvifolia</i>	Chinese elm ^N	MC	
<i>Vicia villosa</i> ssp. <i>varia</i>	Winter vetch ^N	PT	
<i>Viguiera laciniata</i>	San Diego County viguiera	BH, HT, GT, MC, TV	
<i>Vulpia myuros</i> var. <i>Hirsuta</i>	Smilo grass ^N	BH	
<i>Washingtonia robusta</i>	Washington palm ^N	BH, ER, MC, PT, TV	
<i>Xanthium strumarium</i>	Cocklebur ^N	PT	
<i>Xryanthemum crystallinum</i>	Crystalline ice plant	MC	
<i>Xylococcus bicolor</i>	Mission manzanita	MC	
<i>Yucca schidegera</i>	Mojave yucca	HT, MC	
<i>Zeltnera venusta</i>	Canchalagua	BH, CH, ER	

Source: U.S. Navy 2011

Notes: ^N = Nonnative species

SITES

ER- Eucalyptus Ridge HT- Home Terrace
GT- Howard Gilmore Terrace MC- Murphy Canyon Heights
CH- Chollas Heights BH- Bayview Housing
PT- Pomerado Terrace TV- Terrace View

FEDERAL/STATE LISTED

FE = Federally listed endangered
FT = Federally listed threatened
SE = State listed endangered
ST = State listed threatened

OTHER

BCC = U.S. Fish and Wildlife Service Birds of Conservation Concern species
CFP = California Department of Fish and Wildlife fully protected species
WL = California Department of Fish and Wildlife watch list species
SSC = California Department of Fish and Wildlife species of special concern
CITES = Convention on International Trade in Endangered Species of Wild Fauna and Flora

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APPENDIX H
ANNUAL INRMP UPDATE

APPENDIX I

LANDSCAPING APPROVED PLANT LISTS

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Appendix I

Landscaping Approved Plant Lists

NAVFAC SW has developed a recommended plant list for use by grounds personnel on NBSD facilities. The installation's representative botanist and wildlife biologist and NAVFAC SW landscape architect use this list to monitor landscaping and grounds projects to ensure that all projects follow the guidance contained within this list.

The following are the guidelines to be followed for ensuring that native plants are used in landscaping projects at NBSD:

1. Landscape designs and plant lists shall be reviewed and approved by the Installation Natural Resources Manager and NAVFAC Landscape Architect in the planning stages of project design.
2. For each project, California native species from the recommended plant list shall constitute a minimum of 60 percent of the plant material within each stratum (herb, shrub, and tree). Other drought tolerant species from this list shall constitute the remainder of the plant material (a maximum of 40 percent in each stratum) for each project. For the purposes of these calculations, all cultivars are considered exotic.
3. It is vital that coordination with the Navy points of contact listed above occur *early* in the planning process to determine site-specific needs and constraints. Please note that not all species on this list are appropriate for all settings. For example, in some areas trees may not be approved due to the presence of federally listed species.
4. Additional native species may be included contingent upon approval of the Navy points of contact listed above.
5. All plants shall be verified for availability in size and quantities needed for each project prior to specifying on plans or scopes of work.

Table I-1 lists those plants that cannot be used for landscaping at NBSD, and **Table J-2** lists those places that are acceptable for use at NBSD.

Table I-1: Plants Unacceptable for Landscaping Under Any Circumstances

Common Name	Scientific name
Red Apple Ice Plant	<i>Aptenia</i> spp.
Onion Weed	<i>Asphodelus fistulosus</i>
Hottentot Fig Ice Plant	<i>Carpobrotus</i> spp.
Red Spike Ice Plant	<i>Cephallophyllum</i> spp.
Chrysanthemum	<i>Chrysanthemum</i> spp.
Pampas Grass	<i>Cortaderia</i> spp.
Disneyland Ice Plant	<i>Delosperma</i> spp.
Livingstone Daisy Ice Plant	<i>Dorotheanthus</i> spp.
Gazania, Treasure Flower	<i>Gazania</i> spp.
St. John's Wort	<i>Hypericum canariense</i>
Ice Plant	<i>Lampranthus (Oscularia)</i> spp.

Ice Plant	<i>Malephora</i> spp.
Ice Plant	<i>Mesembryanthemum</i> spp.
Fountain Grass	<i>Pennisetum</i> spp.
Goat's Beard	<i>Tragopogon</i> spp.

All plants on the California Invasive Plant Council (Cal-IPC) Invasive Plant Inventory (see <http://www.cal-ipc.org>), the San Diego County Ornamental Invasives Plant Guide (see <http://www.asla-sandiego.org/content/plantguide.html>), and *all* non-native grasses (except those used for turf/lawns) are unacceptable.

Table I-2: Recommended Plant List

Name	Native Status	Height	Spread	Irrigation Needs
Annuals/Bulbs/Perennials/Succulents				
<i>Achillea millefolium</i> Yarrow	N	1'	2'	L-M
Agave cultivars	E	Varies	Varies	L
Agave spp. Agave	CA or E	3'	4'	L
<i>Agave shawii</i> Shaw's Agave	N	3'	4'	L
Aloe spp. Aloe	E	Varies	Varies	L-M
<i>Armeria maritima</i> Sea Pink Thrift	CA	1'	1'	L-M
<i>Astragalus didymocarpus</i> Dwarf White Milk-vetch	N	Varies	Varies	L
<i>Astragalus</i> sp. (native to site) Milk-vetch	N	Varies	Varies	L
<i>Coreopsis maritima</i> Sea Dahlia	N	2'	3'	L-M
<i>Delphinium cardinale</i> Scarlet Larkspur	CA	6'	2'	M
<i>Delphinium parryi</i> San Bernadino Larkspur	N	6'	2'	M
<i>Dichelostemma capitatum</i> Blue Dicks	N	Varies	Varies	L
<i>Dietes bicolor</i> Fortnight Lily	E	2'	3'	L-M
Dietes 'Lemon Drops' Yellow Fortnight Lily	E	2'	3'	L-M
<i>Dietes vegeta</i> Fortnight Lily	E	4'	4'	L-M

Name	Native Status	Height	Spread	Irrigation Needs
<i>Dudleya edulis</i> Ladies' Fingers	N	1'	Varies	M
<i>Dudleya lanceolata</i> Lanceleaf Liveforever	N	1'	1'	M
<i>Dudleya pulverulenta</i> Chalk Dudleya	N	2'	2'	M
<i>Echeveria</i> spp. & cultivars Hens & Chicks	E	Varies	Varies	L
<i>Epilobium canum</i> California Fuchsia	N	2'	4'	L-M
<i>Erigeron glaucus</i> Seaside Daisy	CA	1'	2'	L-M
<i>Eriophyllum confertiflorum</i> Golden Yarrow	N	2'	2'	L-M
<i>Eschscholzia californica</i> California Poppy	N	1'	1'	L-M
<i>Heuchera maxima</i> Coral Bells	CA	1'	1'	L-M
<i>Iris douglasiana</i> Douglas Iris	CA	2'	1'	L-M
<i>Iris missouriensis</i> Western Blue Flag	CA	2'	1'	L-M
<i>Lotus hamatus</i> San Diego Bird's-foot Trefoil	N	1'	1'	M
<i>Lotus nuttallianus</i> Nuttal's Lotus	N	1'	1'	L-M
<i>Lupinus albifrons</i> Bush Lupine	CA	5'	5'	L-M
<i>Lupinus bicolor</i> Miniature Lupine	N	1'	1'	L-M
<i>Lupinus chamissonis</i> Dune Lupine	CA	2'	2'	L-M
<i>Lupinus truncatus</i> Blunt-leaf Lupine	N	2'	2'	L-M
<i>Mammillaria dioica</i> Fish-hook Cactus	N	1'	1'	L-M
<i>Mimulus aurantiacus</i> Bush Monkeyflower	N	4'	4'	L-M
<i>Mimulus cardinalis</i> Scarlet Monkeyflower	CA	2'	2'	L-M
<i>Mimulus guttatus</i> Golden Monkeyflower	CA	2'	2'	L-M
<i>Mirabilis californica</i> Wishbone Bush	N	1'	2'	L

Name	Native Status	Height	Spread	Irrigation Needs
<i>Opuntia californica</i> Snake Cholla	N	2'	3'	L
<i>Opuntia littoralis</i> Prickly Pear	N	2'	3'	L
<i>Opuntia prolifera</i> Coast Cholla	N	2'	3'	L
<i>Pellaea andromedifolia</i> Coffee Fern	N	1'	1'	L
<i>Pellaea mucronata</i> Bird's Foot Fern	CA	1'	1'	L
<i>Polystichum minutum</i> Western Sword Fern	CA	3'	3'	L-M
<i>Sedum spp.</i> Stonecrop	E	Varies	Varies	L
<i>Sisyrinchium bellum</i> Blue-eyed Grass	N	1'	1'	L
<i>Sphaeralcea ambigua</i> Apricot Mallow	CA	4'	4'	L
<i>Thymus serpyllum</i> Creeping Thyme	E	1'	3'	M
<i>Woodwardia fimbriata</i> Giant Chain Fern	CA	4'	3'	M
<i>Yucca schidigera</i> Mojave Yucca	N	8'	2'	L-M
<i>Yucca whipplei</i> Our Lord's Candle	N	3'	6'	L-M
Grasses/Rushes				
<i>Eleocharis montevidensis</i> Spikerush	CA	Varies	Varies	M
<i>Elymus condensatus</i> 'Canyon Prince' Giant Wild Rye	CA	6'	-	M
<i>Elymus glaucus</i> Blue Wildrye	CA	3'	-	L-M
<i>Festuca ovina glauca</i> Blue Fescue	E	1'	10"	L-M
<i>Juncus acutus</i> Spiny Rush	CA	5'	-	M
<i>Juncus mexicanus</i> Mexican Rush	CA	5'	-	L-M
<i>Muhlenbergia species</i> Deer Grass	CA	Varies	Varies	L-M
<i>Muhlenbergia rigens</i> Deer Grass	CA	4'	4'	L-M

Name	Native Status	Height	Spread	Irrigation Needs
<i>Nassella cernua</i> Nodding Needlegrass	CA	3'	2'	L
<i>Nassella lepida</i> Foothill Needlegrass	CA	3'	2'	L
<i>Nassella pulchra</i> Purple Needlegrass	N	3'	2'	L
Ground Covers				
<i>Abronia maritima</i> Red Sand Verbena	N	1'	3'	L
<i>Abronia umbellata</i> Beach Sand Verbena	N	1'	3'	L
<i>Arctostaphylos species</i> (CA natives only) Manzanita	CA	Varies	Varies	L
<i>Carissa macrocarpa</i> 'Green Carpet' Prostrate Natal Plum	E	1'	4'	L-M
<i>Ceanothus cultivars</i> California Lilac	E	8"	12"	L
<i>Fragaria chiloensis</i> Sand Strawberry	CA	Varies	Varies	L
<i>Fragaria vesca</i> Wood Strawberry	CA	6"	3'	L
<i>Juniperus horizontalis</i> 'Wiltonii' Blue Carpet Juniper	E	6"	8'	L-M
<i>Pelargonium peltatum</i> Ivy Geranium	E	2'	3'	L-M
<i>Rosmarinus officinalis species</i> Rosemary Selection	E	Varies	Varies	L-M
<i>Senecio mandraliscae</i> Groundsel	E	1'	2'	L-M
Shrubs				
<i>Abutilon palmeri</i> Indian Mallow	CA	5'	5'	L-M
<i>Adenostoma fasciculatum</i> Chamise	N	8'	8'	L
<i>Adolphia californica</i> Spineshrub	N	Varies	Varies	L
<i>Arctostaphylos cultivars</i> Manzanita	E	Varies	Varies	L-M
<i>Arctostaphylos glandulosa</i> (var./ssp.) Manzanita	CA	3'	3'	L-M
<i>Arctostaphylos glauca</i> Bigberry Manzanita	CA	15'	15'	L-M

Name	Native Status	Height	Spread	Irrigation Needs
<i>Artemisia californica</i> Coastal Sage	N	5'	5'	L-M
<i>Artemisia palmeri</i> San Diego Sagewort	N	1'	1'	L-M
<i>Atriplex lentiformis</i> ssp. <i>lentiformis</i> Big Saltbush	N	10'	10'	L
<i>Baccharis pilularis</i> Coyote Brush	N	3'	6'	L-M
<i>Baccharis salicifolia</i> Mulefat	N	8'	8'	L-M
<i>Baccharis sarothroides</i> Broom Baccharis	N	8'	8'	L-M
<i>Bougainvillea</i> species Bougainvillea	E	Varies	Varies	L-M
<i>Brickellia californica</i> California Brickellbush	N	4'	4'	L-M
<i>Camissonia cheiranthifolia</i> Beach Evening Primrose	N	Varies	Varies	L
<i>Ceanothus</i> cultivars Wild Lilac	E	Varies	Varies	L
<i>Ceanothus</i> species (CA natives only) Wild Lilac	CA	Varies	Varies	L
<i>Ceanothus tomentosus</i> Blue Lilac	N	9'	6'	L
<i>Ceanothus verrucosus</i> Wart-Stemmed Ceanothus	N	8'	8'	L
<i>Cercocarpus betuloides</i> Western Mountain Mahogany	CA	10'	10'	L
<i>Cercocarpus minutiflorus</i> San Diego Mountain Mahogany	N	10'	10'	L
<i>Cistus</i> species (only non-invasives) Rockrose	E	4'	5'	L-M
<i>Cneoridium dumosum</i> Bushrue	N	2'	3'	L
<i>Comarostaphylis</i> div. ssp. <i>diversifolia</i> Summer Holly	N	8'	8'	M
<i>Croton californicus</i> California Croton	N	6'	6'	M
<i>Dendromecon rigida</i> Bush Poppy	N	8'	8'	L
<i>Encelia californica</i> Bush Sunflower	N	5'	5'	L
<i>Eriodictyon</i> crass. var. <i>crassifolium</i> Yerba Santa	N	5'	5'	L-M

Name	Native Status	Height	Spread	Irrigation Needs
<i>Eriogonum fasciculatum</i> Flat-topped Buckwheat	N	3'	4'	L-M
<i>Euphorbia misera</i> Cliff Spurge	N	2'	2'	L-M
<i>Fremontodendron californicum</i> California Flannelbush	CA	15'	15'	L
<i>Fremontodendron mexicanum</i> Mexican Flannelbush	CA	15'	15'	L
<i>Galvezia speciosa</i> Island Bush Snapdragon	CA	6'	8'	L
<i>Helianthemum scoparium</i> Peak Rush Rose	N	1'	3'	M
<i>Heteromeles arbutifolia</i> Toyon	N	8'	15'	L-M
<i>Isocoma menziesii</i> Menzie's Goldenbush	N	4'	4'	L
<i>Isomeris arborea</i> Bladderpod	N	5'	5'	L
<i>Iva hayesiana</i> Poverty Weed	N	3'	5'	L
<i>Juniperus spp.</i> Juniper	E	Varies	Varies	L-M
<i>Justicia californica</i> Chuparosa	CA	5'	8'	L-M
<i>Keckiella antirrhinoides</i> Yellow Bush Penstemon	CA	8'	10'	L-M
<i>Keckiella cordifolia</i> Heart-leaf Penstemon	N	6'	8'	L-M
<i>Lavendula dentata</i> Lavender	E	4'	5'	M
<i>Lonicera subspicata</i> Chaparral Honeysuckle	N	5'	5'	M
<i>Lotus scoparius</i> Deerweed	N	3'	4'	M
<i>Lycium californicum</i> Box Thorn	N	3'	6'	L-M
<i>Malosma laurina</i> Laurel Sumac	N	15'	15'	L-M
<i>Phormium tenax</i> New Zealand Flax	E	Varies	Varies	L-M
<i>Prunus ilicifolia</i> Hollyleaf Cherry	N	15'	15'	L-M
<i>Quercus dumosa</i> Scrub Oak	N	10'	10'	L-M

Name	Native Status	Height	Spread	Irrigation Needs
<i>Rhamnus californica</i> Coffeeberry	N	3'-6'	6'	L-M
<i>Rhamnus crocea</i> Spiny Redberry	N	8'	8'	L
<i>Rhus integrifolia</i> Lemonadeberry	N	15'	15'	L
<i>Ribes indecorum</i> White Flowering Currant	CA	6'	6'	L
<i>Salvia clevelandii</i> Cleveland Sage	N	4'	5'	M
<i>Salvia columbariae</i> Chia	N	4'	5'	M
<i>Salvia mellifera</i> Black Sage	N	5'	5'	M
<i>Santolina chamaecyparissus</i> Lavender Cotton	E	2'	3'	L-M
<i>Satureja douglasii</i> Yerba Buena	CA	1'	3'	L-M
<i>Simmondsia chinensis</i> Jojoba	N	8'	12'	L-M
<i>Solanum parishii</i> Parish's Nightshade	N	Varies	Varies	L-M
<i>Solanum xanti</i> Purple Nightshade	CA	3'	3'	L-M
<i>Trichostema lanatum</i> Woolly Blue Curls	N	3'	4'	L
<i>Viguiera laciniata</i> San Diego County Viguiera	N	2'	6'	L
<i>Xylococcus bicolor</i> Mission Manzanita	N	8'	8'	L
Trees				
<i>Agonis flexuosa</i> Peppermint Tree	E	30'	30'	L-M
<i>Archontophoenix cunninghamiana</i> King Palm	E	50'	15'	M
<i>Brahea armata</i> Blue Hesper Palm	E	45'	10'	L-M
<i>Brahea edulis</i> Rock Palm	E	30'	10'	L-M
<i>Butia capitata</i> Pindo Palm	E	20'	15'	M
<i>Calocedrus decurrens</i> Incense Cedar	CA	80'	20'	L-M

Name	Native Status	Height	Spread	Irrigation Needs
<i>Cercis occidentalis</i> Western Redbud	CA	20'	20'	L-M
<i>Chamaerops humilis</i> Mediterranean Fan Palm	E	20'	8'	L-M
<i>Chilopsis linearis</i> Desert Willow	CA	30'	20'	L
<i>Geijera parvifolia</i> Australian Willow	E	30'	25'	L-M
<i>Jacaranda mimosifolia</i> Jacaranda	E	30'	25'	L-M
<i>Lyonothamnus floribundus</i> Catalina Ironwood	CA	50'	30'	M
<i>Metrosideros exelsa</i> New Zealand Christmas Tree	E	30'	30'	M
<i>Pinus canariensis</i> Canary Island Pine	E	60'	20'	L
<i>Pinus eldarica</i> Afghan Pine	E	50'	30'	L
<i>Pinus torreyana</i> Torrey Pine	N	50'	30'	L
<i>Platanus racemosa</i> Western Sycamore	N	80'	40'	L-M
<i>Podocarpus gracilior</i> Fern Pine	E	60'	30'	M
<i>Populus fremontii</i> Western Cottonwood	N	50'	30'	M
<i>Quercus agrifolia</i> Coast Live Oak	N	50'	50'	L-M
<i>Quercus ilex</i> Holly Oak	E	40'	40'	L-M
<i>Salix lasiolepis</i> Arroyo Willow	N	15'	15'	M
<i>Sambucus mexicana</i> Blue Elderberry	N	20'	20'	L-M
<i>Syagrus romanzoffianum</i> Queen Palm	E	50'	15'	M
<i>Washingtonia filifera</i> California Fan Palm	CA	60'	15'	L-M
Vines				
Bougainvillea species Bougainvillea	E	-	-	L-M
<i>Calystegia macrostegia</i> Morning-Glory	N	-	-	M

Name	Native Status	Height	Spread	Irrigation Needs
<i>Clematis lasiantha</i> Pipestem	CA	-	-	M
<i>Clematis ligusticifolia</i> Virgin's Bower	CA	-	-	M
<i>Clematis paciflora</i> Ropevine	N	-	-	M
<i>Clytostoma callistegioides</i> Violet Trumpet Vine	E	-	-	L-M
<i>Maurandya antirrhiniflora</i> Snapdragon Vine	N	10'	4'	13 to 44
<i>Phaedranthus buccinatorius</i> Blood-Red Trumpet Vine	E	-	-	M
<i>Vitis girdiana</i> California Grape	CA	-	-	L-M

Key:

N= Native to Coastal SD County

CA= California Native

E= Exotic

L= Low Water

M= Moderate Water

L-M= Low to Moderate Water

APPENDIX J

NAVY NATURAL RESOURCES METRICS

NR Metrics 2013 NAVBASE San Diego - NAVBASE SAN DIEGO CA (Main Site)

ATTENTION! DO NOT CLICK THE PRELOAD BUTTON ABOVE!!!

You will loose your data! For more infomation, [click here](#).

Welcome to the Annual Navy Natural Resources Conservation Metrics!

This site has been designed to help guide you step-by step through a series of questions that will inform decision-makers on the status of your Natural Resources program.

Note: Click on the links to the right to jump to a focus area. Please click "Save" located at the bottom of each page to add your draft answers to the database. If you leave and are logged out of the system, your answers will be retained the next time you log in.

Link to the Conservation Website User Guide: [Natural Resources Support Documents](#)

Assignment Information

Assigned To: [Andrew Wastell](#)

Special Area(s): CHOLLAS HEIGHTS HSG, DRYSIDE, EUCALYPTUS HOUSING, HOWARD GILMORE, MISSION GORGE, MURPHY CANYON, NAVBASE SAN DIEGO CA (Main Site), NAVFAC SW, PALETA INDUSTRIAL

Due Date: **Status:** Incomplete

Sent: 9/21/2013 **Sent By:** [Matt Hawkins \(DoD\)](#)

Modified: 10/18/2013 **Modified By:** [Andrew Wastell](#)

Completed: **Completed By:**

Reviewed: **Reviewed By:**

Getting Started...

In the table below please add all participants and attendees that were involved in the Annual Navy Natural Resources Conservation Metrics. Note: The Navy Lead is the Navy POC responsible for the completion of the Metrics for this installation/site.

Select "New Item" to add an attendee.

Attendees / Participants

Name	Organization	Phone	Email	Navy Lead
Sandy Vissman	USFWS	(760) 431-9440	sandy_vissman@fws.gov	No
Andrew Wastell	NAVFAC	(619) 532-2686	andrew.wastell@navy.mil	Yes

Name	Organization	Phone	Email	Navy Lead
Meredith Osborne	CDFG	(858) 636-3163	MOsborne@dfg.ca.gov	No
Shannon Shea	Navfac	(619) 532-4265	shannon.shea1@navy.mil	No
Doug Powers	Navfac	(619) 532-2968	doug.powers1@navy.mil	No

Navy INRMP Status Check(explanation)

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The following questions are a review of the recently finished INRMP Status Update August 2013. Make any necessary corrections and upload any documents that may have recently changed. Also, additional upload methods are listed at the end of the page.

Objective: This purpose of this section of the Natural Resources Conservation Metrics data call is to gather required information associated with the Natural Resources program, specifically the status of Integrated Natural Resources Management Plans (INRMP). Responses to the questions in this section are not scored as a part of the Natural Resources Conservation Metrics data call. These questions have been added here to collect information that will support the Defense Environmental Program Annual Report to Congress (DEPARC) and Office of the Secretary of Defense Environmental Management Review (EMR). By combining these questions with responses to the Metric's seven (7) focus areas , Natural Resources Managers are faced with fewer annual data calls. Data from previous year's data calls may be available and values can be pre-loaded. (see the Navy Conservation Website User's Guide for additional information on preloading data).

1. Has the site been surveyed to determine if significant natural resources exist?

SIGNIFICANT - sources identified as having special importance to an installation and/or its ecosystem. Natural resources may be significant on a local, regional, national, or international scale. All threatened, endangered and at-risk species are significant natural resources that normally will require an INRMP. Installations that actively manage or execute projects for fish and wildlife, forestry, vegetation and erosion control, agricultural outleasng or grazing, or wetlands protection should be evaluated for significance, but normally will require an INRMP. An evaluation for significance should also consider the degree of active management, special natural features, aesthetics, outdoor recreational opportunities, and the ecological context of the installation. (DoDI 4715.03)

Options: Yes, No

Yes

1.a. If the site has been surveyed, were significant natural resources found?

DEFINITION [SIGNIFICANT] - Resources identified as having special importance to an installation and/or its ecosystem. Natural resources may be significant on a local, regional, national, or international scale. All threatened, endangered and at-risk species are significant natural resources that normally will require an INRMP. Installations that actively manage fish and wildlife, forestry, vegetation and erosion control, agricultural outleasng or grazing, or wetlands protection should be evaluated for significance, but normally will require an INRMP. An evaluation for significance should also consider the degree of active management, special natural features, aesthetics, outdoor recreational opportunities, and the ecological context of the installation. (DoDI 4715.03)

Options: Yes, No

Yes

1.b. If the site has not been surveyed, please explain why a survey has not been conducted.

1.c. For those installations where it has been determined that an INRMP is NOT necessary due to insufficient natural resources or other rationale, please provide signed documentation to substantiate this assessment and answer the question below.

Options: Approved Waiver Provided Below, Not Applicable

Not Applicable

To provide signed documentation to substantiate that an INRMP is NOT necessary, [CLICK HERE](#)

2. If significant natural resources were found, is there a compliant INRMP that covers this site?

COMPLIANT INRMP - A complete plan that meets the purposes of the Sikes Act (§101(a)(3)(AC)), contains the required plan elements (§101(b)(1)(AJ)), and has been reviewed for operation and effect within the past 5 years (§101(2)(b)(2)). (CNON45)

Options: Yes, No

Yes

2.a. Name of First Compliant INRMP
NBSD INRMP

2.b. Date of First Compliant INRMP (Usually Dated 2001/2002)
Format: MM/DD/YYYY

7/31/2002

2.c. What type of NEPA Documentation was done for the first compliant INRMP?

Options: EA / FONSI, EIS / ROD
EA / FONSI

2.d. When was the NEPA completed for the first compliant INRMP?
Format: MM/DD/YYYY

1/31/2002

2.e. Please enter the name and date of the most current INRMP that covers this site/installation?

Note: If you have any questions about a compliant INRMP, please contact Tammy Conkle. Tamara.Conkle@navy.mil

Name:

NBSD INRMP

Date: *

Format: MM/DD/YYYY This date is references when the Regional Commander/Commanding Officer endorsed (signed) the most recent INRMP (with valid NEPA coverage) and/or completed a review for operation and effect.

7/31/2002

2.f. If the most current INRMP was used to exempt the site/installation from the designation of critical habitat for a federally listed species under ESA Section 4(a)(3)(B)(i) please list those species below:
California gnatcatcher, San Diego button celery, San Diego mesa mint, least Bell's vireo

2.g. If there is no INRMP for the site, but an INRMP is needed, has funding been requested to develop an INRMP?

Options: Yes, No
Yes

2.g.1. If funding has been requested, what is the expected date to receive funding?
Format: MM/DD/YYYY

If the response to 2.g was "Yes", please enter the expected date to receive funding for a new/updated INRMP.

2.g.2. If no funding has been requested, please explain.

If the response to 2.g. "No", please explain why there is no funding requested for a new/updated INRMP.

3. Has a 5-year INRMP review for operation and effect been completed for the most recent INRMP?

REVIEW FOR OPERATION AND EFFECT – A comprehensive review by the Parties, at least once every 5 years, to evaluate the extent to which the goals and objectives of the INRMP continue to meet the purpose of the Sikes Act, which is to carry out a program that provides for the conservation and rehabilitation of natural resources on military installations. The outcome of this review will assist in determining if the INRMP requires a revision (§101(f)(1)(A)). (CNO-N45) The annual review can qualify for the 5-year review for operation and effect, which is legally required by the Sikes Act, if mutually agreed upon by both partners (i.e. USFWS and State).

Options: Yes, No, N/A
Yes

3.a. If a 5-year INRMP review for operation and effect been completed, did the review result in an addendum/appendix, update or revision of the INRMP?

DEFINITION [**REVISION**] – A substantive change to an INRMP that requires coordination and mutual agreement by the Parties. [List examples of things that would trigger a revision – Navy needs to review current list.]

A revision is not minor changes to the INRMP text, work plans, or projects. Rather, these changes are updates that should be made as a result of annual reviews per DoD policy, to ensure the INRMP reflects the current condition of the natural resources and program goals and objectives. (CNO-N45)

Options: Addendum/Amendment, Update, Revision
Update

3.b. What is the expected completion date of the Addendum/Amendment, Update, Revision?
Format: MM/DD/YYYY

8/1/2002

3.c. If a 5-year INRMP review for operation and effect has not been completed; please explain why a review for operation and effect has not been completed?

To upload documentation that a 5-year INRMP review for operation and effect has been completed, [CLICK HERE](#).

REMINDER:

IF YOUR INRMP IS OLDER THAN 3 YEARS OLD THE REVIEW FOR OPERATION AND EFFECT ADMINISTRATIVE PROCESS SHOULD BE UNDERWAY IN CASE THE INRMP NEEDS TO BE UPDATED/REVISED.

4. Has USFWS concurrence been received on the most recent INRMP or review for operation and effect?

DEFINITION [REVIEW FOR OPERATION AND EFFECT] – A comprehensive review by the Parties, at least once every 5 years, to evaluate the extent to which the goals and objectives of the INRMP continue to meet the purpose of the Sikes Act, which is to carry out a program that provides for the conservation and rehabilitation of natural resources on military installations. The outcome of this review will assist in determining if the INRMP requires a revision (§101(f)(1)(A)).

Options: Yes, No

Yes

4.a. If question 4. is "Yes", which USFWS Region(s) are applicable? (Choose all that apply)

Options: Pacific Region (Region 1), Southwest Region (Region 2), Great Lakes-Big Rivers Region (Region 3), Southeast Region (Region 4), Northeast Region (Region 5), Mountain-Prairie Region (Region 6), Alaska Region (Region 7), California and Nevada Region (Region 8), Headquarters, Washington D.C. (Region 9)
California and Nevada Region (Region 8)

4.b. List the Field Office, if applicable, that signed concurrence documentation.

Office Name

Carlsbad FWS

City

Carlsbad

State

CA

4.c. If question 4. is "Yes", what is the date of concurrence?

Format: MM/DD/YYYY

12/7/2012

4.d. If question 4. is "No", what is the reason for the delay?

4.e. Was an ESA Section 7 Consultation completed with USFWS for the INRMP?

Options: Yes, No, N/A

No

4.f. Which USFWS field office do you regularly conduct ESA Section 7 consultations with typically?

Office Name

Carlsbad FWS

City

Carlsbad

State

CA

4.g. Did the Threatened and Endangered Species Listing and Recovery personnel participate in the INRMP review, update or revisions?

This question is intended to clarify whether USFWS personnel responsible for listing and recovery, specifically the designation of critical habitat

have been participating in the review of your site/installation INRMP.

Options: Yes, No, N/A

No

5. Has NMFS concurrence been received on the most recent INRMP or review for operation and effect?

NMFS = National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS).

Options: Yes, No

Yes

5.a. If question 5. is "Yes", which NMFS Region(s) are involved? (Choose all that apply)

Options: Alaska, Southeast and Caribbean, North-East, North-West, Pacific Island, Southwest
Southwest

5.b. List the local office, if applicable, that signed concurrence documentation.

Office Name

Southwest Regional Office

City

Long Beach

State

Ca.

5.c. If question 5. is "Yes", what is the date of concurrence?

Format: MM/DD/YYYY

6/16/2012

5.d. If question 5. is "No", what is the reason for the delay?

5.e. Was an ESA Section 7 Consultation completed with NMFS for the INRMP?

Options: Yes, No, N/A

No

5.f. Did the Threatened and Endangered Species Listing and Recovery personnel participate in the INRMP review, update or revisions?

This question is intended to clarify whether USFWS personnel responsible for listing and recovery, specifically the designation of critical habitat have been participating in the review of your site/installation INRMP.

Options: Yes, No, N/A

N/A

6. Has State fish and wildlife agency(ies) concurrence been received on the most recent INRMP or review for operation and effect?

Options: Yes, No, N/A

Yes

6.a. If question 6 is "Yes", which State fish and wildlife agency(ies)?

Office Name

Dept. of Fish and Game- South Coast Region

City

San Diego

State

CA

6.b. If question 6. is "Yes", If yes, date of concurrence?

Format: MM/DD/YYYY

2/25/2002

6.c. If question 6. is "No", what is the reason for the delay?

7. If the INRMP was update/revised did the INRMP require new or supplementation NEPA?

Options: Yes, No

Yes

7.a. If so, what was the type of NEPA?

Options: CATEX, EA / FONSI, EIS / ROD

EA / FONSI

7.b. When was the NEPA completed?

Format: MM/DD/YYYY

4/1/2002

8. Has Installation Commanding Officer concurrence been received on the most recent INRMP or review for operation and effect?

Options: Yes, No

Yes

8.a. If question 8. is "Yes", If yes, date of concurrence?

Format: MM/DD/YYYY

3/27/2012

8.b. If question 8. is "No", what is the reason for the delay?

9. If the Regional Commander has final authority over whether your site/installation INRMP is compliant has the Regional Commander concurred with/signed the most recent INRMP or review for operation and effect?

Options: Yes, No, N/A

N/A

9.a. If question 9. is "Yes", If yes, date of concurrence?

Format: MM/DD/YYYY

9.b. If question 9. is "No", what is the reason for the delay?

10. Please upload the following documents where applicable:

1. INRMP
2. INRMP NEPA documentation
3. 5-year operation & effect review letter(s)
4. Other Signed Correspondence with Regulatory Partners
5. Annual review briefs to Commanding Officer or Regional Commander
6. INRMP Waiver Letter

Please follow these instructions to upload your document correctly..

1. Rename the document(s) to include the installation name, document type, "SU 2013", agency and/or status of document.

Some examples:

- "NAS Meridian INRMP SU 2013 Final.pdf"
- "Fallbrook NEPA SU 2013 State.doc"
- "NB Kitsap Signed Letter SU 2013 NMFS.docx"

2. Click the appropriate link in the table below to upload the correct type of document. Please note, File sizes of more than 40MB may require the use of an alternative document transfer method shown below (or by clicking here).

Document Type	Upload Link	View Upload Folder*

New or Current INRMP	Click to Upload	Click to View
INRMP NEPA Documentation**	Click to Upload	Click to View
Signed Correspondence Letters with Agencies***	Click to Upload	Click to View
Signed INRMP Waiver Letter	Click to Upload	Click to View

* Click to view the specific shared folder to verify your document was uploaded properly or in case you need to update the submitted file.

** Includes all related NEPA documents.

*** Signed Correspondence Letters include new / updated 5-Year Operation & Effect Review Letters and Annual Review Briefs

3. On the popup page, click on "Browse", click on your document and click "open".
4. For "Description" field, enter a valid description under 100 characters.
5. Do not change the field "Owner".
6. Do not change the "Folder" field.
7. For the field "Document Category", please click on the down arrow and navigate to "Natural Resources Documents > Integrated Natural Resources Management Plans (INRMPs)" and click the most relevant option.
8. Click "Save Document" and close the window.
9. If you have another document to upload, go up to #2. If you are done uploading documents, continue on the question below "Confirm you uploaded all your INRMP Related document(s)?" ([or click here](#)), choose an option. If you need to leave a comment, please do so by clicking the "Comment on my Response".

Alternative document transfer methods:

- 1) Army SAFE – Safe Access File Exchange

<https://safe.amrdec.army.mil/SAFE/>

- 2) NAVFAC File Transfer System (NFTS)

<https://portal.navfac.navy.mil/portal/page/portal/NFTS/>

Recipient: Tom Mayes using email tom.mayes@navy.mil

- 3) US Mail

Naval Facilities Engineering Command Headquarters

Attn: Tom Mayes – EV2
 1322 Patterson Ave. SE, Suite 1000
 Washington Navy Yard, DC
 20374-5065

11. Please confirm if you uploaded or sent any INRMP Related document(s).

Options: Uploaded to Conservation Website Documents, Uploaded through Army Safe Website, Uploaded through NAVFAC File Transfer System (NFTS), Sending / Sent by US Mail, Not Uploaded / Sent

1. Natural Resources Management (Ecosystem Integrity)

ATTENTION! DO NOT CLICK THE PRELOAD BUTTON ABOVE!!!

You will lose your data! For more information, [click here](#).

Focus Area Purpose: Evaluate the effectiveness of management activities for conserving and rehabilitating installation natural resources as defined in the INRMP.

Supplemental Information: According to the DoDI 4715.3, the goal of ecosystem management is to ensure that military lands support present and future training and testing requirements while preserving, improving, and enhancing ecosystem integrity. The intent of this Focus Area is to define the ecosystems that occur on the installation and assess the integrity of these ecosystems. Answer the questions for each ecosystem selected from the preloaded list. The list is comprised of (1) terrestrial ecosystems identified in Nature Serve's, "[Ecological Systems of the United States: A Working Classification of US Terrestrial Systems](#)" and (2) marine ecosystems identified in NMFS's Coastal and Marine Ecological Classification Standard. For additional information on these classification schemes, go directly to the Nature Serve's [ecosystem online reference](#) or [view a list](#) of terrestrial ecosystems by Land Cover Classes, Biogeographic Divisions, and Ecological Systems. Additionally, go directly to the [CMECS Catalogue of Units](#) or [view a list](#) of marine ecosystems, which only includes the Benthic Biotic, Surface Geology, and Water Column components of the classification scheme.

Note: Marine ecosystems are presented in the same format as terrestrial ecosystems, with CMECS Components categorized under Land Cover Class and NMFS's Large Marine Ecosystems categorized under Biogeographic Divisions.

Instructions: The list below contains the ecosystems occurring on the site(s) that were selected during the FY12 NR Metrics data call. Please review the list and update as necessary. Select the red 'X' to delete an ecosystem from the list. Select "New Item" to add an ecosystem and begin answering questions. Select the name of the preloaded ecosystem to answer the questions for the current reporting period.

Comment on this Focus Area and associated Questions: Select this link below each question if you would like to elaborate on the answer provided. This is also a good way to document unique circumstances and the assumptions made by all partners that contributed to the answer.

Assessment of ecosystem integrity

Ecosystem	Fragmentation	Stressors	Species Populations
<input type="checkbox"/> South Coastal California Vernal Pool	No fragmentation	Highly Vulnerable to Stress	Moderately effective management
<input type="checkbox"/> Southern California Coastal Scrub	No fragmentation	Slightly Vulnerable to Stress	Effectively managed
<input type="checkbox"/> Southern California Dry-Mesic Chaparral	No fragmentation	Slightly Vulnerable to Stress	Effectively managed
<input type="checkbox"/> Riparian/Wetland	No fragmentation	Moderately Vulnerable to Stress	Moderately effective management

1. Are conservation easements, or buffers, in place to provide an ecosystem integrity benefit on the installation?

Options: Yes, No = opportunity exists, but easements/buffers have not been pursued, N/A = no opportunity, development is immediately adjacent to installation

Yes

Comment:

Vernal Pool Preserve at Chollas Heights and Murphy Canyon

2. Are Conservation Banking actions used to achieve positive outcomes and /or INRMP goals and objectives?

Options: Yes, No

2.a. If question 2 is "Yes", please describe.

Please enter Findings and Recommendations. Findings and Recommendations serve as additional clarification to the answers provided for this Focus Area, and they are encouraged in order to provide a better understanding of existing activities, issues to be addressed, and unique circumstances. **Note:** You will need to enter all answers to the above questions directly into the Navy Conservation Website prior to providing responses to Findings and Recommendations. Answers supplied online are scored, which generates a green-yellow-red score for each response. Findings and Recommendations are required for each ecosystem that scored as a yellow or red.

Findings:

Findings are required for answers that scored yellow or red. Findings explain why the score is yellow or red. Findings are encouraged for answers that scored green. This allows you to document natural resources management practices that are benefiting listed species.

Recommendations:

Recommendations are required for answers that scored yellow or red. Recommendations explain how the Findings will be mitigated. Recommendations are encouraged for answers that scored green. This allows you to document natural resources management practices that may be implemented to further improve management of listed species.

Findings

Recommendations

Section Score: 0.94

2. Listed Species & Critical Habitat

ATTENTION! DO NOT CLICK THE PRELOAD BUTTON ABOVE!!!

You will loose your data! For more infomation, [click here](#).

Focus Area Purpose: Evaluates the extent to which federally listed species have been identified and the INRMP provides conservation benefits to these species and their habitats.

Supplemental Information: The intent of this Focus Area is to identify the federally listed species that occur on a Navy installation, as well as assess if an INRMP provides the conservation benefits necessary to preclude designation of critical habitat for a particular species. The USFWS has defined criteria to determine if an INRMP provides adequate special management or protection. These criteria must be addressed in the INRMP to demonstrate that designation of critical habitat is not necessary, the Natural Resource Program and/or INRMP provides a conservation benefit, that the installation is implementing the necessary measures to protect and conserve the habitat, and provide certainty that the conservation effort will be effective. Answer the questions for each of the federally listed species selected from the preloaded list. The list is comprised of USFWS and NMFS federally threatened and endangered species.

Instructions: Please review the list and ensure that it is correct. To **ADD** a species select "New Item" and search for the species list. Select the name of the preloaded species to answer the questions for the current reporting period. To **ADD** species that are not on the pre-populated list or to **DELETE** species from the list please contact Mr. Matt Hawkins (matt.hawkins@navy.mil).

Comment on this Focus Area and associated Questions: Select this link below each question if you would like to elaborate on the answer provided. This is also a good way to document the assumptions made by all partners that contributed to the answer.

Status codes include:

E = endangered. A species in danger of extinction throughout all or a significant portion of its range.

T = threatened. A species likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

Assessment of Federally Listed Species and Critical Habitat

Species	Endemic Surveys (Habitat)	Beneficial Surveys (Habitat)	Beneficial Surveys (Population)	Goals	Critical Habitat	Exemption/Exclusion
Least Bell's vireo (Vireo bellii pusillus)	Yes	Yes	Yes	Moderate	N/A (Critical habitat designation was not proposed...	N/A
Coastal California gnatcatcher (Polioptila califor...)	Yes	Yes	Yes	Moderate	N/A (Critical habitat designation was not proposed...	N/A
San Diego fairy shrimp (Branchinecta sandiegonensi...)	Yes	Yes	Yes	Moderate	N/A (Critical habitat designation was not proposed...	N/A
San Diego button-celery (Eryngium aristulatum var....)	Yes	Yes	Yes	Moderate	N/A (Critical habitat designation was not proposed...	N/A
San Diego mesa-mint (Pogogyne abramsii)	Yes	Yes	Yes	Moderate	N/A (Critical habitat designation was not proposed...	N/A

Unoccupied Critical Habitat Questions

1. Has critical habitat (unoccupied) for any federally listed species not found on the installation been designated on the installation?

Options: Yes, No,

No

1.a. For which species?

User selects from preloaded federal species list.

2. Have management projects/actions addressing unoccupied critical habitat been clearly identified in the INRMP?

Options: Yes, No, N/A

N/A

3. Have management projects/actions addressing unoccupied critical habitat been clearly identified in the EPRWeb?

Options: Yes, No, N/A

N/A

Federally Proposed / Candidate Species / Species of Special Concern

Sub-Focus Area Purpose: *Evaluates the extent to which USFWS candidate species and NMFS species of special concern species have been identified and the INRMP addresses these species and their habitats or the ecosystems in which they are found.*

Instructions: *The list below should include all USFWS candidate species and NMFS species of special concern*

species, including USFWS Candidate Notice of Review (CNOR) and Work Plan (WP) lists, which have been documented or are likely to occur on your installation. Please add all species that have been documented or are likely to occur on your installation. To ADD a species select "New Item" and search for the species list. Select the name of the preloaded species to answer the question regarding which management approach benefits the species. To ADD species that are not on the pre-populated list or to DELETE species from the list please contact Mr. Matt Hawkins (matt.hawkins@navy.mil). Note: The "Comment on my response" option is available for each question and can be used to (1) provide supplemental information about how you answered a question for future reference or (2) provide feedback to HQ if you have any questions/concerns about a question.

Select "New Item" to add a candidate species and begin answering questions.

Federally Proposed / Candidate Species / Species of Special Concern

Candidate Species	Endemic	Level of Concern
<input type="checkbox"/> Hermes copper butterfly (<i>Lycaena hermes</i>)		

Please enter Findings and Recommendations. Findings and Recommendations serve as additional clarification to the answers provided for this Focus Area, and they are encouraged in order to provide a better understanding of existing activities, issues to be addressed, and unique circumstances. **Note:** You will need to enter all answers to the above questions directly into the Navy Conservation Website prior to providing responses to Findings and Recommendations. Answers supplied online are scored, which generates a green-yellow-red score for each response. Findings and Recommendations are required for each ecosystem that scored as a yellow or red.

Findings: Findings are required for answers that scored yellow or red. Findings explain why the score is yellow or red. Findings are encouraged for answers that scored green. This allows you to document natural resources management practices that are benefiting listed species.

Recommendations: Recommendations are required for answers that scored yellow or red. Recommendations explain how the Findings will be mitigated. Recommendations are encouraged for answers that scored green. This allows you to document natural resources management practices that may be implemented to further improve management of listed species.

Findings

Recommendations

Section Score: 0.90

3. Recreational Use and Access

ATTENTION! DO NOT CLICK THE PRELOAD BUTTON ABOVE!!!

You will loose your data! For more infomation, [click here](#).

Focus Area Purpose: Evaluate the availability and adequacy of public recreational use opportunities, such as fishing and hunting, and access for handicapped and disabled persons, given security and safety requirements for the installation.

Comment on this Focus Area and associated Questions: Select this link below each question if you would like to elaborate on the answer provided. This is also a good way to document the assumptions made by all partners that contributed to the answer.

1. Are there Natural Resources related recreational opportunities on the installation?

"Yes" = Yes "No recreation opportunities" = INRMP does not identify outdoor recreational opportunities or access areas for handicapped and disabled persons where resources exist and safety and security requirements allow. "N/A" = mission, security, safety, or environmental constraints limit/prohibit recreational opportunities

Options: Yes, No, N/A: Recreational opportunities are not available due to mission, security, safety, or

environmental constraints

Yes

Comment:

Recreational opportunities are mostly limited to MGRF, and main-base. Natural areas at housing areas are off-limits to the public, military, and DoD civilians.

2. If Natural Resources recreational opportunities are available, are they offered to the public? *

Options: Yes, No, N/A: Recreational opportunities are not available due to mission, security, safety, or environmental constraints

N/A: Recreational opportunities are not available due to mission, security, safety, or environmental constraints

3. If recreational opportunities are available, are they offered to DoD civilian personnel?*

Options: Yes, No, N/A: Recreational opportunities are not available due to mission, security, safety, or environmental constraints

Yes

4. If recreational opportunities are available, are they accessible by disabled veterans/Americans?

Options: Yes, No, N/A: Recreational opportunities are not available due to mission, security, safety, or environmental constraints

Yes

5. Are fees collected for outdoor recreational opportunities?*

Options: Yes, No, N/A: Recreational opportunities do not include hunting and fishing

N/A: Recreational opportunities do not include hunting and fishing

6. Are recreational facilities in good condition? *

Options: Yes, No, NA: Recreational opportunities are not available due to mission, security, safety, or environmental constraints

Yes

7. Are sustainable harvest goals in the INRMP effective for the management of the species' population? *

Options: Not effective, Minimal effectiveness, Moderate effectiveness, Effective, Highly effective, N/A: Recreational opportunities do not include hunting and fishing

N/A: Recreational opportunities do not include hunting and fishing

8. To what extent did the installation develop and provide public outreach/educational awareness, e.g. environmental educational opportunities, natural resource field trips/tours, pamphlets? *

Options: No public outreach provided, Low outreach, Moderate outreach, Good outreach, Excellent outreach, N/A

Moderate outreach

Comment:

Interpretive signs at: -MGRF -Chollas Heights -Murphy Canyon -Main base

9. Is there an active conservation law enforcement program (CLEP) on the installation? *

Options: Yes, No, N/A: recreational opportunities do not include hunting and fishing

No

NOTE: If your answer to Question #9 is "No" or "NA", skip to the "Findings" and "Recommendations" questions at the bottom of this page or [CLICK HERE](#).

If you clicked "Yes" in Question #9, you need to continue to the next section "Conservation Law Enforcement Questions".

Also, please note all questions in the section "Conservation Law Enforcement Questions" are NOT scored.

Conservation Law Enforcement Questions

10. How many total work-hours per year are dedicated to law enforcement? (Includes full-time and part-time personnel)

11. Does the law enforcement program include federal (Non-Navy Civilian), state, or local or contractor personnel? (Check all that apply)

Options: Federal (Non-Navy Civilian), State, Local, Contractor

12. Do you have any inter-jurisdictional agreements for conservation law enforcement with other military departments, Federal, tribal, state or local law enforcement, or land management agencies?

Options: Yes, No, N/A

13. Have conservation law enforcement officers completed the FLETC Land Management Police Training Program or equivalent?

Options: Yes, No, N/A

14. Is a Conservation Law Enforcement Plan included in your INRMP and/or ICRMP?

Options: Yes, No, N/A

15. Are Law Enforcement personnel routinely supporting other programs (Ex. Cultural Resources)?

Options: Yes, No, N/A

16. Please describe the funding sources used by the Law Enforcement Program

17. Please provide a brief description of the installation's Conservation Law Enforcement Program.

*Please enter Findings and Recommendations. Findings and Recommendations serve as additional clarification to the answers provided for this Focus Area, and they are encouraged in order to provide a better understanding of existing activities, issues to be addressed, and unique circumstances. **Note:** You will need to enter all answers to the above questions directly into the Navy Conservation Website prior to providing responses to Findings and Recommendations. Answers supplied online are scored, which generates a green-yellow-red score for each response. Findings and Recommendations are required for each ecosystem that scored as a yellow or red.*

Findings:

Findings are required for answers that scored yellow or red. Findings explain why the score is yellow or red. Findings are encouraged for answers that scored green. This allows you to document natural resources management practices that are benefiting listed species.

Recommendations:

Recommendations are required for answers that scored yellow or red. Recommendations explain how the Findings will be mitigated. Recommendations are encouraged for answers that scored green. This allows you to document natural resources management practices that may be implemented to further improve management of listed species.

Findings

Recommendations

Section Score: 0.76

▣

4. Sikes Act Cooperation (Partnership Effectiveness)

ATTENTION! DO NOT CLICK THE PRELOAD BUTTON ABOVE!!!

You will loose your data! For more infomation, [click here](#).

Focus Area Purpose: Determine to what degree USFWS, State Fish and Wildlife Agency and, when appropriate, NMFS Service, partnerships are cooperative and result in effective INRMP development, review for operation and effect, and mutual agreement.

Comment on this Focus Area and associated Questions Select this link below each question if you would like to elaborate on the answer provided. This is also a good way to document the assumptions made by all partners that contributed to the answer.

1. Was the USFWS invited to participate in the annual INRMP/Natural Resources Program review?

Options: Yes, No

Yes

1.a. By what method was the USFWS invited to participate in the annual INRMP/Natural Resources Program review?

Options: Telephone call, Electronic mail, Official letter, Multiple methods, Other, NA (USFWS was not invited)

Electronic mail

1.b. Did the USFWS respond to the invitation to participate in the annual INRMP/Natural Resources Program review?

Options: Yes, No, N/A

Yes

1.c. How many attempts were made to invite the USFWS to participate in the annual INRMP/Natural Resources Program review?

Options: 0-3, 4-6, 7-10, >10, NA (USFWS was not invited)

0-3

1.d. Did the USFWS participate in the annual INRMP/Natural Resources Program review?

Options: Yes, No

Yes

1.e. If the USFWS participated in the annual INRMP/Natural Resources Program review, was it recognized as a review for operation and effect?

Options: Yes, No

Yes

1.f. If the USFWS did not participate in the annual review, what type of correspondence was received from the USFWS to inform the installation that they were not able to participate?

Options: Telephone call, Electronic mail, Official letter, Other

1.g. If the USFWS did not participate in the annual INRMP/Natural Resources Program review, was a separate meeting held/correspondence sent as a review for operation and effect? When?

When? User enters date in comment text box below question if answered "Yes".

Options: Yes, No

Comment:

USFWS participated

1.h. Was a report of the previous year's annual review submitted to the USFWS during this reporting period?

Options: Yes, No

Yes

2. Was the State Fish and Wildlife Agency invited to participate in the annual INRMP/Natural Resources Program review?

Options: Yes, No

Yes

2.a. By what method was the State Fish and Wildlife Agency invited to participate in the annual INRMP/Natural Resources Program review?

Options: Telephone call, Electronic mail, Official Letter, Multiple methods, Other, NA (the State Fish and Wildlife Agency was not invited)

Electronic mail

2.b. Did the State Fish and Wildlife Agency respond to the invitation to participate in the annual INRMP/Natural Resources Program review?

Options: Yes, No, N/A

Yes

2.c. How many attempts were made to invite the State Fish and Wildlife Agency to participate in the annual INRMP/Natural Resources Program review?

Options: 0-3, 4-6, 7-10, >10, NA (the State Fish and Wildlife Agency was not invited)

0-3

2.d. Did the State Fish and Wildlife Agency participate in the annual INRMP/Natural Resources Program review?

Options: Yes, No, N/A

Yes

2.e. If the State Fish and Wildlife Agency participated in the annual INRMP/Natural Resources Program review, was it recognized as a review for operation and effect?

Options: Yes, No, N/A

Yes

2.f. If the State Fish and Wildlife Agency did not participate in the annual review, what type of correspondence was received from the State Fish and Wildlife Agency to inform the installation that they were not able to participate?

Options: Telephone call, Electronic mail, Official letter, Other

2.g. If the State Fish and Wildlife Agency did not participate in the annual INRMP/Natural Resources Program review, was a separate meeting held/correspondence sent as a review for operation and effect? If Yes, When?

When? User enters date in comment text box below question if answered "Yes".

Options: Yes, No, N/A

N/A

2.h. Was a report of the previous year's annual review submitted to the State Fish and Wildlife Agency during this reporting period?

Options: Yes, No, N/A

No

3. Was NMFS/NOAA Fisheries invited to participate in the annual INRMP/Natural Resources Program review, if applicable?

Options: Yes, No, N/A

N/A

Comment:

Marine resources are covered under the San Diego Bay INRMP

3.a. By what method was NMFS/NOAA Fisheries invited to participate in the annual INRMP/Natural Resources Program review, if applicable?

Options: Telephone call, Electronic mail, Official letter, Multiple, Other, N/A

N/A

3.b. Did NMFS respond to the invitation to participate in the annual INRMP/Natural Resources Program review, if applicable?

Options: Yes, No, N/A

N/A

3.c. How many attempts were made to invite the NMFS/NOAA Fisheries to participate in the annual INRMP/Natural Resources Program review, if applicable? *

Options: 0-3, 4-6, 7-10, >10, N/A

N/A

3.d. Did NMFS/NOAA Fisheries participate in the annual INRMP/Natural Resources Program review, if applicable?

Options: Yes, No, N/A

N/A

3.e. If NMFS/NOAA Fisheries participated in the annual INRMP/Natural Resources Program review, was it recognized as a review for operation and effect, if applicable?

Options: Yes, No, N/A

N/A

3.f. If NMFS/NOAA Fisheries did not participate in the annual INRMP/Natural Resources Program review, was a separate meeting held/correspondence sent as a review for operation and effect, if applicable? If Yes, when?

When? User enters date in comment text box below question.

Options: Yes, No, N/A

N/A

3.g. If NMFS/NOAA Fisheries did not participate in the annual review, what type of correspondence was received from NMFS/NOAA to inform the installation that they were not able to participate, if applicable?

Options: Telephone call, Electronic mail, Official letter, Other, NA

3.h. Was a report of the previous year's annual review submitted to NMFS/NOAA during this reporting period, if applicable?

Options: Yes, No, N/A

N/A

4. What is the level of collaboration/cooperation between Sikes Act partners?

Sikes Act partners: USFWS, State Fish and Wildlife Agency, and NOAA Fisheries Service, if applicable.

Options: None, Minimal collaboration/cooperation, Satisfactory collaboration/cooperation, Effective collaboration/cooperation, Highly effective collaboration/cooperation

Effective collaboration/cooperation

5. How well are installation natural resource management goals and objectives aligned with conservation goals of Sikes Act partners, e.g. USFWS regional goals and State Wildlife Action Plans (SWAPs)?

Options: Not aligned, Somewhat aligned, Completely aligned

Somewhat aligned

*Please enter Findings and Recommendations. Findings and Recommendations serve as additional clarification to the answers provided for this Focus Area, and they are encouraged in order to provide a better understanding of existing activities, issues to be addressed, and unique circumstances. **Note:** You will need to enter all answers to the above questions directly into the Navy Conservation Website prior to providing responses to Findings and Recommendations. Answers supplied online are scored, which generates a green-yellow-red score for each response. Findings and Recommendations are required for each ecosystem that scored as a yellow or red.*

Findings:

Findings are required for answers that scored yellow or red. Findings explain why the score is yellow or red. Findings are encouraged for answers that scored green. This allows you to document natural resources management practices that are benefiting listed species.

Recommendations:

Recommendations are required for answers that scored yellow or red. Recommendations explain how the Findings will be mitigated. Recommendations are encouraged for answers that scored green. This allows you to document natural resources management practices that may be implemented to further improve management of listed species.

Findings

Recommendations

Section Score: 0.78

□

5. Team Adequacy

ATTENTION! DO NOT CLICK THE PRELOAD BUTTON ABOVE!!!

You will loose your data! For more infomation, [click here](#).

Focus Area Purpose: Assess the adequacy of the natural resources team (professionally trained natural resources management and/or installation support personnel) in accomplishing INRMP/Natural Resources Program goals and objectives at each installation.

Comment on this Focus Area and associated Questions Select this link below each question if you would like to elaborate on the answer provided. This is also a good way to document the assumptions made by all partners that contributed to the answer.

1. Is there a Navy professional Natural Resources Manager assigned by the Regional Commander/Installation Commanding Officer?

COs of shore activities holding Class 1 plant accounts shall appoint, by letter, an installation Natural Resources Manager/Coordinator whose duties include ensuring that the CO is informed regarding: natural resources issues, conditions of natural resources, objectives of the INRMP, and potential or actual conflicts between mission requirements and natural resources mandates. Designated installation POC's are responsible for the inherently governmental decisions made on behalf of the installation and CO with regard to Sikes Act compliance. [OPNAVINST 5090.1C]

Options: Yes, No

Yes

2. Is there an on-site Navy professional Natural Resources Manager?

Options: Yes, No

No

3. Is there adequate installation staff assigned or available to properly implement the INRMP/Natural Resources Program goals and objectives? *

staff assigned or available: Defined as NR staff or other reach back EV staff.

Options: Yes, No

Yes

4. How well do higher echelon offices support the installation natural resources program, e.g. reach back support for execution, policy support, etc.)?

Options: No support, Minimal support, Satisfactory support, Well supported, Very well supported

Satisfactory support

5. The team is enhanced by the use of contractors.

Contractors: Defined as supplemental staff to the onsite NR staff, not contractors working in support of contracted projects.

Options: Disagree, Somewhat agree, Neutral, Agree, Strongly agree

Disagree

6. The team is enhanced by the use of volunteers.

Options: Disagree, Somewhat agree, Neutral, Agree, Strongly agree, N/A

Disagree

7. The Natural Resources team is adequately trained to implement the goals and objectives of the INRMP.

Options: Disagree, Somewhat agree, Neutral, Agree, Strongly agree

Disagree

Please enter Findings and Recommendations in the space provided below. Findings and Recommendations are required if the score for this focus area results in a Yellow or Red score. You will be unable to proceed to the next focus area until Findings and Recommendations have been entered.

If your score is Green, Findings and Recommendations serve as additional clarification to the answers provided for this Focus Area, and they are encouraged in order to provide a better understanding of existing activities, issues to be addressed, and unique circumstances.

Findings:

Findings are required for answers that scored yellow or red. Findings explain why the score is yellow or red. Findings are encouraged for answers that scored green. This allows you to document natural resources management practices that are benefiting listed species.

Recommendations:

Recommendations are required for answers that scored yellow or red. Recommendations explain how the Findings will be mitigated. Recommendations are encouraged for answers that scored green. This allows you to document natural resources management practices that may be implemented to further improve management of listed species.

Findings

No on-site NR staff member for NMCS/NBSD and NR manager assigned part time. NR program would benefit from additional staffing.

Recommendations

No on-site NR staff member for NMCS/NBSD and NR manager assigned part time. NR program would benefit from additional staffing.

Section Score: 0.51

□

6. INRMP Implementation

ATTENTION! DO NOT CLICK THE PRELOAD BUTTON ABOVE!!!

You will loose your data! For more infomation, [click here](#).

Focus Area Purpose: Evaluates the execution of actions taken to meet goals and objectives outlined in the INRMP.

Supplemental Information: The intent of this Focus Area is to assess how well actions are being implemented to execute the goals and objectives of the INRMP. Actions can include projects submitted via EPRWeb, as well as activities executed with alternative funds, not programmed through EPRWeb, or project that do not require funding including those that are carried out by the use of volunteers or cooperative partnerships with other entities.

For each project or action executed, or partnership forged, or initiative engaged with, during the reporting period for the installation, the following questions are asked to evaluate INRMP action implementation. Note: The project number, project title, funding source, and total obligated are pre-populated with data from EPRWeb, if applicable. The user has the ability to edit the total obligated amount, if necessary. To ADD more actions simply click on the plus sign "+" as needed.

Instructions: Select a project from the list below (imported from EPRWeb) to begin answering questions. Select the red 'X' to delete a project, if a preloaded project doesn't apply to the site (s) or is not a project that occurred during the current reporting period. If this is an incomplete list, select "New Item" to add additional INRMP projects/actions, e.g. emergent projects or actions that do not require funding, and begin answering questions.

Comment on this Focus Area and associated Questions Select this link below each question if you would like to elaborate on the answer provided. This is also a good way to document the assumptions made by all partners that contributed to the answer.

Assessment of INRMP Implementation

FY	Project #	Project Title	Obligated (\$)	Spent (\$)	Ecosystem Benefited
□	2013 00245NR103	1 SW NBSD - Vegetation Mgt Plan and Implementation...	\$	\$	South Coastal California Vernal Pool
□	2013 00245NR206	1 SW, NBSD Federally Listed Species Survey	\$	\$	South Coastal California Vernal Pool
□	2013 00242NR020	2 BO SW Metro Wildlife Assist Support	\$	\$	Riparian/Wetland
□	2013 00242NR010	2 SW CNRSW Housing - NR Management and BO Complian...	\$	\$	South Coastal California Vernal Pool

FY	Project #	Project Title	Obligated (\$)	Spent (\$)	Ecosystem Benefited
	2013 00242NR033	2 SW San Diego Metro Area Project Wildlife Support	\$	\$	Riparian/Wetland
	2013 00245NN614	CHS SW NBSD - MGRF Invasive Plant Species Control	\$	\$	Southern California Coastal Scrub
	2013 00245NR106	SW NBSD - Erosion Control Plan & Implementation	\$	\$	Southern California Coastal Scrub
	2013 00245NR107	SW NBSD - Fire Management Plan Update & Implementa...	\$	\$	South Coastal California Vernal Pool
	2013 00245NR105	SW NBSD - Invasive Plant Species Control for Endan...	\$	\$	South Coastal California Vernal Pool
	2013 00245NN607	SW, NBSD - INRMP	\$	\$	Southern California Coastal Scrub
	2013 00245NR205	SW, NBSD Exotic Species Management for Endangered ...	\$	\$	Southern California Coastal Scrub
	2013 00245NR006	SW, NBSD Natural Resources Inventory	\$	\$	South Coastal California Vernal Pool

For each INRMP action executed during the reporting period for the installation, the following questions are asked to evaluate the amount of funding spent on listed species related-actions.

Assessment of Listed Species Benefitted by INRMP Implementation

Action	Species	Spent
CHS SW NBSD - MGRF Invasive Plant Species Control	Least Bell's vireo (<i>Vireo bellii pusillus</i>)	\$
00245NR105 - Invasive species control	Least Bell's vireo	\$
00245NR205 - NBSD Invasive Plant Control for Endan...	Coastal California gnatcatcher	\$
SW NBSD - Fire Management Plan Update & Implementa...	San Diego fairy shrimp (<i>Branchinecta sandiegonensi...</i>)	\$
SW NBSD - Erosion Control Plan & Implementation	Coastal California gnatcatcher (<i>Polioptila califor...</i>)	\$
1 SW NBSD - Vegetation Mgt Plan and Implementation...	Coastal California gnatcatcher (<i>Polioptila califor...</i>)	\$
2 SW CNRSW Housing - NR Management and BO Complian...	San Diego fairy shrimp (<i>Branchinecta sandiegonensi...</i>)	\$

General INRMP Implementation Questions

1. Do the goals and objectives of the INRMP/Natural Resources Program support other conservation partnerships/initiatives?

Options: Yes, No

Yes

2. Which conservation partnerships / initiatives are supported?

Select all that apply

Partners in Amphibian and Reptile Conservation (PA...

Comment:

MSCP

3. To what level is the Natural Resource program and/or INRMP meeting USFWS conservation management expectations?

Options: Dissatisfied, Minimally satisfied, Somewhat satisfied, Completely satisfied, More than satisfied

Somewhat satisfied

4. To what level is the Natural Resource and/or INRMP meeting State Fish and Wildlife Agency conservation management expectations?

Options: Dissatisfied, Minimally satisfied, Somewhat satisfied, Completely satisfied, More than satisfied

Somewhat satisfied

5. To what level are Natural Resource program executions meeting NMFS/NOAA conservation management expectations, if applicable?

Options: N/A: Not supported, Minimally supported, Satisfactorily supported, Well supported, Very well supported

Comment:

Although this is N/A, selecting N/A significantly reduces the score.

6. To what extent has the INRMP/Natural Resources program successfully supported other mission areas? (e.g. encroachment, BASH, range support, port operations, air operations, facilities management, etc.)

Options: Not supported, Minimally supported, Satisfactorily supported, Well supported, Very well supported

Well supported

7. Are migratory birds adequately addressed in the INRMP for this installation to support the mission and needed NEPA analyses?

Options: Yes, No

8. Are Cooperative Agreements used to execute natural resources program requirements?

Options: Yes, No

No

9. Describe any obstacles to INRMP implementation.

Please enter Findings and Recommendations in the space provided below. Findings and Recommendations are required if the score for this focus area results in a Yellow or Red score. You will be unable to proceed to the next focus area until Findings and Recommendations have been entered.

If your score is Green, Findings and Recommendations serve as additional clarification to the answers provided for this Focus Area, and they are encouraged in order to provide a better understanding of existing activities, issues to be addressed, and unique circumstances.

Findings:

Findings are required for answers that scored yellow or red. Findings explain why the score is yellow or red. Findings are encouraged for answers that scored green. This allows you to document natural resources management practices that are benefiting listed species.

Recommendations:

Recommendations are required for answers that scored yellow or red. Recommendations explain how the Findings will be mitigated. Recommendations are encouraged for answers that scored green. This allows you to document natural resources management practices that may be implemented to further improve management of listed species.

Findings

Recommendations

Section Score: 0.78

□

7. INRMP (NR Program) Support of the Installation Mission

ATTENTION! DO NOT CLICK THE PRELOAD BUTTON ABOVE!!!

You will loose your data! For more infomation, [click here](#).

Focus Area Purpose: Evaluate the level to which existing natural resources requirements support the installation's ability to sustain the current operational mission, ensuring no net loss of mission capability.

NOTE: As always, this focus area is to be completed by the Regional Commander/Commanding Officer (CO) or his/her designee with the responsibility for Title 10 installation assets and resources. Natural Resource Manager(s) are available to facilitate and support this process.

Comment on this Focus Area and associated Questions *Select this link below each question if you would like to elaborate on the answer provided. This is also a good way to document the assumptions made by all partners that contributed to the answer.*

Mission statement

Our Mission is to deliver the highest standard of support and quality of life services to the Fleet, Fighter and Family.

1. The Natural Resource program effectively considers current and potential future mission sustainment.

Options: Strongly disagree, Disagree, Neutral, Agree, Strongly agree

Strongly agree

2. What is the level of coordination between natural resources personnel and other installation departments and military staff?

Options: No coordination, Minimal coordination, Satisfactory coordination, Effective coordination, Highly effective coordination

Highly effective coordination

3. To what extent does the INRMP support the mission by minimizing possible constraints imposed by regulatory requirements?

Options: Not supported, Minimally supported, Satisfactorily supported, Well supported, Very well supported

Very well supported

4. To what extent has there been a net loss of training lands or mission-related operational/training activities?

Options: Mission is fully impeded; training activities cannot be conducted due to regulatory requirements, Mission/Training activities are somewhat impeded with workarounds due to regulatory requirements, Neutral, No loss occurred, Mission has seen benefits

No loss occurred

5. Please provide examples of how the INRMP or Natural Resources Program has resulted in any mission impacts (work-around, etc) or specific benefits (e.g. able to increase training areas by 100 acres).

Regional Commander / Commanding Officer Signature

In the Regional Commander / Commanding Officer Section, this is a simple form to track who your Regional Commander / Commanding Officer is and that they have seen your results. It is not required that they physically type in their name and rank below.

Name

Curt Jones

Rank

Captain

Please enter Findings and Recommendations in the space provided below. Findings and Recommendations are required if the score for this focus area results in a Yellow or Red score. You will be unable to proceed to the next focus area until Findings and Recommendations have been entered.

If your score is Green, Findings and Recommendations serve as additional clarification to the answers provided for this Focus Area, and they are encouraged in order to provide a better understanding of existing activities, issues to be addressed, and unique circumstances.

Findings:

Findings are required for answers that scored yellow or red. Findings explain why the score is yellow or red. Findings are encouraged for answers that scored green. This allows you to document natural resources management practices that are benefiting listed species.

Recommendations:

Recommendations are required for answers that scored yellow or red. Recommendations explain how the Findings will be mitigated. Recommendations are encouraged for answers that scored green. This allows you to document natural resources management practices that may be implemented to further improve management of listed species.

Findings

Recommendations

Section Score: 0.91

▣

Agriculture and Forestry Program Status

ATTENTION! DO NOT CLICK THE PRELOAD BUTTON ABOVE!!!

You will loose your data! For more infomation, [click here](#).

A. There is an active agriculture out-lease program on this installation.

Options: True, False

False

If you clicked "True" for Question "A" about Agriculture programs, you must fill out the section below called "Agricultural Out-lease Program".

B. There is an active forestry program on this installation.

Options: True, False

False

If you clicked "True" for Question "B" about forestry, you must fill out the section below called "Forestry Program". [Click here](#) to jump to Forestry questions.

If you selected "False" for questions A. and B., then skip to the end of this page or [click here](#) and click "Save".

Agricultural Out-lease Program

1. What is the total number # of leased areas?
2. What is the total number # of leased acres?

3. What is the Annual lease income?

4. What are the annual expenses?

5. Do any leases involve in-kind payments?

Options: Yes, No, N/A

6. What is the number of in-kind leases?

7. What are the leases for?

Options: Crop Production, Hay, Grazing, Other

8. What is the primary land use where agriculture out-leasing occurs?

GS-0401-12

9. Are additional lands available for agriculture out-leasing?

Options: Yes, No, N/A

10. What is the number of additional acres available?

11. Do you have an apiary program?

Options: Yes, No

12. **If Question 11 is "Yes"**, is the apiary activity part of the agriculture out-lease program?

13. How many personnel are funded through agriculture out-lease funds?

14. Primary installation agriculture program POC:

First Name:

Last Name:

Phone:

Email:

Forestry Program

1. What is the number of forested acres?

2. Do you have a commercial forest program?

Options: Yes, No

3. What is the annual program revenue?

4. What are the annual expenses?

5. What is the number acres regenerated through planting?

6. How many acres are naturally regenerated?

7. What is the number of acres of longleaf pine (*Pinus palustris*)?

8. What are the primary commercial species managed? (please use scientific name and separate species names by commas)

9. Is prescribed burning used?

Options: Yes, No

10. **If Question 9 is "Yes"**, what is the number of acres burned in the past year?

11. How many personnel are funded through forestry funds.

12. Primary installation forestry program POC:

First Name:

Last Name:

Phone:

Email:

Summary

ATTENTION! DO NOT CLICK THE PRELOAD BUTTON ABOVE!!!

You will loose your data! For more infomation, [click here](#).

1. As a result of this year's annual review, have any additional actions been identified that should be considered for incorporation into the INRMP?

Options: Yes, No

No

1.a. If Question 1 is "Yes", Please describe additional actions?

2. What are the findings and recommendations that resulted from the annual review?

A "finding" in general is something within the Natural Resources Program that needs further attention. Examples include: Communication, Coordination, Methodology, Activities to be included or excluded, Timing or schedule adjustments, etc.

3. In addition to any recommendations submitted in the previous 7 Focus Areas, please provide any additional or general recommendations?

A "recommendation" in general is a solution to a finding (see above) that would improve some aspect of the Natural Resources program. Examples include: Regular meetings or increased communication, increased focus or emphasis on conservation measures, adjustments to methods used, increased or decreased activities that may provide benefits to a given resource(s).

4. List the top three accomplishments for the Natural Resources Program during this reporting period.

4a. [1st accomplishment]*

Successfull amendedment of Housing Biological Opinion to include the use of herbicide within vernal pool areas. The use of herbicide has significantly increased success rate of weed control, and will reduce future costs associated with NR management of vernal pool preserve. Reduce costs and increased efficiency of vernal pool management enhances military readiness by (by protecting the Navy's ability to utilize its land) through quality conservation planning.

4b. [2nd accomplishment]*

During 2013, over 9 acres of ESA species habitat was rehabilitated (Native outplanting, invasive weed control, and erosion control) at MGRF. Quality natural resources management will preclude Critical Habitat listing, reducing the risks of encumbrances to the military mission.

4c. [3rd accomplishment]*

Effective Natural Resources coordination with housing areas and MGRF to reduce fuel loads, has minimized human health and safety issues for fleet, fighter, and family.

Scorecard

Focus Area	Final
1. Natural Resources Management (Ecosystem Integrity)	0.94
2. Listed Species & Critical Habitat	0.90
3. Recreational Use and Access	0.76
4. Sikes Act Cooperation (Partnership Effectiveness)	0.78
5. Team Adequacy	0.51
6. INRMP Implementation	0.78
7. INRMP (NR	

Focus Area	Final
Program) Support of the Installation Mission	0.91
	0.80

Legend: □ 0.00-0.33 □ 0.34-0.66 □ 0.67-1.00 □ not complete

Legend: Green (1.00-0.67), Yellow (0.66-0.34), Red (0.33-0.0)

To finalize your scorecard, please save this form, and then select the Submit button above.

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APPENDIX K

MEMORANDA OF UNDERSTANDING

**MEMORANDUM OF UNDERSTANDING
AMONG
THE U.S. DEPARTMENT OF DEFENSE
AND
THE U.S. FISH AND WILDLIFE SERVICE
AND
THE INTERNATIONAL ASSOCIATION OF FISH AND WILDLIFE AGENCIES
FOR A
COOPERATIVE INTEGRATED NATURAL RESOURCE MANAGEMENT PROGRAM
ON MILITARY INSTALLATIONS**

A. PURPOSE

The purpose of this Memorandum of Understanding (MOU) is to establish a cooperative relationship between the U.S. Department of Defense (DoD), the U.S. Department of the Interior, Fish and Wildlife Service (FWS), and the State fish and wildlife agencies as represented by the International Association of Fish and Wildlife Agencies (IAFWA) in preparing, reviewing, and implementing integrated natural resource management plans (INRMPs) on military installations.

B. BACKGROUND

In recognition that military lands have significant natural resources, Congress enacted the Sikes Act in 1960 to address wildlife conservation and public access on military installations. The 1997 amendments to the Sikes Act require the DoD to develop and implement an INRMP for each military installation with significant natural resources. The INRMP must be prepared in cooperation with the FWS and the State fish and wildlife agency (States) and reflect the mutual agreement of the parties concerning conservation, protection, and management of fish and wildlife resources on military lands.

INRMPs provide for the management of natural resources, including fish, wildlife, and plants. They incorporate, to the maximum extent practicable, ecosystem management principles and provide the landscape necessary for the sustainment of military land uses. INRMPs allow for multipurpose uses of resources, including public access necessary and appropriate for those uses, provided such access does not conflict with military land use requirements. Effective partnering among the DoD, the FWS, and the States, initiated early in the planning process at national, regional, and the military installation levels, is essential to the development and implementation of comprehensive INRMPs. When such partnering involves the participation of all parties and synchronization of INRMPs with existing FWS and State natural resource management plans, the mutual agreement of all parties is achieved more easily. Consistent with the use of military installations to ensure the readiness of the Armed Forces, the purpose of INRMPs is to provide for the conservation and rehabilitation of natural resources on military lands. Thus, a clear understanding of land use objectives for military lands should enable DoD, the FWS, and the States to share a common understanding of land management requirements while preparing and reviewing INRMPs.

This MOU addresses the responsibilities of the Parties to facilitate optimum management of natural resources on military installations. It replaces a DoD-FWS MOU on "Ecosystem-based Management of Fish, Wildlife and Plant Resources on Military Lands" which expired May 17, 2004.

C. AUTHORITIES

This MOU is established under the authority of the Sikes Act, as amended, 16 U.S.C. 670a-670f, which requires the Secretary of Defense to carry out a program to provide for the conservation and rehabilitation of natural resources on military installations in cooperation with the FWS and the State fish and wildlife agencies. The DoD's primary mission is national defense. DoD manages approximately 30 million acres of land and waters under the Sikes Act to conserve and protect biological resources while supporting sustained military land use.

The FWS manages approximately 96 million acres of the National Wildlife Refuge System, and administers numerous fish and wildlife conservation and management statutes and authorities, including: the Fish and Wildlife Coordination Act, the Migratory Bird Treaty Act of 1918, the Endangered Species Act, the Marine Mammal Protection Act, the Bald and Golden Eagle Protection Act, the Anadromous Fish Conservation Act, the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990, the Federal Noxious Weed Act, the Alien Species Prevention Enforcement Act of 1992, the North American Wetland Conservation Act, and the Coastal Barrier Resources Act.

The States in general possess broad trustee and police powers over fish and wildlife within their borders, including – absent a clear expression of Congress' intent to the contrary – fish and wildlife on Federal lands within their borders. Where Congress has given Federal agencies certain conservation responsibilities, such as for migratory birds or species listed as threatened or endangered under the Endangered Species Act, the States, in most cases, have cooperative management jurisdiction.

The Sikes Act (16 U.S.C. 670c-1) allows the Secretary of a military department to enter into cooperative agreements with States, local governments, nongovernmental organizations, and individuals to provide for the maintenance and improvement of natural resources, or to benefit natural and cultural resources research, on DoD installations.

The Sikes Act (16 U.S.C. 670f(b)) also encourages the Secretary of Defense, to the greatest extent practicable, to enter into agreements to use the services, personnel, equipment, and facilities, with or without reimbursement, of the Secretary of the Interior in carrying out the provisions of this section.

The Economy Act (31 U.S.C. 1535 and 1536) allows a Federal agency to enter into an agreement with another Federal agency for services, when those services can be rendered in a more convenient and cost effective manner by another Federal agency.

The Intergovernmental Cooperation Act of 1968 (P.L. 90-577 (82 Stat. 1098)) allows the "improvement of the administration of grants-in-aid to the States, to permit provision of reimbursable technical services to State and local government.

D. RESPONSIBILITIES

The Parties to this agreement hereby enter into a cooperative program of INRMP development and implementation with mutually agreed-upon fish and wildlife conservation objectives to satisfy the goals of the Sikes Act.

- 1. The DoD, the FWS and IAFWA (the Parties) mutually agree, in accordance with all applicable Federal, State and local laws and regulations:**
 - a. To meet at least annually to discuss implementation of this MOU. The DoD will coordinate the annual meeting and any other meetings related to this MOU. Proposed amendments to the MOU should be presented in writing to the parties at least 15 days prior to the annual meeting. The terms of this MOU and any proposed amendments may be reviewed at the annual meeting. The meeting may also review mutual Sikes Act accomplishments, research and technology needs, and other emerging issues.
 - b. To establish a Sikes Act Tripartite Working Group consisting of representatives from the Parties. This Working Group will meet at least quarterly to discuss and develop projects and documents to assist in the preparation and implementation of INRMPs and to discuss Sikes Act issues of national importance.
 - c. The Sikes Act Tripartite Working Group will encourage the establishment of INRMP Development and Implementation Teams to facilitate early communication during preparation, review, revision or implementation of an INRMP and to ensure that such INRMPs are comprehensive and implemented as mutually agreed.
 - d. Supplemental Sikes Act MOUs or other agreements may be developed at the regional and/or State level.
 - e. To recognize the current DoD and FWS Sikes Act Guidelines on <http://www.fws.gov> and <http://www.denix.osd.mil> as the guidance for communication and cooperation of the Parties represented by this MOU.
 - f. That none of the Parties to the MOU is relinquishing any authority, responsibility, or duty as required by law, regulation, policy, or directive.

- g. To engage in sound management practices for natural resource protection and management pursuant to this MOU with due regard for military readiness, the welfare of the public, native fish and wildlife, threatened and endangered species, and the environment.
- h. Consistent with DoD's primary military mission and to the extent reasonably practicable, to promote the sustainable multipurpose use of natural resources on military installations, to include hunting, fishing, trapping, and nonconsumptive uses such as wildlife viewing, boating, and camping.
- i. To designate the individuals listed below as the national representative from each signatory to participate in the activities pursuant to this MOU. Representatives may also be designated at the regional and local levels to participate in similar Sikes Act planning or coordination activities.
 - i. DoD: Conservation Team Leader, ODUSD (I&E) EM, 1225 Clark Street Suite 1500, Arlington, VA 22202-4336
 - ii. FWS: National Sikes Act Coordinator, U.S. Fish and Wildlife Service, 4401 North Fairfax Drive, Room 400, Arlington, VA 22203.
 - iii. IAFWA: Executive Vice-President, IAFWA, 444 North Capitol Street, NW, Suite 544, Washington, DC 20001.

2. DoD agrees to:

- a. Communicate the establishment of this MOU to all DoD Components.
- b. Take the lead in the development of policies related to INRMP development and implementation and seek the cooperation of the FWS and the State fish and wildlife agencies during development, review, and implementation.
- c. Ensure distribution of the DoD and revised FWS Sikes Act Guidelines to all appropriate DoD offices at every level of command.
- d. Encourage military installations to invite appropriate FWS and State fish and wildlife agency offices to participate in developing and updating the INRMPs. All such invitations should be extended well in advance of the needed date for the product or work in order to facilitate meaningful participation by all three Parties.
- e. Encourage military installations to take advantage of FWS and State fish and wildlife agency natural resources expertise through the use of Economy Act transfers and cooperative agreements. Priority should be given to projects that:

- i. Sustain the military mission;
 - ii. Consider the strategic planning priorities of the FWS and the State fish and wildlife agency; and
 - iii. Effectively apply the principles of ecosystem management.
- f. Encourage military installation to identify INRMP project requirements and give priority to those that:
 - i. Ensure conservation of natural resources while sustaining military mission activities;
 - ii. Achieve compliance with Federal, State, and local laws; and
 - iii. Provide adequate staffing for the development and implementation of the INRMP.
- g. Discuss with the FWS and the State fish and wildlife agencies all issues of mutual interest related to the protection, conservation, and management of fish and wildlife resources on DoD installations, and obtain the mutual agreement of the FWS and the States regarding all INRMP provisions related to activities within their legal jurisdiction.
- h. Subject to mission, safety and security requirements, provide public access to military installations to facilitate the sustainable multipurpose use of its natural resources.
- i. Identify DoD natural resource research needs, and develop research proposals with input from FWS and/or the IAFWA.
- j. Encourage the Military Services to establish natural resources management liaisons to facilitate:
 - i. Coordination and mutual agreement of INRMPs;
 - ii. Development and implementation of cooperative regional and local natural resource conservation partnerships and conservation initiatives with FWS and State fish and wildlife agency offices; and
 - iii. Natural resources conservation technology transfer and training initiatives between the Military Services, Federal land management agencies, and State fish and wildlife agencies.

3. FWS agrees to:

- a. Communicate the establishment of this MOU to each FWS Regional Office and appropriate field stations in close proximity to military installations.
- b. Distribute the DoD and revised FWS Sikes Act Guidelines to each FWS Regional Office and appropriate field station in close proximity to military installations.
- c. Designate regional and field station FWS liaisons to develop partnerships and assist the DoD in implementing joint management of ecosystem-based natural resource management programs.
- d. Identify FWS personnel needs for the development, review, updating, and implementation of INRMPs and expedite the fulfillment of those needs, as appropriate, based on funding and FWS priorities.
- e. Provide technical assistance to the DoD in managing Federal trust resources such as endangered species, migratory birds, interjurisdictional fisheries, invasive species, contaminants, wetlands, coastal resources, law enforcement, or other natural resource issues within the scope of FWS responsibilities, funding constraints and expertise.
- f. Work with the DoD to coordinate military natural resource research efforts and the creation of a consolidated source of information, with a particular emphasis on research on listed species and species at-risk.
- g. Disseminate upcoming proposed listing and critical habitat designations to DoD Headquarters offices and potentially affected installations as part of outreach efforts before the Federal Register publication of such proposed designations.
- h. Provide law enforcement support to protect fish, wildlife and plant resources on military installations within the jurisdiction of the FWS.

4. IAFWA agrees to:

- a. Communicate the establishment of this MOU to each State fish and wildlife agency director and appropriate field offices.
- b. Distribute the DoD and revised FWS Sikes Act Guidelines to each State fish and wildlife agency director and appropriate field offices.
- c. Facilitate and coordinate with the States to encourage them to:

- i. Participate in the development, review, updating and implementation of INRMPs upon request of military installations.
- ii. Designate State liaisons to assist in developing partnerships and to assist the DoD in implementing natural resource conservation and management programs.
- iii. Identify State wildlife management areas in close proximity to military installations and, where appropriate, participate in the joint management of ecosystem-based natural resource management projects.
- iv. Provide technical assistance to the DoD in managing natural resource issues such as endangered species, migratory birds, interjurisdictional fisheries, invasive species, contaminants, wetlands, coastal resources, law enforcement, outdoor recreation, or other natural resource issues within the scope of State responsibility and expertise.
- v. Identify State personnel needs for the development, review and implementation of INRMPs and expedite the fulfillment of these needs as appropriate based on available funding and State priorities.
- vi. Coordinate current and proposed State natural resource research efforts with those that may relate to DoD installations.
- vii. Coordinate with DoD installations in development of comprehensive state wildlife conservation plans.

E. STATEMENT OF NO FINANCIAL OBLIGATION

This MOU does not impose any financial obligation on the part of any signatory.

F. ESTABLISHMENT OF COOPERATIVE AGREEMENTS

The Parties are encouraged to enter into cooperative agreements to coordinate and implement natural resource management on military installations. If fiscal resources are to be transferred in support of this MOU, the Parties must develop a separately funded cooperative agreement. Such cooperative agreements may be entered into under the authorities of the Sikes Act (16 U.S.C. 670a-670f, as amended) and the Economy Act (31 U.S.C. 1535 and 1536). Each funded cooperative agreement shall include a work plan and a financial plan that identify goals, objectives, and a budget and payment schedule. A cooperative agreement to accomplish a study or research also will include a study design and methodology in the work plan. It is understood and agreed that any monies allocated via these cooperative agreements shall be expended in accordance with its terms and in the manner prescribed by the fiscal regulations and/or administrative policies of the party making the funds available.

G. AMENDMENTS

This MOU may be amended at any time by mutual agreement of the parties in writing.

H. TERMINATION

Any party to this agreement may remove itself from this MOU upon sixty (60) days written notice to the other parties.

I. EFFECTIVE DATE AND DURATION

This MOU will be in effect upon date of final signature and will continue for five years from date of final signature. The parties will meet 6 months prior to the expiration of this MOU to discuss potential modifications and renewal terms.

1/31/06

Date

Alex A. Buchler

Assistant Deputy Under Secretary of Defense
(Environment, Safety and Occupational Health)
U.S. Department of Defense

1/31/06

Date

A Dale Hall

Director
Fish and Wildlife Service
U.S. Department of Interior

1/31/06

Date

John Brough

Executive Vice-President
International Association of Fish and Wildlife Agencies

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APPENDIX L
ENVIRONMENTAL ASSESSMENT FOR INRMP

FINAL
ENVIRONMENTAL ASSESSMENT
ADDRESSING THE
INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN
FOR
NAVAL BASE SAN DIEGO, CALIFORNIA



JUNE 2014

ACRONYMS AND ABBREVIATIONS

AOP	Activity Overview Plan	MSCP	Multiple Species Conservation Program
APE	Area of Potential Effect		
AQCR	Air Quality Control Region	NAAQS	National Ambient Air Quality Standards
BMP	Best Management Practice		
CAA	Clean Air Act	NAVFAC SW	Naval Facilities Engineering Command Southwest
CDFW	California Department of Fish and Wildlife	Navy	U.S. Navy
CEQ	Council on Environmental Quality	NBSD	Naval Base San Diego
	Comprehensive Environmental Response, Compensation and Liability Act	NEPA	National Environmental Policy Act
CERCLA		NMCS	Naval Medical Center San Diego
CESA	California Endangered Species Act	NOAA	National Oceanic and Atmospheric Administration
CFR	Code of Federal Regulations	NOAA Fisheries	National Marine Fisheries Service
CNO	Chief of Naval Operations		
CNRSW	Commander, Navy Region Southwest	NPDES	National Pollutant Discharge Elimination System
CWA	Clean Water Act	OPNAVINST	Chief Of Naval Operations Instruction
CZMA	Coastal Zone Management Act	Pb	lead
DOD	Department of Defense		
DODI	Department of Defense Instruction	PM _{2.5}	Particulate Matter equal to or less than 2.5 microns in diameter
EA	Environmental Assessment	PM ₁₀	Particulate Matter equal to or less than 10 microns in diameter
EFH	Essential Fish Habitat	PPV	Public-Private Venture
EIS	Environmental Impact Statement	RCRA	Resource Conservation and Recovery Act
EO	Executive Order		
ESA	Endangered Species Act	SARA	Superfund Amendments and Reauthorization Act
FFSRA	Federal Facilities Site Remediation Agreement	SDAB	San Diego Air Basin
FONSI	Finding of No Significant Impact	SIP	State Implementation Plan
GIS	Geographic Information System	SWMU	Solid Waste Management Units
HCP	Habitat Conservation Plan	SWRCB	State Water Resources Control Board
INRMP	Integrated Natural Resources Management Plan	U.S.C.	United States Code
MBTA	Migratory Bird Treaty Act	USACE	U.S. Army Corps of Engineers
MOU	Memorandum of Understanding	USEPA	U.S. Environmental Protection Agency
MGRF	Mission Gorge Recreational Facility	USFWS	U.S. Fish and Wildlife Service
		VOC	Volatile Organic Compound

TITLE PAGE
FINAL ENVIRONMENTAL ASSESSMENT
ADDRESSING THE
INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN
FOR
NAVAL BASE SAN DIEGO, CALIFORNIA
JUNE 2014

Lead Agency: U.S. Navy

Title of Proposed Action: Implementation of an Integrated Natural Resources Management Plan (INRMP) for Naval Base San Diego (NBSD), California

Designation: Draft Environmental Assessment (EA)

Prepared by: U.S. Navy

Point of Contact: Naval Facilities Engineering Command, Southwest Division
Ms. Rebecca Loomis, Senior Environmental Planner
2730 McKean Street, Bldg 291
San Diego, CA 92136
Phone: (619) 556-9968
Fax: (619) 556-0195

EXECUTIVE SUMMARY

Proposed Action

The U.S. Navy (Navy) is proposing to implement a revised Integrated Natural Resources Management Plan (INRMP) for Naval Base San Diego (NBSD), consistent with the goals and objectives established in the Sikes Act, as amended as amended (16 United States Code [U.S.C.] 670a et seq.), and with guidance and regulations specified in Department of Defense Instruction (DODI) 4715.03 (*Natural Resources Conservation Program*, 2011), Chief of Naval Operations Instruction (OPNAVINST) 5090.1D (*Environmental Readiness Program Manual* (10 January 2014), and Chief of Naval Operations (CNO) *Integrated Natural Resources Management Program Guidance* (2006). The previous INRMP was prepared in August 2002. The revised INRMP would include all properties addressed in the 2002 INRMP, and any special areas that have since been assigned to NBSD other than the Public Private Venture (PPV) lease areas (see **Section 1.2.4**).

The Proposed Action includes continuing some of NBSD's existing natural resources management prescriptions along with the prescription of new management actions, particularly for the properties that have become a part of NBSD since the 2002 INRMP. The scope of the revised INRMP includes all lands owned, leased, withdrawn, or otherwise used for military training by NBSD (see **Table 1-1**); with the exception of Naval Medical Center San Diego and PPV lease areas (see **Section 1.2.4**). All management prescriptions would be integrated and implemented in the context of the installation's mission support needs and regional setting. As a result of the growth in the San Diego region, the impacts of planning and future development in San Diego County and NBSD necessitate coordinated planning for land and resource management. Natural resources management on NBSD must be integrated with other disciplines, programs, and planning beyond the scope of traditional fish and wildlife management on Navy installations.

Under the Proposed Action, the INRMP would be reviewed and updated annually as needed. Additionally, INRMPs must be reviewed for operation and effect no less than once every 5 years by the installation, the U.S. Fish and Wildlife Service (USFWS), and the California Department of Fish and Wildlife (CDFW). The Proposed Action would have additional benefits including: (1) better integration of the INRMP with other installation planning documents; (2) improved integration of the natural resources program with other NBSD activities; (3) explicit goals and objectives under which ongoing and future natural resources projects would be implemented; and (4) a systematic approach to integrated natural resources management by documenting present and future program implementation.

Purpose of and Need for the Project

The purpose of implementing the INRMP is to chart a course for natural resources management on NBSD, consistent with the Sikes Act as amended and Department of Defense (DOD) and Navy policy and guidance regarding INRMPs. The purpose of the INRMP is to: initiate an ecosystem-based conservation program that provides for conservation and rehabilitation of natural resources in a manner that is consistent with the military mission; integrate and coordinate all natural resources management activities; provide for sustainable multipurpose uses of natural resources; and, provide for public access for use of natural resources subject to safety and military security considerations. A majority of the facilities associated with NBSD are on restricted military lands and would remain restricted.

The need for implementing an INRMP revision is to address changes to NBSD facilities, natural resources, desired natural resources projects and initiatives, updates to programmed projects, best available science, updates to military operations and land use patterns in the area that have occurred since

2002. NBSD is required to update the 2002 INRMP and initiate management actions for the 18 naval special areas that have since become part of NBSD. Both the INRMP and the natural resources program that it supports must meet the guidance and regulations provided in DODI 4715.03, OPNAVINST 5090.1D, and the CNO *Integrated Natural Resources Management Program Guidance*. These guidance documents and policies collectively require a plan and management approach consistent with mission support, multipurpose use, integration, ecosystem- or landscape-level management, and environmental compliance and stewardship.

Alternatives Analysis

Reasonable Alternative Screening Factors. Under the National Environmental Policy Act (NEPA), reasonable alternatives to implement a proposed action must be considered in an Environmental Assessment (EA). A range of reasonable alternatives was developed. To be considered reasonable, an alternative must be consistent with the criteria listed as follows:

1. Be based on the principles of ecosystem management.
2. Provide for sustainable multipurpose use of natural resources.
3. Maintain compliance with relevant environmental regulations.
4. Provide for public access for use of natural resources subject to safety and military security considerations.
5. Establish specific natural resources management objectives and timeframes for the Proposed Action.
6. Prevent loss in the capability of military lands to support the military mission of the installation.

Alternatives Analyzed. The Navy's policy is to analyze at least one action alternative in an EA, other than the Proposed Action, unless it would not be practical to do so (OPNAVINST 5090.1D). For this EA, only the Proposed Action and No Action Alternative were deemed to be reasonable alternatives and were carried forward for detailed analysis.

The Proposed Action would encompass the consideration of a wide variety of resource management practices and projects, depending on current environmental conditions and ecological considerations. Therefore, within the INRMP, there are many possible alternatives for the management of natural resources on the military installation. All resource management objectives in the INRMP would result in net beneficial impacts on resources.

No Action Alternative. Under the No Action Alternative, the Navy would not implement a revised INRMP for NBSD. The No Action Alternative would result in continued natural resources management as characterized in the 2002 INRMP for NBSD. The No Action Alternative does not meet the purpose of and need for the Proposed Action. It does, however, serve as a baseline against which the impacts of the Proposed Action can be evaluated. Under the No Action Alternative, natural resources management would continue as it has since the 2002 INRMP was implemented and would not include management prescriptions for 18 naval special areas that have since become part of NBSD. However, since 2002, the installation has established measures and programs for the management of natural resources on these new properties and would continue to ensure they are managed in compliance with Federal, state and local environmental laws and regulations.

Alternatives Considered but Eliminated from Further Detailed Analysis. A compliance-driven management alternative to the Proposed Action was initially considered, which would take a minimal approach to management and only manage natural resources components that are required by laws or

regulations. Under this alternative, an ecosystem-based approach would not be implemented; rather, management actions would only be implemented if there was a possibility of violating a law, such as the Clean Water Act (CWA) or the Endangered Species Act (ESA). This alternative would not comply with the intent of the Sikes Act for natural resources management and would fail to ensure a no net loss of the installation’s capability to support the military mission.

The Sikes Act requires that the INRMP be developed to ensure that the management approach for resources is ecosystem-based, and thus goes beyond simple compliance. According to the Sikes Act, the vision of an installation INRMP is to ensure the sustainability of all ecosystems within and near the installation, and to ensure no net loss of the installation’s capability to support the military mission. To meet the intent of the Sikes Act, the DOD adopted an ecosystem-based management approach as the basis for future management of DOD lands and waters through applying the principles of adaptive management and through collaborating with internal and external parties (DODI 4715.03). Therefore, the compliance-driven management alternative would not meet the intent of the Sikes Act and was eliminated from further detailed analysis in this EA.

Summary of Environmental Effects from the Proposed Action and No Action Alternative

Table ES-1 presents a summary of the potential environmental impacts that would occur from implementation of the Proposed Action and the No Action Alternative.

Table ES-1. Summary of Environmental Impacts

Resource Area	Proposed Action	No Action Alternative
Land Use	<ul style="list-style-type: none"> The Proposed Action would develop an outdoor recreation plan that may create natural resources-based outdoor recreation opportunities resulting in the improvement of the quality of life and morale for Navy personnel and their families through provision of quality recreational experiences while sustaining ecosystem integrity. Therefore, no significant impacts on land use would occur. 	<ul style="list-style-type: none"> The No Action Alternative would result in a continuation of impacts from the 2002 INRMP and would result in a beneficial impact on land use patterns at NBSD by ensuring the compatibility of environmental management efforts with future land use planning actions that may be necessary to meet the military mission for NBSD. Therefore, no significant impacts on land use would occur.
Air Quality	<ul style="list-style-type: none"> Mechanized activities associated with the Proposed Action would potentially create dust and gaseous emissions from use of equipment. These emissions would be temporary and local to the project area. There would be no major source of air pollution under the revised INRMP. Any air permits necessary for specific projects in the INRMP would be obtained prior to implementation of the project. Therefore, implementation of the Proposed Action would not result in significant impacts on air quality. 	<ul style="list-style-type: none"> The No Action Alternative would result in a continuation of the 2002 INRMP and would result in no significant impacts or beneficial impacts on local or regional air quality. NBSD activities that currently generate air emissions would not change. Therefore, no significant impacts to air quality would occur.

Resource Area	Proposed Action	No Action Alternative
<p>Topography, Geology, and Soils</p>	<ul style="list-style-type: none"> • No significant impacts on topography or geology at NBSD would occur from the implementation of the INRMP. • The protection of soil resources from erosion through prevention and control practices, and from rehabilitation of degraded soil resources would occur under the Proposed Action. Therefore, implementation of the Proposed Action would not have a significant impact on topography, geology, or soils. 	<ul style="list-style-type: none"> • The No Action Alternative would result in a continuation of the 2002 INRMP and would result in beneficial impacts on topography, geology, or soils on the NBSD facilities. The 2002 INRMP provides specific recommendations for mapping eroded areas and implementing a soil erosion control program to conserve existing natural areas from disturbance that could degrade soils. • Management efforts to stabilize soils and decrease erosion on steep slopes and along streams and drainage ways would not be implemented on properties not included in the 2002 INRMP; however, the installation has established measures and programs for the management of topography, geology, and soils to ensure they are in compliance with Federal, state and local environmental laws and regulations. Overall beneficial impacts would occur. Therefore, there would be no significant impacts to topography, geology and soils.
<p>Water Resources</p>	<ul style="list-style-type: none"> • No significant effects on water supply would occur under the Proposed Action. • Under the Proposed Action, the prevention and control of soil erosion on NBSD facilities would occur. The reduction of sediment within the effluent from urban storm water drainages that cross NBSD facilities would result in improved water quality in San Diego Bay. The assistance in recovery of unstable drainages, where necessary, on NBSD facilities would reduce soil erosion and sedimentation within the streams. • The reduction in storm water entering streams would reduce impacts on surrounding floodplains. The minimization of fertilizers and pesticides applied on NBSD would improve surface water quality by reducing nutrients and pollutants entering waterways in streams. Therefore, no significant impacts on water resources would occur. 	<ul style="list-style-type: none"> • The No Action Alternative would result in a continuation of the 2002 INRMP and would result in beneficial impacts on water resources on the NBSD facilities addressed in that plan. The implementation of sediment- and erosion-control best management practices (BMPs) was a management strategy within the 2002 INRMP; therefore, NBSD would continue to implement these projects as necessary under the No Action Alternative. • Management efforts to implement sediment- and erosion-control BMPs on facilities not addressed in the 2002 INRMP would follow established measures and programs for the management of water resources to ensure they are in compliance with Federal, state and local environmental laws and regulations. Overall beneficial impacts would occur. Therefore, there would be no significant impacts to water resources.

Resource Area	Proposed Action	No Action Alternative
<p>Biological Resources (Vegetation)</p>	<ul style="list-style-type: none"> • Long-term, beneficial effects on native vegetation would result from the Proposed Action due to the implementation of habitat improvement projects such as noxious weed/invasive plant removal and revegetation with native plant species. 	<ul style="list-style-type: none"> • The No Action Alternative would result in a continuation of the 2002 INRMP and would result in beneficial impacts on biological resources on the NBSD facilities addressed in that plan. Management strategies, such as invasive vegetation removal and revegetation with native species, are prescribed in the 2002 INRMP. • These vegetation management strategies would not be implemented on the NBSD facilities not addressed in the 2002 INRMP; however, the installation has established programs for the management of vegetation to ensure they are in compliance with Federal, state and local environmental laws and regulations. Overall beneficial impacts would occur. Therefore, there would be no significant impacts to vegetation.
<p>Biological Resources (Wildlife)</p>	<ul style="list-style-type: none"> • Long-term, beneficial effects on wildlife would result from the implementation of habitat improvement projects to protect habitats, removal of invasive vegetation, and revegetation with native plants. Long-term, minor, beneficial effects on wildlife species, particularly songbirds and small mammals, would occur from the control of feral animal populations on NBSD. • Long-term, beneficial impacts on targeted habitats and populations would result from habitat and wildlife population surveys. 	<ul style="list-style-type: none"> • The No Action Alternative would result in a continuation of the 2002 INRMP and would result in beneficial impacts on biological resources on the NBSD facilities addressed in that plan. Management strategies, such as feral animal control are prescribed in the 2002 INRMP. • These wildlife management strategies would not be implemented on the NBSD facilities not addressed in the 2002 INRMP; however, the installation has established measures and programs for the management of wildlife to ensure they are in compliance with Federal, state and local environmental laws and regulations. Overall beneficial impacts would occur. Therefore, there would be no significant impacts to wildlife.

Resource Area	Proposed Action	No Action Alternative
Biological Resources (Special Status Species)	<ul style="list-style-type: none"> Long-term, beneficial effects on potential federally and state-listed threatened and endangered species and other protected and sensitive species would occur from regular (approximately every 2 years) surveys for these species on NBSD facilities. 	<ul style="list-style-type: none"> The No Action Alternative would result in a continuation of the 2002 INRMP and would result in beneficial impacts on biological resources on the NBSD facilities addressed in that plan. Management strategies, such as surveys for protected and sensitive species, are prescribed in the 2002 INRMP. These protected species management strategies would not be implemented on the NBSD facilities not addressed in the 2002 INRMP; however, the installation has established measures and programs for the management of protected species to ensure they are in compliance with Federal, state and local environmental laws and regulations. Overall beneficial impacts would occur. Therefore, there would be no significant impacts to special status species.
Hazardous Materials and Wastes	<ul style="list-style-type: none"> Long-term, minor, beneficial effects on hazardous materials and waste management would occur from the reduction in use of pesticides, rodenticides, and herbicides on NBSD facilities. 	<ul style="list-style-type: none"> The No Action Alternative would result in a continuation of the 2002 INRMP and would result in no significant impacts on hazardous materials and waste management on the NBSD facilities addressed in that plan. No significant impacts on hazardous materials and wastes would occur from off peninsula facilities. Existing natural resources management activities and associated use of hazardous materials occurring on NBSD facilities would remain unchanged from the 2002 INRMP. NBSD facilities not addressed in the 2002 INRMP would continue use of hazardous materials per compliance requirements. Therefore, there would be no significant impacts from hazardous materials.

Cumulative and Other Impacts

Natural resource management objectives for NBSD under the Proposed Action would be consistent with and benefit other existing, approved, and proposed plans in the region as discussed in detail in **Section 1.7 of the INRMP**. The primary goal of the INRMP is to provide an adaptive ecosystem-based conservation program that will support the NBSD mission and provide for the sustainability of natural resources. Thus, by design, the Proposed Action would be consistent with the military mission on NBSD, including on- and off-installation land uses; on- and off-installation air quality; on- and off-installation topography, geology, and soils; on- and off-installation water resources management; on- and off-installation biological resources management; and in compliance with environmental laws and regulations.

Implementation of the Proposed Action, when considered with other ecosystem-based management planning programs being implemented in the San Diego region, would provide beneficial, cumulative effects on the region's land use; topography, geology, and soils; water resources; biological resources; and hazardous materials and waste management.

The potential greenhouse gas (GHG) emissions resulting from implementation of the Proposed Action would primarily be from motorized vehicles transporting personnel and materials to and from work sites. The potential effects of GHG emissions are by nature global and cumulative, as most individual sources of GHG emissions are not large enough to have an appreciable effect on global climate change. Therefore, an appreciable impact on global climate change would only occur when GHG emissions associated with the alternatives are combined with GHG emissions from other man-made activities on a global scale.

The effects of the Proposed Action, when added to the effects from the cumulative projects, are minor and not large enough to have an appreciable effect on GHGs and climate change. Therefore, no significant cumulative impacts on GHG and global climate change would occur from implementation of the Proposed Action.

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**FINAL
ENVIRONMENTAL ASSESSMENT ADDRESSING THE
INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN FOR NAVAL BASE SAN DIEGO**

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1. Purpose of and Need for the Proposed Action

This Environmental Assessment (EA) describes and analyzes the U.S. Navy's (Navy) proposal to implement the revised Integrated Natural Resources Management Plan (INRMP) for Naval Base San Diego (NBSD), California. This section presents background information, a description of the location and facilities of NBSD, the purpose of and need for implementing the Proposed Action, a statement of the decision to be made, an overview of resource areas analyzed, and a summary of the agency and public coordination.

1.1 Introduction

The Navy is proposing to implement the revised INRMP for NBSD, to be consistent with the goals and objectives established in the Sikes Act, as amended (16 United States Code [U.S.C.] 670a et seq.), and with guidance and regulations specified in Department of Defense Instruction (DODI) 4715.03 (*Natural Resources Conservation Program*, 2011), Chief of Naval Operations Instruction (OPNAVINST) 5090.1D (*Environmental Readiness Program Manual*, 10 January 2014), and the Chief of Naval Operations (CNO) *Integrated Natural Resources Management Program Guidance* (U.S. Navy 2006a). The revised INRMP would provide natural resources management strategies for NBSD into the future and would include all properties addressed in the 2002 INRMP, as well as the 18 naval special areas that have since become a part of NBSD.

1.2 Location and Facilities of NBSD

NBSD is located in San Diego County, California, and is composed of four main properties, as shown in **Figure 1-1**: NBSD Main Site (formerly known as the Naval Station San Diego or 32nd Street), Broadway Complex, Mission Gorge Recreational Facility (MGRF), and 18 naval special areas.

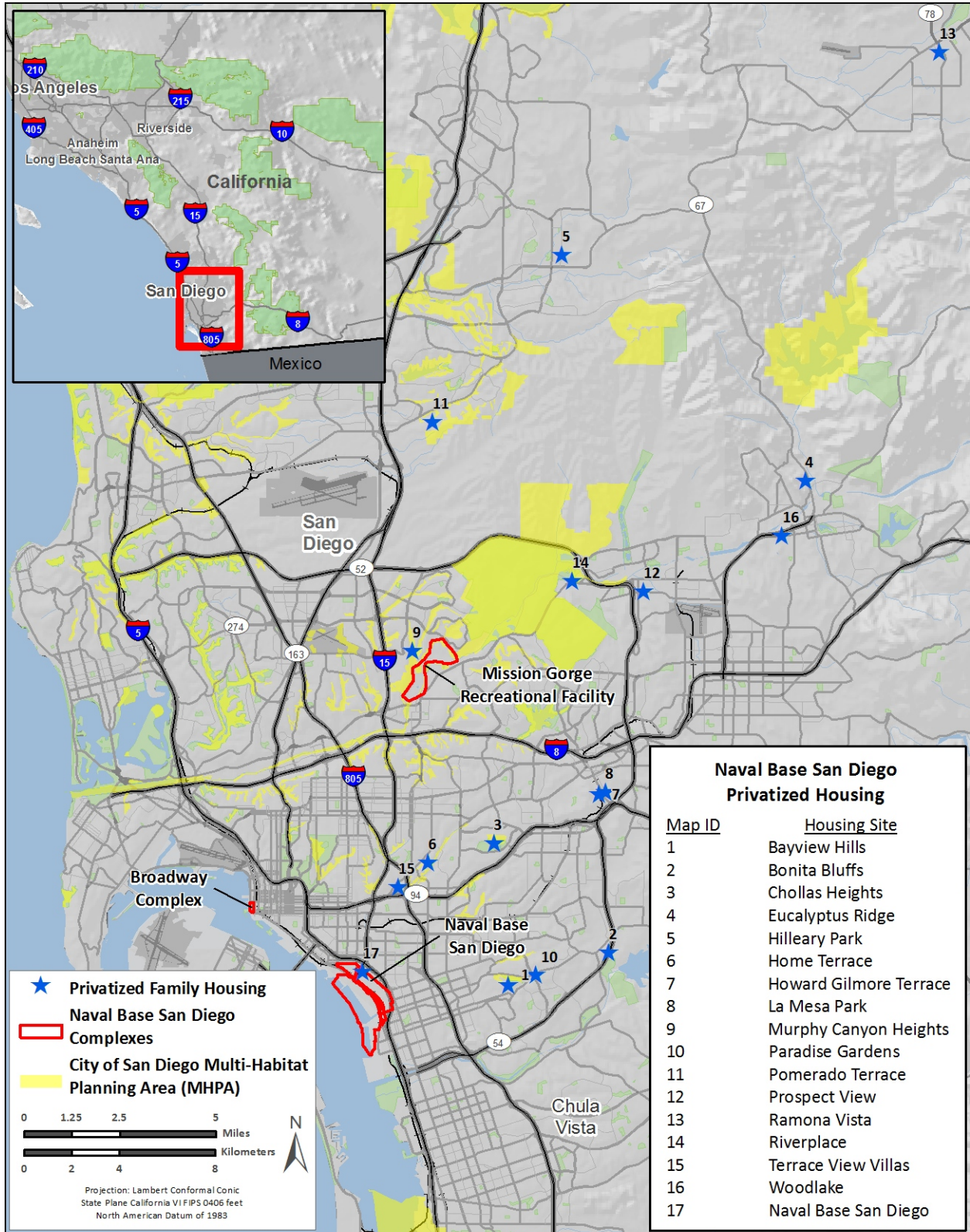
The NBSD Main Site borders San Diego Bay, and is located in the cities of San Diego and National City. Broadway Complex and MGRF occur in the City of San Diego. The NBSD special areas all occur within the San Diego Metro Region.

The NBSD INRMP includes all lands owned, leased, withdrawn, or otherwise used for military training by the NBSD (see **Table 1-1**) consortium, with the exception of Naval Medical Center San Diego (NMCSD), the NBSD in-water property within San Diego Bay which are managed under separate INRMPs, and the Public Private Venture (PPV) lease areas (see **Section 1.2.4**). The natural resources management for the NBSD in-water bayside areas, although still under the responsibility of the NBSD Commanding Officer, is covered within the San Diego Bay INRMP.

1.2.1 NBSD Main Site

NBSD Main Site is located in San Diego County on the eastern edge of San Diego Bay, bordered by the cities of San Diego to the north and east and National City to the south and east, and is situated about 3 miles (5 kilometers) southeast of the San Diego city center and 10 miles (16 kilometers) north of the U.S./Mexico International Border (U.S. Navy 2002a).

NBSD Main Site occupies a site lying east and west of Harbor Drive and occupies 1,036.5 acres (419.5 hectares) of land and 298 acres (120.6 hectares) of water extending to the U.S. Pier head line in San Diego Bay (U.S. Navy 2010b). A 25.8-acre (10.4 hectare) compound owned by Naval Supply Center and 40 acres (16 hectares) of railroad right-of-way owned by the Atchison, Topeka & Santa Fe Railway and the Metropolitan Transit Development Board are within the NBSD boundary (U.S. Navy 2002a).



Source: ESRI StreetMap USA 2007, U.S. Navy 2010b, U.S. Navy 2011, SanGIS 2003.
 Disclaimer: Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 1-1. NBSD General Location Map

Table 1-1. NBSD Facilities

NBSD Facility	NBSD Facility Sizes (acres)	Land Leased to a Public Private Venture (PPV) per Lease Agreement under the Military Housing Privatization Initiative (MHPI) (acres)*	NBSD Facility Sizes, Excluding Land Leased to a PPV per Lease Agreement under the MHPI (acres)**
Naval Base San Diego, Main Site	1,036.5	NA	1,036.5
Broadway Complex	15.1	NA	15.1
Mission Gorge Recreation Facility	448	NA	448
Bayview Hills Special Area	168.5	163.1	5.4
Bonita Bluffs Special Area	4.3	4.3	--
Chollas Heights Special Area	73.0	50.8	22.2
Eucalyptus Ridge Special Area	40.9	31.4	9.5
Hilleary Park Special Area	3.3	3.3	--
Home Terrace Special Area	10.1	10.1**	--
Howard Gilmore Terrace Special Area	50.4	38.4	12.0
La Mesa Park Townhouses Special Area	2.6	2.6	--
Murphy Canyon Special Area	683.6	607.2	76.4
Paradise Gardens Special Area	3.4	3.4	--
Pomerado Terrace Special Area	48.3	48.3**	--
Prospect View Special Area	7.7	7.7	--
Ramona Vista Apartments Special Area	4.2	4.2	--
Riverplace Special Area	6.5	6.5	--
Terrace View Villas Special Area	18.3	17.2	1.1
Woodlake Special Area	3.4	3.4	--
Naval Base San Diego Special Area	4.2	4.2	--
Pacific Beacon (Palmer Hall) Special Area	NA	NA	--
Total	2,632.3	1,006.1	1,626.2

Source: U.S. Navy 2010b and U.S. Navy 2011

Notes:

NA = Not Available/Not Applicable

* = Please see the INRMP for additional information. As provided in the INRMP, the Navy has entered into certain ground leases on government-owned land, pursuant to the MPHPI. Under the MHPI authority, the Navy has entered into two current ground leases with respect to NBSD, whereby certain government-owned land is leased out to a Limited Liability Company (Lessee) for military housing purposes. The two ground leases referenced above are (1) the Second Amended and Restated Real Estate Ground Lease, dated October 1, 2007, by and between the United States of America (acting through the Navy) and San Diego Family Housing, LLC (SDFH) as Lessee; and (2) the Real Estate Ground Lease and Conveyance of Improvements, dated December 15, 2006, by and between the United States of America, acting through the Navy, and California Naval Communities LLC (Clark) as Lessee (this second lease is also referred to as the "Pacific Beacon Ground Lease"). The Navy refers to these projects as "Public-Private Ventures" (PPV), and the term "PPV lease" is used in this EA. The INRMP provides the most current, best information that the Navy has available regarding PPV lease boundaries for all NBSD PPV neighborhoods. These NBSD PPV neighborhoods include the following: Bayview Hills, Bonita Bluffs, Chollas Heights, Eucalyptus Ridge, Hilleary Park, Home Terrace, Howard Gilmore Terrace, La Mesa Park Townhouses, Murphy Canyon Heights, Naval Base San Diego Quarters A and B, Paradise Gardens, Pomerado Terrace, Prospect View, Ramona Vista Apartments, Riverplace, Terrace View Villas, Woodlake, and Pacific Beacon. These boundaries are not exact, but do constitute the best, currently available information digitized from Navy Real Estate Summary Maps and all Lessee survey drawings. The Navy Real Estate Summary Maps will be updated with official, Navy endorsed shapefiles when such shapefiles become available. In certain cases, there are slight discrepancies in the lines of the non-leased Navy land boundaries and the PPV lease boundaries, and those discrepancies appear to be due to land survey/GIS translation challenges. Overall, the INRMP provides the most current, best available maps and information regarding the PPV lease boundaries for all NBSD PPV neighborhoods.

** = These acreages were estimated based on maps provided in the INRMP and were adjusted to match the acreages the NBSD boundary.

NBSD Main Site, the largest facility in the NBSD complex in terms of ships, people, and supported operations, is centrally located to meet the administrative mission of NBSD to coordinate between joint operations and the functioning of regional service centers such as Naval Supply Command, Navy Public Works Center, and the regional commissary store (U.S. Navy 2005a). NBSD is highly developed and has few natural resources, other than two heron and egret nesting rookeries, Paleta Creek, Chollas Creek, and general landscaping on the community facilities complex, which is the area of NBSD Main Site east of Harbor Drive (also referred to informally as the “dryside”) (U.S. Navy 2005a). The bayfront area (west of Harbor Drive), is highly industrialized and lies along the San Diego Bay. Chollas and Paleta creeks also cross NBSD Main Site (U.S. Navy 2002a) (see **Figure 1-2**).

1.2.2 Broadway Complex

The Broadway Complex is a 15.1-acre (6.1-hectare) facility in downtown San Diego at 937 North Harbor Drive (see **Figure 1-3**). The Broadway Complex is an administrative facility on government-owned land near the downtown San Diego waterfront in San Diego, California. The facility is highly urbanized and consists of office buildings and parking lots (U.S. Navy 2006b). Natural resources at the Broadway Complex are limited to minor landscaping around the facility (U.S. Navy 2002).

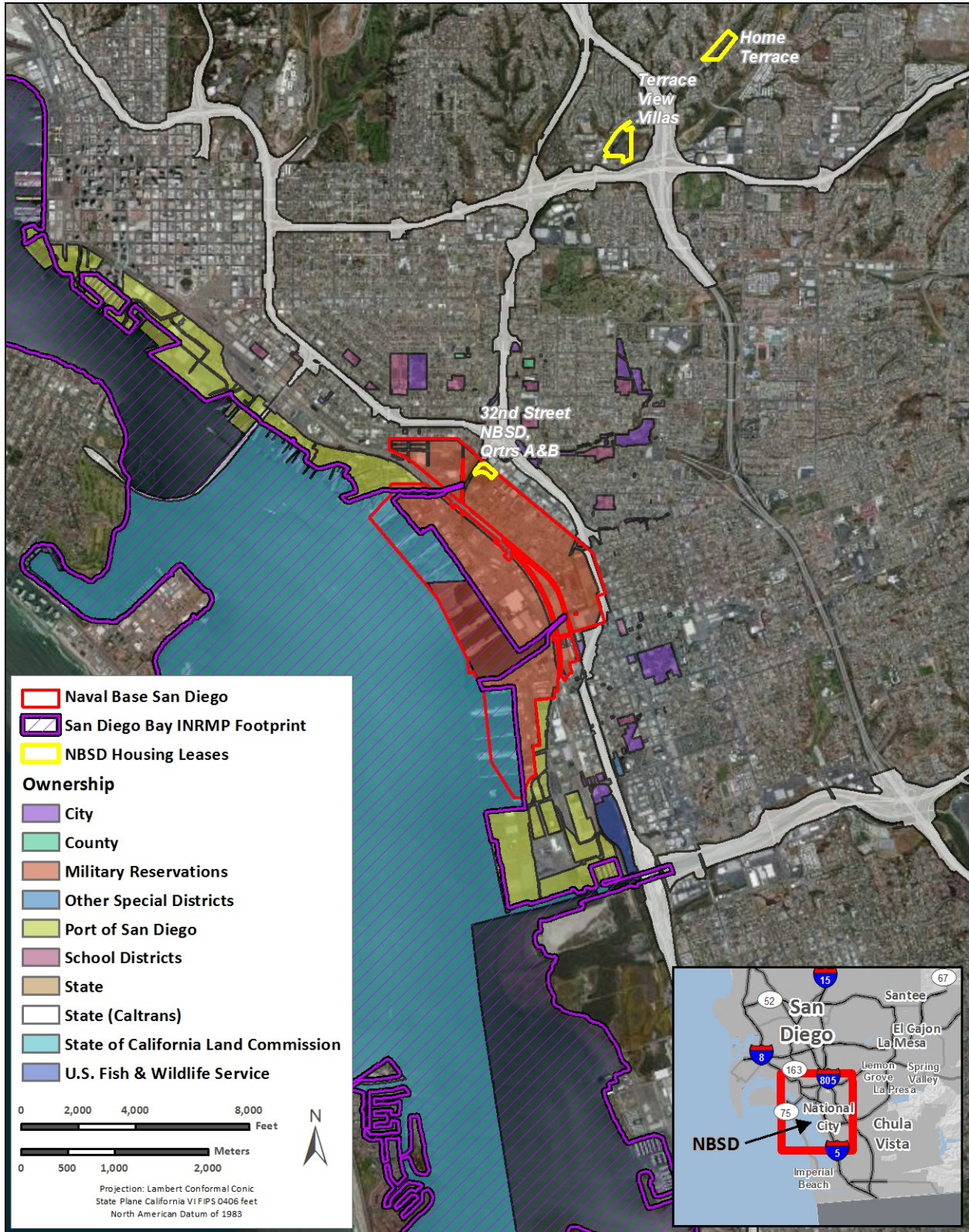
1.2.3 Mission Gorge Recreational Facility

The MGRF is a 448-acre (181-hectare) facility north of the community of Allied Gardens in the City of San Diego along the San Diego River (see **Figure 1-4**). The facility is east of Interstate 15, north of Friars Road, west of Mission Gorge Road, and south of Marine Corps Air Station Miramar (U.S. Navy 2002). MGRF is entirely a recreational facility for military personnel consisting of the 36-hole Admiral Baker Golf Course, a driving range, picnic and camping areas, and various other support facilities (e.g., tennis and volleyball courts, baseball fields, and a recreational vehicle camping area) geared towards recreation and well-being of military personnel and their dependents.

The facility primarily consists of cultivated or landscaped habitat with various ornamental trees and shrubs planted on the golf course and surrounding areas. Natural habitat on site includes riparian woodland along the San Diego River and coastal sage scrub adjacent to the golf course on the north and northwestern edges of the property. Most of the natural habitat on site either occurs within the San Diego River or along very steep slopes (25–50 percent or greater) and is not suitable for development.

1.2.4 NBSD Special Areas

In 2006, 18 naval special areas came under NAVFAC SW jurisdiction, as portions of those naval special areas were leased to a Limited Liability Company (Lessee) pursuant to a PPV lease arrangement (see **Figure 1-1**). There are two PPV leases at NBSD, leasing out certain land under the authority of the Military Housing Privatization Initiative. This EA analyzes the Proposed Action and No Action Alternative on any Navy-retained parcels within the special areas, which were not leased to an LLC under a PPV lease arrangement. Special areas may encompass both leased land and non-leased, Navy-retained parcels (see **Table 1-1**). For the portions of the special areas that have been leased under a PPV lease arrangement, the Lessee has exclusive use and possession of the leased land, and has important responsibilities with regard to natural resource issues, as discussed in Section 7 of the INRMP. **Table 1-2** provides the number of housing units in each of the special areas, the year(s) that they were built, and their general location.



Source: (c) 2010 Microsoft Corporation and its data suppliers, U.S. Navy 2010b, SanGIS
 Disclaimer: Maps should not be reproduced or relied upon without the approval of the installation biologist for the most current information.

Figure 1-2. Naval Base San Diego Main Site

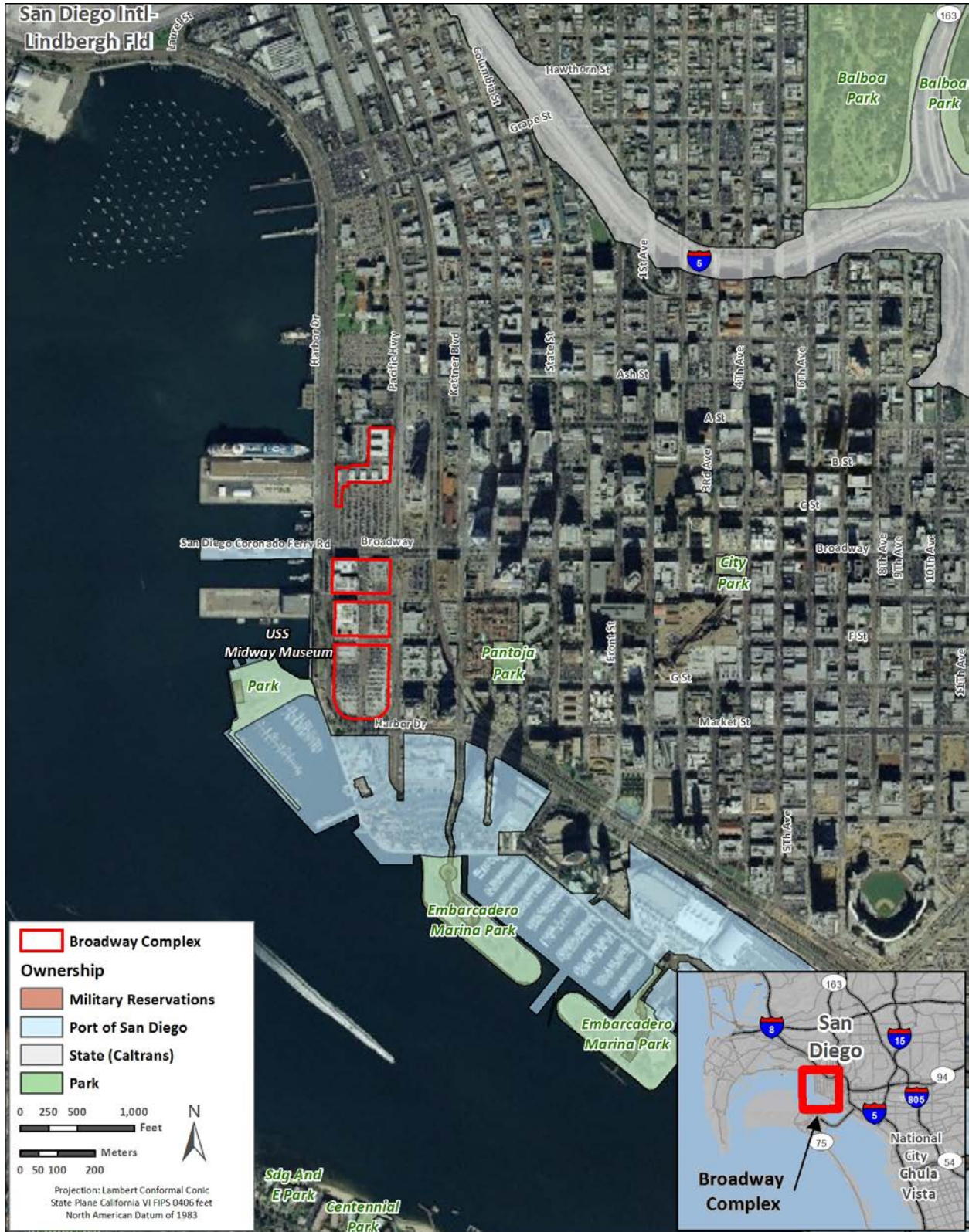
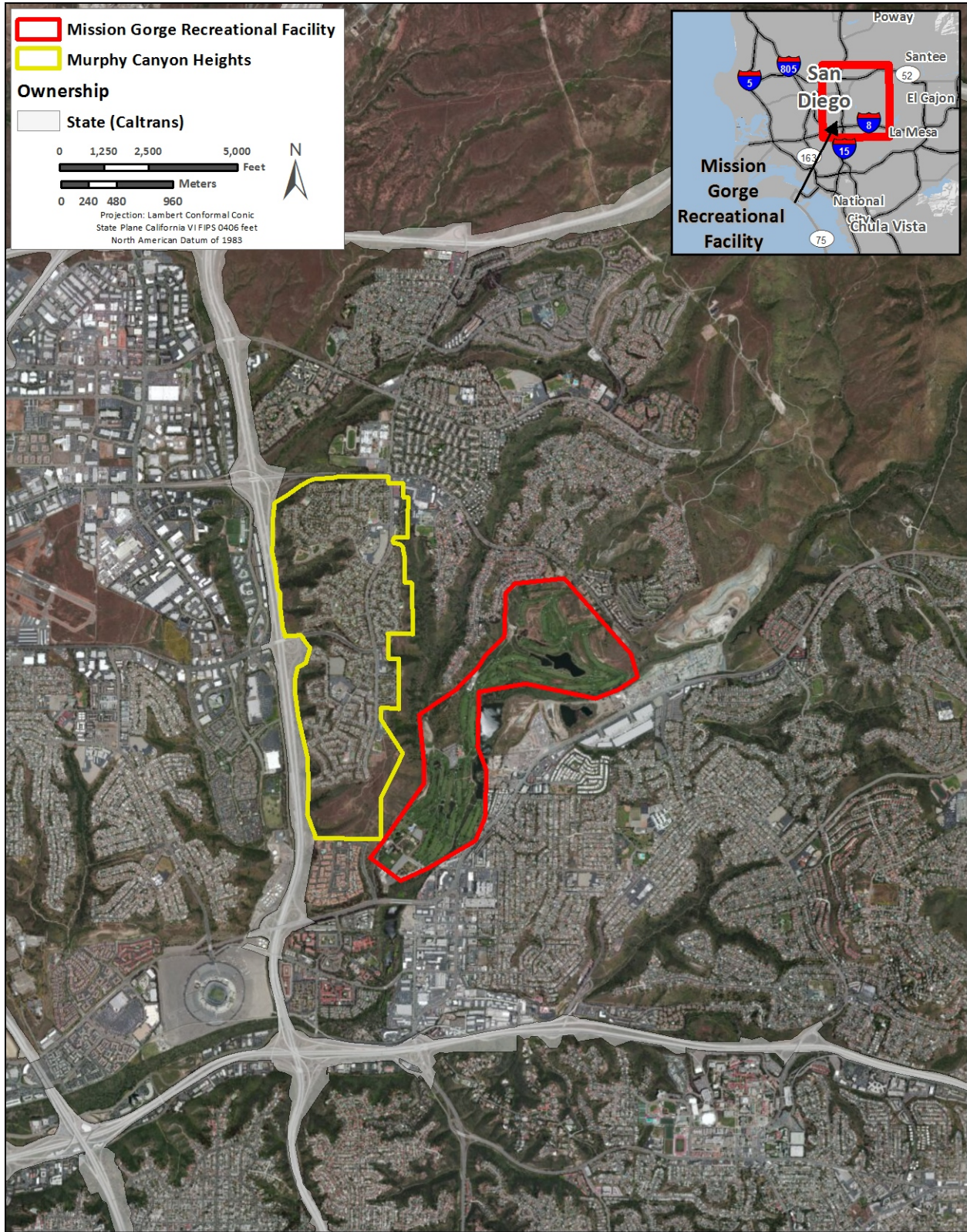


Figure 1-3. Broadway Complex



Source: ESRI StreetMap USA 2007, Bing Maps 2010 - Hybrid, U.S. Navy 2010b, SanGIS

Figure 1-4. Mission Gorge Recreational Facility

Table 1-2. Naval Base San Diego Special Areas

Special Area	Number of Housing Units	Year Built
Bayview Hills	723	1997 – 1998
Bonita Bluffs	75	1991
Chollas Heights	419	1997
Eucalyptus Ridge	290	1997
Hilleary Park	37	1982
Home Terrace	85	1982 – 1984
Howard Gilmore Terrace	244	1992
La Mesa Park Townhomes	56	1991
Murphy Canyon Heights	2319	1973 – 1975
Paradise Gardens	46	1992
Pomerado Terrace	120	1984
Prospect View	84	1995
Ramona Vista Apartments	88	1991
Riverplace	78	1995
Terrace View Villas	236	1990
Woodlake	48	1984
Naval Base San Diego	2	1947
Pacific Beacon (Palmer Hall)	683 (258)	2009 (2004)

Source: U.S. Navy 2011

The Navy has entered into two current ground leases with respect to Naval Base San Diego (NBSD), whereby government-owned land is leased out to a particular Limited Liability Company (LLC, Lessee) for military housing purposes. The Navy refers to these projects as Public Private Venture (PPV) projects. Based on key provisions in both relevant ground leases, for the leased portions of the NBSD PPV neighborhoods (listed in **Table 1-2**), the Lessee has exclusive use and possession of the leased land, and shall comply with the provisions of all applicable Environmental Laws. Also as set forth in both leases, the Lessee cannot make certain changes to the leased land without prior written approval of the Government, which would be in the form of a Site Approval Request. Please see the INRMP for specific lease boundaries and additional information regarding each NBSD PPV lease.

There are 18 PPV Military Family Housing communities that came under NBSD jurisdiction in 2006 (see **Figure 1-1** and **Table 1-1**). See **Section 7 of the INRMP** for more detailed information on the NBSD PPV neighborhoods covered in the San Diego Family Housing Ground Lease and the Pacific Beacon Ground Lease.

1.3 Purpose and Need for the Project

The purpose of implementing the INRMP is to chart a course for natural resources management on NBSD, consistent with the Sikes Act as amended and Department of Defense (DOD) and Navy policy and guidance regarding INRMPs. The purpose of the INRMP is to: initiate an ecosystem-based conservation program that provides for conservation and rehabilitation of natural resources in a manner

that is consistent with the military mission; integrate and coordinate all natural resources management activities; provide for sustainable multipurpose uses of natural resources; and provide for public access for use of natural resources subject to safety and military security considerations. A majority of the facilities associated with NBSD are on restricted military lands and would remain restricted.

The need for implementing an INRMP revision is to address changes to NBSD facilities, natural resources, desired natural resources projects and initiatives, and use patterns in the area that have occurred since 2002. NBSD is required to update the 2002 INRMP and initiate management actions for the 18 naval special areas that have since been assigned to NBSD. Both the INRMP and the natural resources program that it supports must meet the guidance and regulations provided in DODI 4715.03, OPNAVINST 5090.1D, and the CNO *Integrated Natural Resources Management Program Guidance*. These guidance documents and policies collectively require a plan and management approach consistent with mission support, multipurpose use, integration, ecosystem- or landscape-level management, and environmental compliance and stewardship.

1.4 Decision to be Made

The decision to be made as a result of the analysis in this EA is whether or not an Environmental Impact Statement (EIS) needs to be prepared. An EIS would need to be prepared if it is determined that the Proposed Action would have significant impacts on the human or natural environment. Should an EIS be deemed unnecessary, an alternative from this EA may be selected for implementation. The alternative selected would be documented in a Finding of No Significant Impact (FONSI).

1.5 Scope of Analysis

1.5.1 Resource Areas Analyzed

This EA examines the potential effects of the Proposed Action and No Action Alternative on six resource areas: land use; air quality; topography, geology, and soils; water resources; biological resources; and hazardous materials and wastes. These were identified as being potentially affected by the Proposed Action and include applicable critical elements of the human environment that are mandated for review by Executive Order (EO), regulation, or policy

1.5.2 Resource Areas Minimally or Not Impacted

In compliance with the National Environmental Policy Act (NEPA) and the Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 Code of Federal Regulations [CFR] Parts 1501–1508), the evaluation of environmental impacts should focus on significant environmental issues. Impacts should be discussed in proportion to their significance, with only a brief discussion of issues that are other than significant. Some environmental resources and conditions that are often analyzed in an EA have been omitted from detailed analysis in this EA. **Table 1-3** provides the basis for such exclusions.

Table 1-3. Resource Areas Minimally or Not Impacted

Resource Area	Reason Minimally or Not Impacted
Noise	The Proposed Action and No Action Alternative would not be expected to increase the ambient noise environment on or adjacent to NBSD.
Airspace Management	The Proposed Action and No Action Alternative are land-based. The use or modification of airspace would not occur and no hazards to air navigation, or obstructions, would be introduced.
Coastal Zone Management	The Coastal Zone Management Act (CZMA) of 1972 (16 U.S.C Section 1451) encourages coastal states to be proactive in managing coastal zone uses and resources. CZMA established a voluntary coastal planning program and participating states submit a Coastal Management Plan to the National Oceanic and Atmospheric Administration for approval. Under the CZMA, Federal agency actions within or outside the coastal zone that affect any land or water use or natural resource of the coastal zone shall be carried out in a manner that is consistent to the maximum extent practicable with the enforceable policies of the approved state management programs. Each state defines its coastal zone in accordance with the CZMA. Excluded from any coastal zone are lands the use of which by law is subject solely to the discretion of the Federal government or which is held in trust by the Federal government (16 U.S.C 1453). Due to the programmatic nature of this INRMP, no consultation with the California Coastal Commission is required at this time. There are, however, specific actions/projects discussed within the INRMP that may require additional environmental analysis, per NEPA, prior to being implemented. If and when such projects are to be carried forward, the Navy would, as necessary, engage in consultation with the California Coastal Commission should the project have potential to affect any coastal use or resource (even if conducted entirely within a Federal enclave).
Cultural Resources	Compliance with Section 106 of the National Historic Preservation Act for the NBSD INRMP is accomplished through conformance with the 36 CFR 800 process, and is the responsibility of NBSD. The potential for effects on historic properties for the NBSD INRMP and any future and emergent implementation projects, as outlined in Chapter 8 of the NBSD INRMP, are to be considered on an individual basis as separate undertakings and require review by authorized NBSD cultural resource personnel. Pursuant to 36 CFR 800, such efforts include determining: 1) the area of potential effect; 2) the identification of historic properties within the area of potential effect; and, 3) the effect on historic properties within the area of potential effect.
Socioeconomic Resources and Environmental Justice	The Proposed Action and No Action Alternative would not contain projects that result in changes to socioeconomic conditions or disproportionately affect off-installation minority or low-income populations. Therefore, there would be no impact to socioeconomic resources or environmental justice issues.
Traffic and Transportation Systems	No traffic issues or effects on transportation systems on or in the vicinity of NBSD would be anticipated from the implementation of the Proposed Action and No Action Alternative.

Resource Area	Reason Minimally or Not Impacted
Infrastructure and Utilities	No modification of or impacts on infrastructure or utilities would occur as a result of the implementation of the Proposed Action or No Action Alternative on NBSD. Therefore, there would be no impact on infrastructure or utilities.
Public Health, Safety, and Protection of Children	Safety concerns that arise as a result of the Proposed Action and No Action Alternative may include the safety of field crews during various hazardous weather or wildlife interactions or the spraying of herbicides and pesticides. All projects would require an Accident Prevention Plan be developed and implemented. Staff would hold a safety briefing prior to each field day to avoid injury in the field. Herbicides and pesticides are handled and applied in accordance with Federal and state laws. Therefore, there would be no impact on public safety or health.
Visual Resources	No adverse effects on visual resources will result from the implementation of the Proposed Action or No Action Alternative on NBSD.
Public Services	The Proposed Action and No Action Alternative would not impact public services. Public services (e.g., schools, police, fire, emergency medical services) are associated with the project footprint, but they would not be managed any differently and would not be impacted as a result of the Proposed Action or No Action Alternative on NBSD.

1.6 Intergovernmental Coordination, Public and Agency Participation

The Navy will coordinate with the USFWS, the California Department of Fish and Wildlife (CDFW), the National Oceanic and Atmospheric Administration (NOAA), and other Federal, state, and local agencies, as part of the INRMP revision process. Materials relating to interagency coordination and public involvement will be included as **Appendix M of the INRMP**.

A Notice of Availability (NOA) announcing the availability of the Draft INRMP and Draft EA will be published in a local newspaper to initiate a 15-day public review period. The NOA will solicit comments on the Draft EA and involve the public in the decision-making process. The Draft INRMP and Draft EA will be made available at the Navy Region Southwest Web site: <http://www.navyregionsouthwest.com/> and at the San Diego City Library Central Branch and the San Diego County Library. An NOA for the Final INRMP and Final EA will also be published in a local newspaper upon signature of the FONSI.

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2. Description of the Proposed Action and Alternatives

This section describes the Proposed Action and alternatives, including the No Action Alternative. The NEPA process evaluates potential environmental consequences associated with a proposed action and considers alternative courses of action. In addition, CEQ regulations specify the inclusion of a No Action Alternative against which potential impacts can be compared.

2.1 Reasonable Alternative Screening Factors

A range of reasonable alternatives was considered, consistent with the criteria listed below:

1. Be based on the principles of ecosystem management.
2. Provide for sustainable multipurpose use of natural resources.
3. Maintain compliance with relevant environmental regulations.
4. Provide for public access for use of natural resources subject to safety and military security considerations.
5. Establish specific natural resources management objectives and timeframes for the Proposed Action.
6. Prevent loss in the capability of military lands to support the military mission of the installation.

The Proposed Action and the No Action Alternative were the only alternatives deemed reasonable and consistent with the screening factors. The Proposed Action in itself encompasses consideration of a wide-variety of resource management practices and projects (i.e. alternate actions) that can be implemented in the future, depending on environmental conditions and ecological considerations at the time. Also, all resource management objectives in the revised INRMP would only result in beneficial effects to area resources, as “good environmental stewardship” is the purpose of the INRMP.

In addition, early participation in the development of the Proposed Action by the USFWS and the CDFW ensured the mutual agreement among these parties on the natural resources management goals/objectives and projects that are stated in the INRMP. For these reasons, only the Proposed Action and the No Action Alternative were carried forward for detailed analysis in this EA.

2.2 Description of the Proposed Action and Alternatives

2.2.1 Proposed Action

Under the Proposed Action, the Navy proposes to implement the revised INRMP for NBSD, which would integrate ecosystem management of NBSD’s natural resources under a single INRMP. The Proposed Action would: (1) implement an ecosystem-based conservation program; (2) integrate and coordinate all natural resource management activities, including specific projects and routine program operations; (3) provide a provision for the sustainable multi-purpose use of natural resources; and (4) provide a provision for public access to non-restricted military lands. The revised INRMP was developed and would be implemented to be consistent with the military use of the properties and the goals and objectives established in the Sikes Act, as amended. The Navy will implement recommendations in the INRMP within the framework of regulatory compliance, national Navy mission obligations, anti-terrorism and force protection limitations, and funding constraints. All actions contemplated in the INRMP are subject to the availability of funds properly authorized and appropriated under Federal law.

Following implementation, the revised INRMP would be reviewed and updated annually as needed and reviewed for operation and effect no less than once every 5 years. The Proposed Action includes continuing some of NBSD's existing natural resources management prescriptions along with the prescription of several new management actions for property that has become a part of NBSD since the 2002 INRMP. A list of proposed INRMP projects to be implemented at NBSD is included in **Appendix D of the INRMP**. All management prescriptions would be integrated and implemented in the context of NBSD's mission support needs and regional setting.

As a result of the growth in the San Diego region, the impacts of planning and future development in San Diego County and NBSD necessitate coordinated planning for land and resource management. Natural resources management must be integrated with other disciplines, programs, and planning beyond the scope of traditional fish and wildlife management on Navy installations. The INRMP includes projects that would benefit the following:

- Watershed Management
- Habitat Management
- Fish and Wildlife Management
- Special Status Species Management
- Exotic and Invasive Species Management
- Grounds and Landscape Maintenance
- Pest Management
- Outdoor Recreation and Public Access
- Law Enforcement of Natural Resources Laws and Regulations
- Environmental Awareness and Outreach
- Geographic Information System (GIS) Management, Database Management, Data Integration, Access and Reporting.

Besides meeting the project's purpose and need, the Proposed Action would have additional benefits that include: (1) better integration of the INRMP with other installation planning documents; (2) improved integration of the natural resources program with other NBSD activities; (3) an explicit goal and objectives under which ongoing and future natural resources projects would be implemented; and, (4) a systematic approach to integrated natural resources management by documenting present and future program implementation. NBSD has developed a management goal that is consistent with DOD, Navy, and installation-specific policies and guidance on how natural resources should be managed, sustained, and rehabilitated, where applicable. The goal is as follows:

The NBSD INRMP goal is to provide an adaptive ecosystem-based conservation program that will ensure no net loss of the installation's capability to support the military mission and provide for the sustainability of natural resources.

NBSD has developed a set of objectives that support this goal, and is proposing an array of projects and management actions to support each objective (see **Appendix D of the INRMP**). The proposed projects and management actions include both newly proposed initiatives and ongoing initiatives carried over from the 2002 INRMP. This array of projects contributes to the objectives and goal for management of

NBSD's natural resources, consistent with DOD and Navy guidance concerning the Sikes Act, multipurpose use, ecosystem- and landscape-level management, and support of the military mission.

2.2.2 No Action Alternative

Under the No Action Alternative, the Navy would not implement a revised INRMP for NBSD. The No Action Alternative would result in continued natural resources management as characterized in the 2002 INRMP for NBSD. The No Action Alternative does not meet the purpose of and need for the Proposed Action, because an integrated, ecosystem-based conservation program for all NBSD facilities would not be implemented in accordance with updated DOD and Navy INRMP guidelines; because the NBSD footprint has increased and changed.

It does, however, serve as a baseline against which the impacts of the Proposed Action can be evaluated. Under the No Action Alternative, natural resources management would continue as it has since the 2002 INRMP was implemented and would not include management prescriptions for the 18 naval special areas that have since become part of NBSD.

2.3 Alternatives Considered but Not Carried Forward for Detailed Analysis

A compliance-driven management alternative to the Proposed Action was initially considered, which would take a minimal approach to management and only manage natural resources components that are required by laws or regulations. Under this alternative, an ecosystem-based approach would not be implemented; rather, management actions would only be implemented if there was a possibility of violating a law, such as the Clean Water Act (CWA) or the Endangered Species Act (ESA). While it would ensure that NBSD would be less likely to receive a notice of violation for noncompliance with natural resource regulations, this alternative would not comply with the intent of the Sikes Act for natural resources management.

The Sikes Act requires that the INRMP be developed to ensure that the management approach for resources is ecosystem-based, and thus goes beyond simple compliance. According to the Sikes Act, the vision of an installation INRMP is to ensure the sustainability of all ecosystems within and near the installation, and to ensure no net loss of the installation's capability to support the military mission. To meet the intent of the Sikes Act, the DOD adopted an ecosystem-based management approach as the basis for future management of DOD lands and waters through applying the principles of adaptive management and through collaborating with internal and external parties (DODI 4715.03). Therefore, the compliance-driven management alternative would not meet the intent of the Sikes Act and was eliminated from further detailed analysis in this EA.

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3. Affected Environment and Environmental Consequences

3.1 Introduction

This section describes the environmental resources and conditions most likely to be affected by the Proposed Action and alternatives and provides information to serve as a baseline from which to identify and evaluate environmental and socioeconomic consequences likely to result from implementation of the Proposed Action and alternatives. Baseline conditions represent current conditions. In compliance with NEPA, CEQ guidelines, and 32 CFR Part 775, the description of the affected environment focuses on those resources and conditions potentially subject to impacts.

This section also presents an analysis of the potential direct and indirect impacts that would be expected on the affected environment from implementation of each alternative.

3.2 Summary of Environmental Consequences

Table 3-1 provides an overview of potential impacts under the Proposed Action and No Action Alternative, separated by resource area.

Table 3-1. Summary of Environmental Consequences from the Proposed Action and No Action Alternative

Resource Area	Proposed Action	No Action Alternative
Land Use	<ul style="list-style-type: none"> The Proposed Action would develop an outdoor recreation plan that may create natural resources-based outdoor recreation opportunities resulting in the improvement of the quality of life and morale for Navy personnel and their families through provision of quality recreational experiences while sustaining ecosystem integrity. Therefore, no significant impacts on land use would occur. 	<ul style="list-style-type: none"> The No Action Alternative would result in a continuation of impacts from the 2002 INRMP and would result in a beneficial impact on land use patterns at NBSD by ensuring the compatibility of environmental management efforts with future land use planning actions that may be necessary to meet the military mission for NBSD. Therefore, no significant impacts on land use would occur.
Air Quality	<ul style="list-style-type: none"> Mechanized activities associated with the Proposed Action would potentially create dust and gaseous emissions from use of equipment. These emissions would be temporary and local to the project area. There would be no major source of air pollution under the revised INRMP. Any air permits necessary for specific projects in the INRMP would be obtained prior to implementation of the project. Therefore, implementation of the Proposed Action would not result in significant impacts on air quality. 	<ul style="list-style-type: none"> The No Action Alternative would result in a continuation of the 2002 INRMP and would result in no significant impacts or beneficial impacts on local or regional air quality. NBSD activities that currently generate air emissions would not change. Therefore, no significant impacts to air quality would occur.

Resource Area	Proposed Action	No Action Alternative
<p>Topography, Geology, and Soils</p>	<ul style="list-style-type: none"> • No significant impacts on topography or geology at NBSD would occur from the implementation of the INRMP. • The protection of soil resources from erosion through prevention and control practices, and from rehabilitation of degraded soil resources would occur under the Proposed Action. Therefore, implementation of the Proposed Action would not have a significant impact on topography, geology, or soils. 	<ul style="list-style-type: none"> • The No Action Alternative would result in a continuation of the 2002 INRMP and would result in beneficial impacts on topography, geology, or soils on the NBSD facilities. The 2002 INRMP provides specific recommendations for mapping eroded areas and implementing a soil erosion control program to conserve existing natural areas from disturbance that could degrade soils. • Management efforts to stabilize soils and decrease erosion on steep slopes and along streams and drainage ways would not be implemented on properties not included in the 2002 INRMP; however, the installation has established measures and programs for the management of topography, geology, and soils to ensure they are in compliance with Federal, state and local environmental laws and regulations. Overall beneficial impacts would occur. Therefore, there would be no significant impacts to topography, geology and soils.
<p>Water Resources</p>	<ul style="list-style-type: none"> • No significant effects on water supply would occur under the Proposed Action. • Under the Proposed Action, the prevention and control of soil erosion on NBSD facilities would occur. The reduction of sediment within the effluent from urban storm water drainages that cross NBSD facilities would result in improved water quality in San Diego Bay. The assistance in recovery of unstable drainages, where necessary, on NBSD facilities would reduce soil erosion and sedimentation within the streams. • The reduction in storm water entering streams would reduce impacts on surrounding floodplains. The minimization of fertilizers and pesticides applied on NBSD would improve surface water quality by reducing nutrients and pollutants entering waterways in streams. Therefore, no significant impacts on water resources would occur. 	<ul style="list-style-type: none"> • The No Action Alternative would result in a continuation of the 2002 INRMP and would result in beneficial impacts on water resources on the NBSD facilities addressed in that plan. The implementation of sediment- and erosion-control best management practices (BMPs) was a management strategy within the 2002 INRMP; therefore, NBSD would continue to implement these projects as necessary under the No Action Alternative. • Management efforts to implement sediment- and erosion-control BMPs on facilities not addressed in the 2002 INRMP would follow established measures and programs for the management of water resources to ensure they are in compliance with Federal, state and local environmental laws and regulations. Overall beneficial impacts would occur. Therefore, there would be no significant impacts to water resources.

Resource Area	Proposed Action	No Action Alternative
<p>Biological Resources (Vegetation)</p>	<ul style="list-style-type: none"> • Long-term, beneficial effects on native vegetation would result from the Proposed Action due to the implementation of habitat improvement projects such as noxious weed/invasive plant removal and revegetation with native plant species. 	<ul style="list-style-type: none"> • The No Action Alternative would result in a continuation of the 2002 INRMP and would result in beneficial impacts on biological resources on the NBSD facilities addressed in that plan. Management strategies, such as invasive vegetation removal and revegetation with native species, are prescribed in the 2002 INRMP. • These vegetation management strategies would not be implemented on the NBSD facilities not addressed in the 2002 INRMP; however, the installation has established programs for the management of vegetation to ensure they are in compliance with Federal, state and local environmental laws and regulations. Overall beneficial impacts would occur. Therefore, there would be no significant impacts to vegetation.
<p>Biological Resources (Wildlife)</p>	<ul style="list-style-type: none"> • Long-term, beneficial effects on wildlife would result from the implementation of habitat improvement projects to protect habitats, removal of invasive vegetation, and revegetation with native plants. Long-term, minor, beneficial effects on wildlife species, particularly songbirds and small mammals, would occur from the control of feral animal populations on NBSD. • Long-term, beneficial impacts on targeted habitats and populations would result from habitat and wildlife population surveys. 	<ul style="list-style-type: none"> • The No Action Alternative would result in a continuation of the 2002 INRMP and would result in beneficial impacts on biological resources on the NBSD facilities addressed in that plan. Management strategies, such as feral animal control are prescribed in the 2002 INRMP. • These wildlife management strategies would not be implemented on the NBSD facilities not addressed in the 2002 INRMP; however, the installation has established measures and programs for the management of wildlife to ensure they are in compliance with Federal, state and local environmental laws and regulations. Overall beneficial impacts would occur. Therefore, there would be no significant impacts to wildlife.

Resource Area	Proposed Action	No Action Alternative
<p>Biological Resources (Special Status Species)</p>	<ul style="list-style-type: none"> • Long-term, beneficial effects on potential federally and state-listed threatened and endangered species and other protected and sensitive species would occur from regular (approximately every 2 years) surveys for these species on NBSD facilities. 	<ul style="list-style-type: none"> • The No Action Alternative would result in a continuation of the 2002 INRMP and would result in beneficial impacts on biological resources on the NBSD facilities addressed in that plan. Management strategies, such as surveys for protected and sensitive species, are prescribed in the 2002 INRMP. • These protected species management strategies would not be implemented on the NBSD facilities not addressed in the 2002 INRMP; however, the installation has established measures and programs for the management of protected species to ensure they are in compliance with Federal, state and local environmental laws and regulations. Overall beneficial impacts would occur. Therefore, there would be no significant impacts to special status species.
<p>Hazardous Materials and Wastes</p>	<ul style="list-style-type: none"> • Long-term, minor, beneficial effects on hazardous materials and waste management would occur from the reduction in use of pesticides, rodenticides, and herbicides on NBSD facilities. 	<ul style="list-style-type: none"> • The No Action Alternative would result in a continuation of the 2002 INRMP and would result in no significant impacts on hazardous materials and waste management on the NBSD facilities addressed in that plan. No significant impacts on hazardous materials and wastes would occur from off peninsula facilities. • Existing natural resources management activities and associated use of hazardous materials occurring on NBSD facilities would remain unchanged from the 2002 INRMP. NBSD facilities not addressed in the 2002 INRMP would continue use of hazardous materials per compliance requirements. Therefore, there would be no significant impacts from hazardous materials.

3.3 Land Use

3.3.1 Definition of the Resource

The term “land use” refers to real property classifications that indicate either natural conditions or the types of human activity occurring on a parcel. In many cases, land use descriptions are codified in local zoning laws. However, there is no nationally recognized convention or uniform terminology for describing land use categories. As a result, the meanings of various land use descriptions, “labels,” and definitions vary among jurisdictions.

The two main objectives of land use planning are to ensure orderly growth and compatible uses among adjacent property parcels or areas. Tools supporting land use planning include written master plans, management plans, policies, and zoning regulations. In appropriate cases, the location and extent of a proposed action needs to be evaluated for its potential effects on a project site and adjacent land uses. The foremost factor affecting a proposed action in terms of land use is its compliance with any applicable land use or zoning regulations. Other relevant factors include matters such as existing land use at the project site and the types of land uses on adjacent properties.

3.3.2 Existing Conditions

NBSD Main Site: NBSD is the largest surface force support installation for the DON, and is home to 56 tenant commands and 56 ships of the Pacific Surface Fleet. The installation is also a shore activity under the administrative control of Commander, Pacific Fleet (CINCPACFLT) and the Commander, Naval Surface Force, U.S. Pacific Fleet (COMNAVSURFPAC), headquartered in San Diego (U.S. Navy 2002a). Commander, Pacific Fleet Instruction (CINCPACFLTINST) 5450.24 defines the mission of NBSD as “to provide appropriate logistical support for the operating forces of the U.S. Navy and for dependent activities and other commands as assigned” (CNIC 2009).

Components of this mission include the following:

1. Operations (including transportation, communications, security, port and harbor services, harbor and installation defense, shore patrol and local law enforcement liaison, detention and correction services) and training
2. Administration (including public affairs, legal services, management engineering/industrial management support, comptroller, and accounting and fiscal services)
3. General engineering support and mission operations (includes fire protection and Station maintenance)
4. Personnel support (housing, welfare, recreation, exchanges, commissaries, dependent activity support)
5. Medical and dental services
6. Material maintenance
7. Real property maintenance and utility operations
8. Supply operations (U.S. Navy 2002a).

NBSD is divided by Harbor Drive into two major parts: the mainly industrial bayfront area, west of Harbor Drive (“wetside”), and the community facilities complex, east of Harbor Drive (“dryside”). The 375 acres (152 hectares) of land and 326 acres (132 hectares) of water west of Harbor Drive are

intensively developed and support waterfront operations, ship maintenance, Station maintenance, training, administration, and logistics functions. Wetside operational facilities include piers, quaywalls, small craft berthing facilities, fueling facilities, armories, and waterfront operations buildings.

Recreation facilities on NBSD Main Site include a few recreational fields, gymnasiums, tennis courts, picnic areas, swimming pools, weight rooms, and a bowling alley. Most of the recreation facilities are concentrated in the southeast corner of the installation with a scattering of facilities located along the waterfront for fleet support.

Bayside land uses north and south of NBSD Main Site are comprised primarily of commercial and industrial-type uses related to shipping, ship repair, warehousing, and support facilities. Residential uses are generally located east of NBSD Main Site on Interstate 5. NBSD Main Site is bordered by the cities of San Diego to the north and east and National City to the south and east in San Diego County. Other than the downtown area, City of San Diego land uses surrounding the naval facilities are not anticipated to change. Zoning consists of primarily low to high density residential and neighborhood commercial uses.

Broadway Complex: The 22-acre (9-hectare) Broadway Complex site includes approximately 16 acres (6 hectares) of buildings, parking areas, and lawn. The Navy Pier is approximately 6 acres (2 hectares) in size. The Broadway Complex supports the main offices of NAVFAC SW, Personnel Support Activity, Reserve Readiness Command Southwest, Fleet and Industrial Supply Center San Diego, Commander Navy Region Southwest, and the Navy Computer and Telecommunications Station (U.S. Navy 2002a). Recreation activities at the Broadway Complex include walking, running, jogging, and bicycling on existing roadways and trails, and contain a few picnic areas for military personnel and their families.

The Broadway Complex is located along the San Diego Bay on Harbor Drive in downtown San Diego. Broadway and the Broadway Pier border the site to the north. Market Street and Seaport Village and Embarcadero Marina Park are to the south. Pacific Highway defines the eastern boundary. The San Diego Trolley line and a number of high-rise buildings, including One America Plaza, the Koll Building and, the Wyndham Emerald Plaza Hotel, are located nearby to the east.

Mission Gorge Recreational Facility: The primary mission of MGRF, which includes Admiral Baker Golf Course, is to provide for maximum participation in programs that are designed to enhance physical, mental, and social well-being of all active duty personnel and their dependents. MGRF is entirely a recreational facility for military personnel consisting of the 36-hole Admiral Baker Golf Course, a driving range, picnic and camping areas, and various other support facilities (e.g., tennis and volleyball courts, baseball fields, and a recreational vehicle camping area).

Land use to the south, southeast, and west of MGRF consists mainly of high-density residential and commercial uses. Residential housing for Navy personnel is located to the northwest. Undeveloped and industrial lands are located to the north, east, and northeast within the San Diego River floodplain and east of the river channel. The City of San Diego's Mission Trails Regional Park is located approximately one mile upriver from the MGRF. Qualcomm Stadium is approximately one mile southwest of the site, southwest of the intersection of Interstate 15 and Friars Road.

NBSD Special Areas: Special Areas are sites that are remote from the main activity. The mission of the Navy housing special areas is to provide safe, secure housing for Navy personnel and their families. The Navy special areas are located throughout the metropolitan San Diego area (see **Figure 1-1**).

3.3.3 Environmental Consequences

3.3.3.1 Proposed Action

The Proposed Action would be compatible with existing NBSD land uses and adjacent uses. Proposed natural resources management actions would not introduce any new land uses that would be incompatible with existing land uses, either on- or off-site. Implementation of the INRMP would ensure that natural resources continue to support the NBSD mission and future growth, development, and redevelopment activities planned for the installation. The INRMP integrates natural resources management with other installation plans and activities. It also establishes goals that represent a long-term vision for the health and quality of NBSD's natural resources. Any future changes in mission, training activity, or technology should be analyzed to assess its impact on natural resources. As new installation plans and Navy guidance and regulations are developed, they will be integrated with the goals and management actions of the INRMP. The INRMP will be reviewed, assessed, and modified as needed on an annual basis to ensure continued integration with other management plans or changes in military mission or environmental conditions.

The Proposed Action would develop an outdoor recreation plan that may create natural resources-based outdoor recreation opportunities (subject to compatibility with mission requirements) resulting in the improvement of the quality of life and morale for Navy personnel and their families through provision of quality recreational experiences while sustaining ecosystem integrity. The Proposed Action would also develop and implement best management practices for grounds maintenance and establish monitoring metrics to ensure management strategies are meeting goals and objectives of the INRMP. Therefore, no significant impacts on land use would occur.

3.3.3.2 No Action Alternative

Under the No Action Alternative, the military mission, on-installation land use, and land use on adjacent properties occurring on NBSD facilities would remain unchanged from the 2002 INRMP. Federal lands would be at risk for designation of critical habitat if the INRMP is not implemented. New landscaping practices, such as removal of exotics or invasive weeds and restoration of degraded areas, enhance the appearance of the affected area but would not result in an adverse impact to the current land use. The revised INRMP accommodates existing uses, including compatible uses such as regional irrigation, air operations, and shoreline construction. Overall land use beneficial impacts would occur. Therefore, no significant impacts would occur to land use by implementing the No Action Alternative.

3.4 Air Quality/Climate Change

3.4.1 Definition of the Resource

In accordance with Clean Air Act (CAA) requirements, the air quality in a given region or area is measured by the concentration of criteria pollutants in the atmosphere. The air quality in a region is a result of not only the types and quantities of atmospheric pollutants and pollutant sources in an area, but also surface topography, the size of the topological "air basin," and the prevailing meteorological conditions.

Ambient Air Quality Standards. Under the CAA, the U.S. Environmental Protection Agency (USEPA) developed numerical concentration-based standards, or National Ambient Air Quality Standards (NAAQS), for six criteria pollutants that have been determined to affect human health and the environment. The NAAQS represent the maximum allowable concentrations for ozone, measured as either volatile organic compounds (VOCs) or total nitrogen oxides, carbon monoxide, nitrogen dioxide,

sulfur oxides, respirable particulate matter (including particulate matter equal to or less than 10 microns in diameter [PM₁₀] and particulate matter equal to or less than 2.5 microns in diameter [PM_{2.5}]), and lead (Pb) (40 CFR Part 50). The CAA also gives the authority to states to establish air quality rules and regulations. The State of California has adopted the NAAQS and promulgated additional California Ambient Air Quality Standards (CAAQS) for criteria pollutants. The CAAQS are more stringent than the Federal primary standards.

Attainment versus Nonattainment and General Conformity. The USEPA classifies the air quality in an air quality control region (AQCR), or in subareas of an AQCR, according to whether the concentrations of criteria pollutants in ambient air exceed the NAAQS. Areas within each AQCR are therefore designated as either “attainment,” “nonattainment,” “maintenance,” or “unclassified” for each of the six criteria pollutants. Attainment means that the air quality within an AQCR is better than the NAAQS; nonattainment indicates that criteria pollutant levels exceed NAAQS, maintenance indicates that an area was previously designated nonattainment but is now attainment, and an unclassified air quality designation by USEPA means that there is not enough information to classify an AQCR appropriately, so the area is considered attainment.

The General Conformity Rule applies only to significant actions in nonattainment or maintenance areas. This rule requires that any Federal action meet the requirements of a State Implementation Plan (SIP) or Federal Implementation Plan. More specifically, CAA conformity is ensured when a Federal action does not cause a new violation of the NAAQS; contribute to an increase in the frequency or severity of violations of NAAQS; or delay the timely attainment of any NAAQS, interim progress milestones, or other milestones toward achieving compliance with the NAAQS.

Greenhouse Gas Emissions. The potential impacts from proposed greenhouse gas (GHG) emissions are by nature global and cumulative, as individual sources of GHG emissions are not large enough to have an appreciable effect on climate change. Therefore, an appreciable impact on global climate change would only occur when proposed GHG emissions combine with GHG emissions from other man-made activities on a global scale. GHGs are analyzed in **Section 4.3** of this EA.

3.4.2 Existing Conditions

NBSD is in San Diego County, which is within the San Diego Intrastate AQCR. The San Diego area is in the San Diego County Air Pollution Control District and is subject to its rules and regulations. The San Diego County Air Pollution Control District is responsible for implementing and enforcing local, state, and Federal air quality regulations in the 4,200-square-mile San Diego Air Basin (SDAB), which encompasses all of San Diego County.

The air quality in San Diego County has been characterized by USEPA as a nonattainment area for ozone (nitrogen oxides and VOCs) and a maintenance area for carbon monoxide. San Diego County is classified by the USEPA as unclassified/attainment for all other criteria pollutants (USEPA 2010d). The California Air Resources Board has designated the SDAB as a nonattainment area for 8-hour ozone, PM₁₀, and PM_{2.5} and as unclassified/attainment for all other criteria pollutants (CARB 2009).

The SDAB is currently designated as nonattainment for both the 24-hour and the state annual PM₁₀ standards. The air basin is also designated as nonattainment for the state annual PM_{2.5} standard (CARB 2009a). The PM₁₀ emission inventory includes only primary particulate matter (PM). On an annual average basis, directly emitted PM₁₀ emissions contribute approximately 70 percent of the ambient PM₁₀ in the SDAB (CARB 2009b). The PM_{2.5} emission inventory includes only primary PM. On an annual average basis, directly emitted PM_{2.5} emissions contribute approximately 50 percent of the ambient PM_{2.5} in the SDAB (CARB 2009c).

NBSD is in San Diego County, which is within the San Diego Intrastate AQCR. The San Diego area is in the San Diego County Air Pollution Control District and is subject to its rules and regulations. The San Diego County Air Pollution Control District is responsible for implementing and enforcing local, state, and Federal air quality regulations in the 4,200-square-mile San Diego Air Basin (SDAB), which encompasses all of San Diego County.

3.4.3 Evaluation Standards

The environmental consequences on local and regional air quality conditions near a proposed Federal action are determined based upon the increases in regulated pollutant emissions relative to existing conditions and ambient air quality. Specifically, the impact in NAAQS “attainment” and “non-attainment” areas would be considered significant if the net increases in pollutant emissions from the Federal action would result in any one of the following scenarios:

- Cause or contribute to a violation of any national or state ambient air quality standard
- Expose sensitive receptors to substantially increased pollutant concentrations
- Represent an increase of 10 percent or more in an affected AQCR emissions inventory
- Exceed any Evaluation Criteria established by a SIP or permit limitations.

3.4.4 Environmental Consequences

3.4.4.1 Proposed Action

Mechanized activities associated with the Proposed Action would potentially create dust and gaseous emissions from use of equipment. These emissions would be temporary and local to the project area. Project staff driving to and from the project site would create emissions; however, this would also be temporary and localized. There would be no major source of air pollution under the revised INRMP. Any air permits necessary for specific projects in the INRMP would be obtained prior to implementation of the project. A Record of Non-Applicability has been completed for this project (see **Appendix B**).

The Proposed Action would also develop specifications and standards for reseeded/revegetation of disturbed sites, thereby reducing dust associated with other projects. Therefore, implementation of the Proposed Action would not result in significant impacts on air quality.

3.4.4.2 No Action Alternative

Under the No Action Alternative, the activities that currently generate air emissions would remain unchanged from the 2002 INRMP.

The 2002 INRMP would not result in a substantial change in the emissions-generating equipment used for a range of activities. Ongoing activities, including landscape trimming, mowing or pruning, habitat restoration, soil erosion control efforts, or stream channel maintenance projects would either be enhanced to incrementally reduce emissions or would remain the same. No new activities are proposed that would expose people to localized air pollutant concentrations. An incremental reduction in emissions could result from proposed measures such as erosion prevention efforts (U.S. Navy 2002a).

Proposed habitat restoration measures provide for manual removal of invasive and exotic plants where feasible and use of chemical or mechanical applications only when necessary. The No Action Alternative is considered to be consistent with the SIP and would be consistent with the air quality management planning efforts of the Air Pollution Control District (U.S. Navy 2002a).

Therefore, no significant impacts on local or regional air quality would occur from the No Action Alternative.

3.5 Topography, Geology, and Soils

3.5.1 Definition of the Resource

Geological resources consist of the Earth's surface and subsurface materials. Within a given physiographic province, these resources typically are described in terms of topography and physiography, geology, soils, and geologic hazards.

Topography and physiography pertain to the general shape and arrangement of a land surface, including its height and the position of its natural and human-made features. Geology is the study of the Earth's composition and provides information on the structure and configuration of surface and subsurface features. Soils are the unconsolidated materials overlying bedrock or other parent material. Soils typically are described in terms of their complex type, slope, and physical characteristics. Differences among soil types in terms of their structure, elasticity, strength, shrink-swell potential, and erosion potential affect their abilities to support certain applications or uses. In appropriate cases, soil properties must be examined for their compatibility with particular construction activities or types of land use.

3.5.2 Existing Conditions

3.5.2.1 NBSD Main Site

Topography. The topography of NBSD Main Site (NBSD) is generally characterized as highly urbanized and relatively flat (U.S. Navy 2002a). NBSD is adjacent to the San Diego Bay and is situated approximately 10 feet (3 meters) above mean sea level. The San Diego Bay bottom has been dredged to accommodate shipping traffic and has a depth of 30 to 37 feet (9 to 11 meters) at the NBSD berthing area (U.S. Navy 2002a). An exception is the area of steep slopes (over 25 percent) in the triangle between Wabash Boulevard and 32nd Street and in the Commissary/Exchange compound south of Main Street (U.S. Navy 2002a).

Geology. Lands occupied by NBSD have been extensively filled during the last 50 years and include tidelands bordering San Diego Bay. Local topography around San Diego Bay is characterized by gently sloping ground at an average elevation of 10 feet above mean sea level (AMSL). An exception is the area of steep slopes (over 25 percent) in the triangle between Wabash Boulevard and 32nd Street and in the Commissary/Exchange compound south of Main Street.

NBSD, and the region as a whole, is located in a seismically active area. Faults (or fault splays) of the Rose Canyon fault system are the only known active faults within the San Diego Bay area. Three southwesterly trending branches of the Rose Canyon fault—the Spanish Bight, Coronado, and Silver Strand branches—pass through the bay in the vicinity of Naval Base San Diego (U.S. Navy 2002a). San Diego warrants a Seismic Zone 3 rating by the International Conference of Building and a Zone 4 rating by NAVFAC Design Manual 2.

Portions of NBSD (west of Harbor Drive) and the Broadway Complex are located primarily on artificially compacted fill; the portion east of Harbor Drive is underlain by Bay Point Formation. The Bay Point Formation, found generally west of Harbor Drive at NBSD, is assigned a high paleontological resource sensitivity based upon the occurrence of extremely diverse and well-preserved assemblages of marine invertebrate fossils and rare vertebrate fossils.

Approximately 90 percent of NBSD could be subject to liquefaction due to its location on bay fill and geologic sedimentation that may be subject to ground shaking during a severe earthquake (Navy 1989). Development at MGRF is limited, but structures built on unstable alluvium could also be subject to liquefaction during a seismic event.

Soils. Soils information presented below is summarized from the INRMP for NBSD (U.S. Navy 2002a) and derived from information presented in the “Soil Survey, San Diego Area,” published by the U.S. Department of Agriculture Soil Conservation Service in 1973.

Filling and dredging operations associated with the conversion of the bayfront to marine/industrial use have modified the natural marsh and tidal flat system that formerly existed. The area of NBSD and areas to the north and south were filled in the 1940s for Navy vessel berthing sites. As a result, all of the identified soil types at NBSD are either man-made or significantly altered from their natural state. The U.S. Department of Agriculture Soil Conservation Service (1973) identifies three major types of soil in the vicinity of NBSD. These include Made Land, Urban Land, and the Huerhuero-Urban Land Complex.

Dredging has modified the topography of the bay bottom. Berthing areas at NBSD have a depth of 30-37 feet. The deep-water channel in the bay is 37 feet deep. This channel extends from the 24th Street Marine Terminal to Embarcadero Park at the end of Fifth Avenue. The main ship channel from Embarcadero Park to the bay entrance at Ballast Point is 42 feet deep and 600 to 800 feet wide. There is an extensive dredged material turning basin at the North Island aircraft berthing area.

3.5.2.2 Broadway Complex

Topography. The topography of Broadway Complex is characterized as highly urbanized and relatively flat (U.S. Navy 2002a). The Broadway Complex is situated on the San Diego Bay, which is located approximately 10 feet (3 meters) above mean sea level.

Geology. The geologic composition of the Broadway Complex is comprised entirely of artificial compacted fill (U.S. Navy 2002a). Seismic faults and associated potential geological hazards in the vicinity of the Broadway Complex are similar to those described for the NBSD Main Site in **Section 3.5.2.1**.

Soils. Due to filling and dredging activities beginning during the 1940s that converted the San Diego Bay bayfront from a natural landscape to the present-day highly urbanized landscape, the only soil category occurring on the Broadway Complex is Urban Land (U.S. Navy 2002a).

3.5.2.3 Mission Gorge Recreational Facility

Topography. MGRF is situated on a portion of the San Diego River alluvial plain in northern Mission Valley and is surrounded by steep canyons and ridges (U.S. Navy 2002a). Slopes within MGRF are approximately between 0 and 5 percent, and the surrounding slopes range from 9 to 50 percent (U.S. Navy 2002a).

Geology. Flatter central areas of MGRF are composed primarily of younger (deposited 0.1 to 1.6 million years ago) alluvium, slope wash, and stream terrace deposits with steeper perimeter areas of MGRF comprised of older deposits (55 million years ago) such as Stadium Conglomerate of the Poway Group, which contains fossiliferous cross-bedded sandstone, and the Friars Formation, a nonmarine and lagoonal sandstone overlain by sedimentary deposits (California Division of Mines and Geology).

The Stadium Conglomerate at MGRF is considered to have either a moderate or high paleontological resource sensitivity based upon location within the formation. The lower conglomeratic units have been associated with diverse and well-preserved remains of terrestrial vertebrates while the upper units are considered less rare. The Friars Formation found at MGRF is assigned a moderate resource sensitivity rank based on the generally poor state of fossil preservation when found. Resources found in “unnamed river terrace deposits,” along the region’s larger coastal river valleys, including the San Diego River in Mission Valley, are generally considered to have a low paleontological resource sensitivity. However, because important vertebrate remains have been collected from several locations within this deposit class, and may be encountered elsewhere, “unnamed river terrace deposits” are assigned a moderate resource sensitivity (Deméré 1994).

The MGRF is located on a portion of the San Diego River alluvial plain in northern Mission Valley. The elevation is approximately 100 feet AMSL with slopes ranging from 0 to 5 percent through the central portion of the property. Steep canyons and ridges abut this flatter alluvial plain area on the west and north sides. Elevations reach as high as 360 feet AMSL along the western perimeter of the site and nearly 300 AMSL feet on the north. Adjacent slopes range between 9 and 50 percent. Slopes gradually increase to the east of the river valley and off-site through the Grantville neighborhood of the city of San Diego. Elevations decrease south of the MGRF property and continue to do so as the river channel passes Mission San Diego de Alcalá.

Soils. Soils found on MGRF consist of well-drained moderately deep loams, well-drained cobbly loams, to well-drained, undulating to steep, gravelly loams. INRMP Figure 3-2 depicts the mapped soil series for MGRF and provides a description of the each of the soil types found on-site.

3.5.2.4 NBSD Special Areas

Topography. All of the special areas are located outside of the fence line of the NBSD Main Site, with the exception of the Naval Base San Diego special area (two housing units) and Pacific Beacon (Palmer Hall). The land cover at special areas at NBSD is entirely made land. The San Diego metropolitan area is situated between 70 miles (110 kilometers) of coast line on the west and the Laguna Mountains in the east. The topography includes hills, mesas, and canyons. Elevation in San Diego ranges from sea level to 1,591 feet (485 meters).

Geology. San Diego County lies almost entirely within the Peninsular Ranges geomorphic province and rides atop the Pacific Plate, following a northwesterly path while grinding against the North American Plate. As a result of grinding, earthquakes and past volcanic activity, in combination with weathering processes, have largely shaped San Diego County into a geologically diverse area. Seismic structures running close by include the Rose Canyon Fault Branch, which runs north to south along the eastern side of the Silver Strand (U.S. Navy 2002a). The Rose Canyon Fault is considered the most potentially damaging fault in the area and is believed to have the potential to produce a 7.5 magnitude quake (U.S. Navy 2002a). Another major fault in the county, the Elsinore Fault, runs diagonally from the northwest to southeast across the county through Lake Henshaw. The San Jacinto Fault, further to the east and more or less paralleling the Elsinore Fault, has been the most active of San Diego County’s fault zones in recent times (U.S. Navy 2002a).

Soils. Soils within the NBSD special areas are described below.

Bayview Hills: The NRCS mapped seven soil types on Bayview Hills: Huerhuero-Urban land complex, Olivenhain-Urban land complex, and made land Diablo clay, Gaviota fine sandy loam, and Line clay loam, and Olivenhain-Urban land complex (NRCS 2011).

Bonita Bluffs: The only soil type mapped at Bonita Bluffs is the well-drained soil type San Miguel rock silt loam, with 9 to 30 percent slopes which comes from metavolcanic parent material.

Chollas Heights: The NRCS mapped three soil types on Chollas Heights special area: Redding-Urban land complex, Olivenhain cobbly loam and Olivenhain-Urban land complex (NCRS 2011).

Eucalyptus Ridge: The NRCS mapped four soil types on the Eucalyptus Ridge special area: Fallbrook-Vista sandy loam, with slopes of 9 to 30 percent and slopes of 15 to 30 percent, Placentia sandy loam, and Vista rocky coarse sandy loam (NCRS 2011).

Hilleary Park: Approximately 100 percent of the Hilleary Park special area is comprised of Placentia sandy loam soils with slopes of 2 to 9 percent.

Home Terrace: The NRCS mapped three soil types on the Home Terrace special area made land, Olivenhain cobbly loam, and Riverwash (NCRS 2011).

Howard Gilmore Terrace: Approximately 100 percent of the soil present on the Howard Gilmore Terrace special area is comprised of Friant rocky fine sandy loam with slopes of 9 to 30 percent (NCRS 2011).

La Mesa Park Townhomes: The NRCS mapped two soil types on the La Mesa Park Townhomes special area: Huerhuero loam; eroded, and Cieneba coarse sandy loam, eroded (NCRS 2011).

Murphy Canyon Heights: The NRCS mapped nine soil types on the Murphy Canyon Heights special area: Altamont clay with slopes of 5 to 9 percent and 9 to 15 percent, Diablo-Olivehain complex, Olivenhain cobbly loam with slopes of 9 to 30 percent and 30 to 50 percent, Redding gravelly loam with slopes of to 9 percent, 9 to 30 percent, and 15 to 50 percent, and terrace escarpments (NCRS 2011).

Paradise Gardens: The NRCS mapped two soil types on the Paradise Gardens special area, Linne clay loam and Olivenhain cobbly loam (NCRS 2011).

Pomerado Terrace: The NRCS mapped four soil types on the Pomerado Terrace special area; Riverwash, Redding gravelly loam, Redding cobbly loam, and Redding cobbly loam-dissected (NCRS 2011).

Prospect View: The NRCS mapped two soil types on the Prospect View special area, Salinas clay loam and Fallbrook sandy loam (NCRS 2011).

Ramona Vista Apartments: Approximately 100 percent of the soils mapped on the Ramona Vista Apartments special area consisted of Placentia sandy loam. Placentia sandy loam has slopes of 9 percent (NCRS 2011).

Riverplace: The NRCS mapped two soil types on the Riverplace special area, Fallbrook sandy loam and Ramona sandy loam (NCRS 2011).

Terrace View Villas: The NRCS mapped four soil types on the Terrace View Villas special area, Redding cobbly loam and made land (NCRS 2011).

Woodlake: Approximately 100 percent of the Woodlake special area is comprised of Grangeville fine sandy loam soils with slopes of 0 to 2 percent (NCRS 2011).

NBSD: Approximately 100 percent of the soils at the Naval Base San Diego special area and Pacific Beacon are made land.

3.5.3 Environmental Consequences

3.5.3.1 Proposed Action

No new structures are proposed that would increase the exposure of people or structures to significant seismic risk. Management actions would not substantially alter unique geologic or topographic features at any of the NBSD complexes nor would resource management actions disturb subsurface formations where unique paleontological resources could be located. The protection of soil resources from erosion through prevention and control practices, and from rehabilitation of degraded soil resources would occur under the Proposed Action. Therefore, implementation of the Proposed Action would not result in significant impacts on topography, geology, or soils. There would be some beneficial impacts from rehabilitation of areas with degraded soils.

3.5.3.2 No Action Alternative

Under the No Action Alternative, NBSD would continue to implement specific strategies in accordance with the 2002 INRMP for mapping existing eroded areas and implementing a soil erosion control program to conserve existing natural areas from disturbance that could degrade soils. Additionally, management policies include measures to revegetate existing denuded or eroded soils. None of the 2002 INRMP activities would result in the destruction of subsurface formations affecting paleontological resources. The No Action Alternative would therefore not increase the seismic risk to humans, nor would implementation be expected to adversely affect on-site soils or paleontological resources.

The revised INRMP would include all properties addressed in the 2002 INRMP, and the 18 naval special areas that have since been assigned to NBSD. For those properties not covered in the revised INRMP, the installation has established measures and programs for the management of topography, geology, and soils to ensure they are managed in compliance with Federal, state and local environmental laws and regulations. Overall beneficial impacts to topography or geology would occur. Therefore, no significant impacts would occur to topography or geology by implementing the No Action Alternative.

3.6 Water Resources

3.6.1 Definition of the Resource

Groundwater. Groundwater consists of subsurface hydrologic resources. It is an essential resource that functions to recharge surface water and is often used for potable water consumption, agricultural irrigation, and industrial applications. Groundwater typically can be described in terms of its depth from the surface, aquifer or well capacity, water quality, surrounding geologic composition, and recharge rate. Groundwater quality and quantity are regulated under several statutes and regulations.

Surface Water. Surface water resources generally consist of wetlands, lakes, rivers, and streams. Surface water is important for its contributions to the economic, ecological, recreational, and human health of a community or locale. The CWA (33 U.S.C. § 1251 et. seq., as amended) establishes Federal limits, through the National Pollutant Discharge Elimination System (NPDES) on the amounts of specific pollutants that are discharged to surface waters to restore and maintain the chemical, physical, and biological integrity of the water. The NPDES program regulates the discharge of point (i.e., end of pipe) and nonpoint sources (i.e., storm water) of water pollution. The U.S. Army Corps of Engineers (USACE)

has regulatory authority over waters of the United States. The term “waters of the United States” has broad meaning under the CWA and incorporates deepwater aquatic habitats and special aquatic habitats (including wetlands). Waters of the United States are areas regulated under the CWA and also include coastal and inland waters, lakes, rivers, ponds, streams, intermittent streams, vernal pools, and waters that if degraded or destroyed could affect interstate commerce.

Section 404 of the CWA authorizes the Secretary of the Army, acting through the USACE, to issue permits for the discharge of dredged or fill materials into the waters of the United States, including wetlands. Therefore, even an inadvertent encroachment into wetlands or non-wetland waters of the United States resulting in displacement or movement of soil or fill materials has the potential to be viewed as a violation of the CWA if an appropriate permit has not been issued by the USACE.

Wetlands. Wetlands are land areas saturated with water, either permanently or seasonally, which take on characteristics distinguishing themselves as distinct ecosystems. The primary factor that distinguishes wetlands is the characteristic vegetation adapted to its unique soil conditions. The USEPA and USACE are responsible for making jurisdictional determinations and regulating wetlands and waters of the United States under Section 404 of the CWA. These agencies assert jurisdiction over (1) traditional navigable waters, (2) wetlands adjacent to navigable waters, (3) nonnavigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months), and (4) wetlands that directly abut such tributaries. Additionally, non-relatively permanent tributaries, or ephemeral drainages, that are determined to have a “significant nexus” to traditional navigable water of the United States can be considered jurisdictional under the CWA. The significant nexus evaluation must consider flow characteristics and functions of the tributary to determine if it has a significant effect on the chemical, physical, and biological integrity of downstream traditional navigable waters (EPA 2008).

Floodplains. Floodplains are areas of low-level ground present along rivers, stream channels, large wetlands, or coastal waters. Floodplain ecosystem functions include natural moderation of floods, flood storage and conveyance, groundwater recharge, and nutrient cycling. Floodplains also help to maintain water quality and are often home to a diverse array of plants and animals. In their natural vegetated state, floodplains slow the rate at which the incoming overland flow reaches the main water body. Flood potential is evaluated by the Federal Emergency Management Agency, which defines the 100-year floodplain as the area that has a 1 percent chance of inundation by a flood event in a given year. Certain facilities inherently pose too great a risk to be in either the 100- or 500--year floodplain, such as hospitals, schools, or storage buildings for irreplaceable records. Federal, state, and local regulations often limit floodplain development to passive uses, such as recreational and preservation activities, to reduce the risks to human health and safety.

3.6.2 Existing Conditions

3.6.2.1 NBSD Main Site

Wetlands were delineated on NBSD during the 2006 and 2008 natural resources survey for NBSD. A total of 1.6 acres (0.65 hectares) of wetlands and 298.8 acres (121 hectares) of other USACE regulated waters of the United States were identified on NBSD (U.S. Navy 2010b).

Groundwater in the San Diego area exists in an unconfined condition at depths ranging from 2 to 11 feet (0.6 to 3.4 meters) below ground surface. Groundwater generally flows in a south-southeastern (bayward) direction. However, flow direction could be influenced locally by the partial barrier of the quay wall and by the presence or absence of impervious surfaces (U.S. Navy 2002a). Groundwater in the

San Diego area has high levels of salinity and total dissolved solids and is not a source of potable water (U.S. Navy 2008).

NBSD lies within the 60,007-acre (24,284-hectare) San Diego Bay watershed and within the 16,270-acre (6,584-hectare) Chollas Creek watershed. The Chollas Creek watershed includes Chollas and Paleta creeks, which cross the NBSD Main Site (U.S. Navy 2002a). Due to intense urbanization within the watershed, Las Chollas is completely channelized on NBSD and lacks natural soil cover, and the stream bank along Paleta creek is degraded. Both of these are subject to flooding. For example, “a tentative estimation of flood potential indicates that an area 4,000 feet wide at the mouth of Chollas Creek could be covered with one to two feet of water in a major storm” (U.S. Navy 2002b).

Water quality in Chollas Creek and the Seventh Street Channel (Paleta Creek) are highly degraded and the State Water Resources Control Board (SWRCB) lists both as “impaired” water bodies on the 303(d) List. TMDLs will be established for each. The Seventh Street Channel (Paleta Creek) in San Diego Bay is designated by the SWRCB as a high-priority toxic hot spot and Chollas Creek is designated as a moderate-priority hot spot.

Paleta Creek has a very small drainage basin and small channel capacity, resulting in the potential for flooding during a 10-year flood event, or during a high tide event combined with a storm (U.S. Navy 2002b). A high tide combined with a storm could cause flooding through backup of water in the channel. Such flooding would cover a large area because of the flat, low-lying topography and the meandering course of the channel that leads to the bay. Paleta Creek also has the capacity to accommodate 70 percent of the floodway resulting from a 100-year flood (U.S. Navy 2002b). The baseball fields east of Paleta Creek and the structures (field house, racquet courts, and hobby shops) west of the creek are situated in the 100-year floodplain. Other developed areas adjacent to Chollas Creek, such as the Exchange Service Station, are subject to inundation (U.S. Navy 2002b).

Due to the marginal capacity of these streams to convey flood flows, sedimentation is a significant factor, especially at the Division Street and Fourth Street crossings of Paleta Creek where sedimentation of the culverts can aggravate flooding. The Navy has a CWA 404 permit to perform routine maintenance dredging in portions of Paleta Creek (U.S. Navy 2002a).

3.6.2.2 Broadway Complex

Groundwater in the San Diego area exists in an unconfined condition at depths ranging from 2 to 11 feet (0.6 to 3.4 meters) below ground surface. Groundwater generally flows in a south-southeastern (bayward) direction. However, flow direction could be influenced locally by the partial barrier of the quay wall and by the presence or absence of impervious surfaces (U.S. Navy 2002a). Groundwater in the San Diego area has high levels of salinity and total dissolved solids and is not a source of potable water (U.S. Navy 2008).

There are no naturally occurring streams or other watercourses on Broadway Complex (U.S. Navy 2002a). The Broadway Complex is fully developed and located in the downtown urbanized area.

Runoff from this facility is diverted to the existing municipal storm drain network which outlets to the San Diego Bay (U.S. Navy 2002b).

No wetlands were identified on Broadway Complex during the 2006 and 2008 natural resources survey for NBSD (U.S. Navy 2010b). The Broadway Complex is within the 100-year floodplain.

3.6.2.3 Mission Gorge Recreational Facility

The MGFR, commonly known as Admiral Baker Field, is located in the City of San Diego within the Mission San Diego Hydrologic Subarea (907.11) of the Lower San Diego Hydrologic Area (907.10) of the San Diego Hydrologic Unit (907.00). MGRF lies along the San Diego River. The majority of the San Diego River has been channelized to protect the golf courses and adjacent off-site urban areas from severe flooding. The golf course area contains several created irrigation/drainage ponds, some of which support southern willow scrub and freshwater marsh vegetation. Most of these ponds are interconnected through pipes, earthen drainage swales, and concrete culverts. Development surrounding the northeastern property boundaries has necessitated the construction and alteration of a few earthen drainage ditches in order to protect the golf course landscaping. MGRF also has been granted riparian rights to the use of San Diego River water by the State Water Resources Control Board (SWRCB) (U.S. Navy 2002a). Water taken under riparian rights may be stored for no more than 30 days. If water is to be stored longer than 30 days, additional documentation is required, including a storage rights permit, license, and NEPA/California Environmental Quality Act (CEQA) documentation.

Commander, Navy Region Southwest has a Statement of Water Diversion and Use on file with the SWRCB for the continued diversion of San Diego River water to the golf course for irrigation purposes. The Navy has been diverting water from the river since 1955 and currently diverts approximately 730 acre-feet (90 hectare meters) per year in order to irrigate 220 acres (89 hectares) of the golf courses. The water is pumped from one diversion point on the river into holding ponds located on the golf course. From the holding ponds, the water is drawn into the installation's irrigation system.

Wetlands and non-wetland jurisdictional waters of the United States, as defined by USACE, were delineated on MGRF during the 2006 and 2008 natural resources survey for MGRF. As shown in, a total of 1.6 acres (0.6 hectares) of wetlands and 298.8 acres (120.9 hectares) of other USACE regulated waters of the United States were identified on MGRF (U.S. Navy 2010b).

3.6.2.4 NBSD Special Areas

No wetlands or other waters of the United States occur within 14 of the 18 NBSD special areas (U.S. Navy 2009b). Surface water bodies occur within the Bayview Hills, Chollas Heights, Murphy Canyon Heights, and Pomerado Terrace special areas, as detailed in the following paragraphs.

Bayview Hills: Certain areas of this property are covered by a PPV lease. Please see the INRMP for additional information. No wetlands or non-wetland jurisdictional waters of the United States were delineated within the Navy-retained parcel (U.S. Navy 2011).

Chollas Heights: A total of 0.10 acre (0.04 hectare) of wetlands and 0.05 acre (0.02 hectare) of non-wetland jurisdictional waters of the United States were delineated within the Navy-retained parcel (U.S. Navy 2011). In addition, 0.13 acre (0.05 hectare) of isolated wetlands were delineated within the Navy-retained parcel of the Chollas Heights special area. Vernal pools were mapped during surveys conducted in 1999, but these pools were not delineated again during surveys conducted in 2009 (U.S. Navy 2011). This site consists of mesa tops with seasonal wetlands, a complex of vernal pools and a series of urban drainages connected via culverts (U.S. Navy 2011). Certain areas of this property are covered by a PPV lease. Please see the INRMP for additional information.

Murphy Canyon Heights: A total of 0.10 acre (0.04 hectare) of wetlands and 0.25 acre (0.10 hectare) of concrete ditches were delineated within the special area. An expansive complex of vernal pools were mapped during surveys conducted in 1999 but were not delineated during surveys conducted in 2009. A single blue-line stream was delineated and is located just north of Aero Drive, immediately south of the

housing area. In addition, Murphy Canyon Creek has been identified by the USGS as being a blue-line stream within the special area but was not delineated during the 2009 survey (U.S. Navy 2011). Certain areas of this property are covered by a PPV lease. Please see the INRMP for additional information.

Pomerado Terrace: Property entirely covered by a PPV lease, there are no Navy-retained non-leased areas for this neighborhood. Please see the INRMP for additional information.

No floodplains occur in 16 of the 18 NBSD special areas (U.S. Navy 2009b). Floodplains occur within the Bayview Hills and Pomerado Terrace special areas, as detailed in the following paragraphs.

Bayview Hills: Certain areas of this property covered by PPV lease. Please see the INRMP for additional information. No floodplains were delineated within the Navy-retained parcel (U.S. Navy 2011).

Pomerado Terrace: Property entirely covered by a PPV lease, there are no Navy-retained non-leased areas for this neighborhood. Please see the INRMP for additional information.

3.6.3 Environmental Consequences

3.6.3.1 Proposed Action

No significant, adverse impacts on water supply would occur from water conservation actions associated with the Proposed Action. Beneficial impacts of water conservation include reduced pressure on regional water resources and better preparedness for extreme events, such as drought, fires, and other disasters.

Under the Proposed Action, sedimentation in surface waters downstream of NBSD facilities would be prevented or controlled due to a reduction in soil erosion. Therefore, long-term, beneficial impacts on water resources would result. The reduction of sediment within the effluent from urban storm water drainages that cross NBSD facilities would improve water quality in San Diego Bay. The improvements of unstable drainages, where necessary, on the NBSD facilities would improve water quality due to a reduction in soil erosion and sedimentation within the streams.

The implementation of Low Impact Development practices and technologies in future improvements on NBSD would minimize the amount of storm water runoff from impervious surfaces and associated pollutants (e.g., petroleum products) that reaches waterways on and downstream of NBSD. The reduction in storm water entering streams would reduce impacts on surrounding floodplains. The minimization of fertilizers and pesticides applied on NBSD using integrated pest management techniques (as described in **Section 3.8.3.1**) would improve surface water quality by reducing nutrients and pollutants entering waterways in streams and the potential for future eutrophication in waterways. Herbicide and pesticide use would be closely controlled and applied in a manner consistent with Federal and state laws. To ensure effective use of herbicides and pesticides and reduce the likelihood of runoff, they would be applied days before a known rain event.

Therefore, implementation of the Proposed Action would not result in significant impacts on water resources, but rather, beneficial impacts to water quality along the San Diego River as improvement projects are implemented.

3.6.3.2 No Action Alternative

Beneficial impacts on water resources would occur from the implementation of the No Action Alternative. The implementation of sediment- and erosion-control BMPs is a management strategy

identified in the 2002 INRMP. Under the No Action Alternative, NBSD would continue to implement sediment- and erosion-control BMPs in accordance with the 2002 INRMP.

The revised INRMP would include all properties addressed in the 2002 INRMP, and 18 NBSD special areas that have since been assigned to NBSD. For those properties not covered in the revised INRMP, the installation has established measures and programs for the management of water resources in these areas to ensure they are managed in compliance with Federal, state and local environmental laws and regulations. Overall beneficial impacts to water resources would occur. Therefore, no significant impacts would occur to water resources by implementing the No Action Alternative.

3.7 Biological Resources

3.7.1 Definition of the Resource

Biological resources include native or naturalized plants and animals and the habitats (e.g., grasslands, forests, and wetlands) in which they exist. Protected and sensitive biological resources include the following:

- ESA-listed species (threatened or endangered) and those candidate species proposed for ESA-listing as designated by the USFWS (terrestrial and freshwater organisms) or National Marine Fisheries Service (NMFS) (marine organisms).
- Species that are state-listed by the CDFW as endangered, threatened, or candidates under the California Endangered Species Act (CESA).
- Other special status species (not state-listed under CESA), including CDFW species of special concern, California Native Plant Society (CNPS) rare plants, CDFW fully protected species, and birds of conservation concern (as identified by the American Bird Conservancy or National Audubon Society).
- Migratory birds, protected under the Migratory Bird Treaty Act (MBTA) of 1918, as amended, and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*.
- Marine mammals, protected under the Marine Mammal Protection Act of 1972, as amended.
- Bald and Golden Eagles protected under the Bald and Golden Eagle Protection Act.
- Critical habitats (designated by USFWS and NMFS), essential fish habitat (EFH) (designated by regional fishery management councils with NMFS assistance), and other sensitive habitats.

Special status species include those species that are federally or state-listed endangered, threatened, candidate, or California species of special concern; birds on the Federal birds of conservation concern list; and plants identified by the CNPS as belonging to the Rare Plant Rank list of 1B. In addition, those migratory bird species that have been determined to be of the highest “concern” to the DOD and that have been identified on the DOD Partners in Flight Priority Species list have been included.

The MBTA (16 U.S.C. 703-712) protects all migratory birds and prohibits the taking of migratory birds, their young, nests, and eggs, except as permitted by the USFWS. The USFWS recommends that the Broadway Complex avoid impacting birds protected under the MBTA by surveying for nesting birds in areas proposed for disturbance and if necessary, waiting until the nesting and fledging process is complete. Alternatively, the USFWS recommends conducting activities outside of nesting areas or outside of the general migratory bird-nesting season that extends from mid-February through the end of August, to help avoid direct impacts.

3.7.2 Existing Conditions

3.7.2.1 NBSD Main Site

Vegetation

NBSD Main Site is composed of highly developed land with very little vegetation. Most of the terrestrial vegetation on NBSD Main Site is limited to ornamental trees and shrubs typically found in urbanized landscaped areas, and grasses commonly found in recreational areas (i.e., pampas grass [*Cortaderia jubata*], shoregrass, and fountain grass [*Pennisetum setaceum* Forsskal]) (U.S. Navy 2010b).

Other than developed land, the most common habitat type at NBSD Main Site is the southern coastal salt marsh habitat. Southern coastal salt marshes are generally located along the inland portions of bays, lagoons and estuaries (U.S. Navy 2002a). These areas consist of a moderate to dense covering of salt-tolerant herbaceous species. The salt marsh at NBSD Main Site is subject to regular inundation by the San Diego Bay and consists of hydric soils. Plant species commonly found in the southern coastal salt marsh include cordgrass (*Spartina foliosa*), pickleweed (*Salicornia virginica*), annual pickleweed (*Salicornia bigelovii*), saltwort (*Batis maritima*), estuary seablite (*Suaeda esteroa*), golden bush (*Isocoma* sp.), shoregrass (*Monanthochloe littoralis*), and box thorn (*Lycium californicum*) (U.S. Navy 2002a).

The aquatic flora on NBSD Main Site is limited to riparian and wetland species along Paleta and Chollas creeks (e.g., cattail [*Typha* sp.] and giant reed), and eelgrass within the shallow coastal zones in San Diego Bay (U.S. Navy 2010b, U.S. Navy 2002a). Eelgrass (*Zostera marina*) is a perennial marine flowering aquatic plant that provides habitat for several varieties of fish and invertebrates in the San Diego Bay (U.S. Navy 2011b). The 2011 update to the eelgrass distribution within San Diego Bay showed that it extended over a total bottom area of 1,830.4 acres (740.7 hectares) and follows the general patterns of distribution noted in prior surveys. The greatest extent of eelgrass is found within the shallow southern ecoregion of the Bay with more extensive eelgrass also being found on the shallower fringes of the western Bay shorelines where gradual shorelines are more prominent (U.S. Navy et al. 2011b). The inventory did not identify any eelgrass specifically within the NBSD marine footprint, but it has the potential to occur.

A natural resources inventory report was conducted at the NBSD Main Site from November 2006 to January 2008. The Two native saltmarsh vegetation communities pickleweed-jaumea series and pickleweed series occur on NBSD Main Site. Other land cover includes the non-native giant reed series, open water and developed land (U.S. Navy 2010b).

Detailed information on each of the terrestrial vegetation communities found on NBSD Main Site is included in **Section 4.2.3.1 of the INRMP**.

Wildlife

Due to the intensive urbanization that has occurred on NBSD Main Site, terrestrial habitat is limited and wildlife species diversity is relatively low (U.S. Navy 2010b).

Invertebrate species observed during the 2006 and 2008 natural resources surveys at NBSD Main Site include scarab beetles (family Scarabaeidae), noctuid moths (family Noctuidae), blue butterflies (family Lycaenidae), skipper butterflies (family Hesperidae), water midges (family Chironomidae), ichneumonid wasps (family Ichneumonidae), ants (family Formicidae), sweat bees (family Halictidae), jumping spiders (family Salticidae), and wolf spiders (family Lycosidae) (U.S. Navy 2010b).

During 2005 surveys of the San Diego Bay, there were 58 species of fish collected. Topsmelt (*Atherinops affinis*) was the most abundant species followed by deepbody anchovy (*Anchoa compressa*), slough anchovy (*Anchoa delicatissima*), Northern anchovy (*Engraulis mordax*), and shiner perch (*Cymatogaster aggregata*). In 1998 the Pacific Fishery Management Council delineated and designated essential fish habitat (EFH) in San Diego Bay for coastal pelagic species and Pacific Coast Groundfish.

One reptile species, the western fence lizard (*Sceloporus occidentalis*), was observed on NBSD Main Site during the 2006 and 2008 surveys. One amphibian species, the bullfrog (*Rana catesbeiana*) is also known to occur on NBSD Main Site, but was not observed during the most recent 2006 and 2008 surveys (U.S. Navy 2010b).

During the 2006 and 2008 surveys performed at NBSD Main Site, raptors were observed foraging on the installation, including the Cooper’s Hawk (*Accipiter cooperii*), Red-tailed Hawk (*Buteo jamaicensis*), and Red-shouldered Hawk (*Buteo lineatus elegans*). Raptor perching sites at NBSD Main Site include the athletic field light poles and tall eucalyptus trees within the urban areas. Western Gulls (*Larus occidentalis*), Rock Pigeons (*Columba livia*), European Starlings (*Sturnus vulgaris*), House Finches (*Carpodacus mexicanus frontalis*), and other birds typical of urban environments were common at NBSD Main Site. Black Phoebes (*Sayornis nigricans semiatra*) were frequently observed on the athletic fields. In the salt marsh vegetation and open water of Paleta Creek, species such as Green Heron (*Butorides striatus*), Blue-winged Teal (*Anas discors*), and Great Egret (*Ardea alba*) were also observed (U.S. Navy 2010b).

Due to the urbanization of NBSD, available habitat for terrestrial mammal species is very limited. Only three terrestrial species of mammals were observed or detected on NBSD during the 2006 and 2008 natural resources surveys, including the gray fox (*Urocyon cinereoargenteus*), black rat (*Rattus rattus*) and house mouse (*Mus musculus*) (U.S. Navy 2010b).

Three year-round marine mammal species and one migratory marine mammal species are expected to be found within the NBSD Main Site marine habitat. These include the California sea lion (*Zalophus californianus*), Pacific harbor seal (*Phoca vitulina richardii*), bottlenose dolphin (*Tursiops truncatus*), and the migratory gray whale (*Eschrichtius robustus*). Detailed information on wildlife at NBSD Main Site is included in **Section 4.2.4 of the INRMP**.

Special Status Species

Federally Listed and Candidate Species

No federally listed or candidate species are known to occur at NBSD Main Site. **Table 3-2** includes the species either observed on NBSD during the 2006 natural resources survey, or species with the potential to occur on the installation.

Table 3-2. Special Status Species Observed or with the Potential to Occur on NBSD Main Site

Common Name	Scientific Name	Federal Status	State Status	NBSD Presence
Plants				
Estuary seablite	<i>Suaeda esteroa</i>	---	CNPS Rank 1B.1	Found along Paleta Creek.
Birds				

Common Name	Scientific Name	Federal Status	State Status	NBSD Presence
Great Egret	<i>Ardea alba egretta</i>	---	---	Observed foraging in Paleta Creek, no nests present.
Great Blue Heron	<i>Ardea herodias wardi</i>	---	---	Observed foraging in Paleta Creek, no nests present.
Snowy Egret	<i>Egretta thula thula</i>	---	---	Nesting on NBSD.
Black-crowned Night-Heron	<i>Nycticorax nycticorax hoactli</i>	---	---	Nesting on NBSD.
Osprey	<i>Pandion haliaetus</i>	---	WL	Observed at NBSD in 2012.

Source: U.S. Navy 2010b, CNPS 2011, Pers. Comm. A. Wastell 2012

Note: Herons and egrets are identified as special status species due to the concerns that have risen over the proper management of these colonies and the best approach to minimize conflicts with naval operations. They are also protected under MBTA.

Key:

Federal Status: FE = Federal Endangered, FT = Federal Threatened, FC = Federal Candidate, BCC = Birds of Conservation Concern

State Status: SE = State Endangered, ST = State Threatened, SSC = Species of Special Concern, WL = Watch List, FP = Fully Protected

CNPS: CNPS List 1B = Rare, threatened, or endangered in California and elsewhere. 0.1: Seriously threatened in California.

Other Special Status Species

Other special status species on NBSD Main Site that have focused management in the INRMP include:

- Estuary seablite (*Suaeda esteroa*) was the only rare plant documented during the 2006 and 2008 natural resources surveys. Estuary seablite is a CNPS List 1B species. Estuary seablite was found along Paleta Creek, generally interspersed with pickleweed and iceplant. Approximately 500 individuals were observed along Paleta Creek during the 2006 and 2008 surveys. A few individuals were also observed at the lower extent of Chollas Creek at the base of riprap (U.S. Navy 2010b). More detailed species specific information is available in **Section 4.2.5.2 of the INRMP**.

3.7.2.2 Broadway Complex

Vegetation

Terrestrial vegetation on Broadway Complex is limited to ornamental trees and shrubs typically found in urbanized landscaped areas and miscellaneous herbaceous species, most of which are nonnative weeds (U.S. Navy 2010b). Terrestrial species noted during the 2006 and 2008 natural resources survey on Broadway Complex include pine trees (*Pinus* sp.), eucalyptus (*Eucalyptus* sp.), and London plane tree (*Platanus acerifolia*) (U.S. Navy 2010b).

Wildlife

No invertebrates were identified at Broadway Complex during the 2006 and 2008 survey (U.S. Navy 2010b). However, species expected to occur at the property include noctuid moths, blue butterflies,

skipper butterflies, water midges, ichneumonid wasps, ants, sweat bees, jumping spiders, and wolf spiders (U.S. Navy 2010b).

No reptiles or amphibians were identified at Broadway Complex during the 2006 and 2008 survey (U.S. Navy 2010b). The western fence lizard, which is common in urban environments, has the potential to occur at the facility.

Due to the urbanization of Broadway Complex, nesting habitat for avian species is limited; however, several avian species are expected to transit Broadway Complex (U.S. Navy 2010b). Generalist species and species that will make use of ornamental vegetation observed at Broadway complex include house finch, rock dove, American crow, Northern mockingbird, black phoebe, mourning dove and Anna's hummingbird.

Water obligate birds, that may fly over or perch around Broadway Complex include California Gull, Heerman's Gull, Western gull, California brown pelican and California least tern.

Available mammalian habitat is very limited at the Broadway Complex and no mammals were detected during the 2006 and 2008 natural resources surveys. Urbanized species expected to occur on Broadway Complex include feral cats (*Felis catus*), the black rat, and the house mouse (U.S. Navy 2002a).

Special Status Species

Federally Listed and Candidate Species

Due to lack of habitat, no federally listed or candidate species are expected to occur on Broadway Complex. The California Least Tern (*Sterna antillarum browni*) was observed during surveys conducted on the end of the pier (outside the boundaries of the Broadway Complex) and this observation may misrepresent the species that occur within the boundaries of the Broadway Complex (U.S. Navy 2010b).

Other Special Status Species

Other special status species on Broadway Complex that have focused management in the INRMP include:

- California Gull (*Larus californicus*), a state listed California Species of Special Concern, was observed during surveys conducted on the end of the pier (outside the boundaries of the Broadway Complex) and this observation may misrepresent the species that occur within the boundaries of the Broadway Complex (U.S. Navy 2010b).

3.7.2.3 Mission Gorge Recreational Facility

Vegetation

The 440-acre (178-hectare) MGRF facility primarily consists of cultivated or landscaped habitat with various ornamental trees, shrubs, and grasses (e.g., pampas grass, Bermuda grass) planted on the golf courses and surrounding areas (U.S. Navy 2010b). Natural habitat areas also occur, with riparian woodland along the San Diego River and coastal sage scrub adjacent to the golf course on the north and northwestern edges of the property. Most of the natural habitat on-site occurs either within the San Diego River or along very steep slopes (25-50 percent or greater) and is not suitable for development. Eight native vegetation communities are present at the MGRF: California Encelia series, California Encelia-San Diego County Viguiera series, California sagebrush series, California sagebrush black sage series, coast goldenbush-coyotebush series, cottonwood-willow series, bulrush series, and mule fat

series. Non-native plant communities include: eucalyptus series, eucalyptus series–removed, wild oat series, giant reed series, and Russian thistle series. Other land cover types include open water, ruderal habitat and developed land (U.S. Navy 2010b).

Detailed information on each of the terrestrial vegetation communities found at MGRF is included in **Section 6.2.3.1 of the INRMP**.

Wildlife

The majority wildlife habitats on MGRF consist of landscaped grounds associated with the Admiral Baker Golf Course and other recreational facilities at the site (U.S. Navy 2002b).

Invertebrate species diversity on MGRF is moderate due to habitat fragmentation (U.S. Navy 2010b). Invertebrate species observed during the 2006 and 2008 natural resources surveys at MGRF include stink bugs (family Pentatomidae), leafhoppers (family Cicadellidae), fulgorid planthoppers (family Fulgoridae), house flies (family Muscidae), long-legged flies (family Dolichopodidae), and jumping spiders (U.S. Navy 2010b). Butterfly species observed included western tiger swallowtail (*Papilio rutulus rutulus*), fiery skipper (*Polites sabuleti*), and western pygmy blue (*Brachidium exile*) (U.S. Navy 2010b).

Reptile and amphibian species observed on MGRF during the 2006 and 2008 surveys included the common side-blotched lizard (*Uta stansburiana*), western fence lizard, San Diego alligator lizard (*Elpharia multicannatus webbi*), Belding's orange-throated whiptails (*Aspidoscelis hyperythrus beldingi*), California whipsnake (*Masticophis lateralis*), California kingsnake (*Lampropeltis getulus californiae*), California toad (*Bufo boreas halophilus*), Pacific tree frog (*Hyla regilla*), the nonnative and highly invasive bullfrog, and the African clawed frog (*Xenopus laevis*), also a potentially serious exotic invasive pest species (U.S. Navy 2010b).

Only one fish, mosquitofish (*Gambusia affinis*), was detected during the 2010 inventory of MGRF.

MGRF contains quality nesting habitat for several avian species, particularly within and around the Admiral Baker Golf Course. Raptors were observed foraging at MGRF, including Cooper's Hawks, Red-tailed Hawks, and Red-shouldered Hawks (*Buteo lineatus elegans*). MGRF supports tall riparian habitat along the San Diego River and in patches in the northeast portion of the site, and eucalyptus groves and other tall ornamental trees associated with the golf course. Each of these areas can potentially support nesting raptors. The undisturbed habitat around the Admiral Baker Golf Course provides good quality foraging sites for raptor species (U.S. Navy 2010b).

Bird species commonly observed at MGRF include Anna's Hummingbird (*Calypte anna*), Lesser Goldfinch (*Carduelis psaltria hesperophilus*), Bushtit (*Psaltriparus minimus minimus*), and Song Sparrow (*Melospiza melodia*). Swallows, including Northern Rough-winged Swallow (*Stelgidopteryx serripennis*), Barn Swallow (*Hirundo rustica erythrogaster*), Tree Swallow (*Tachycineta bicolor*), and Cliff Swallow (*Petrochelidon pyrrhonota tachina*) were observed at MGRF. Orange-crowned Warblers (*Vermivora celata*), White-crowned Sparrows (*Zonotrichia leucophrys*), and Yellow-rumped Warblers (*Dendroica coronata*) were detected during the winter months (U.S. Navy 2010b).

During the 2006 and 2008 natural resources surveys, mammalian species observed or detected included the California pocket mouse (*Chaetodipus californicus*), bobcat (*Felis rufus*), California ground squirrel (*Spermophilus beecheyi*), pocket gopher (*Thomomys bottae*), and San Diego woodrat (*Neotoma lepida intermedia*) (U.S. Navy 2010b). In addition, several bat species were detected in the San Diego River region and have the potential to occur on MGRF: western mastiff bat (*Eumops perotis californicus*),

pocketed free-tailed bat (*Nyctinomops femorosaccus*), big free-tailed bat (*Nyctinomops macrotis*), western red bat (*Lasiurus blossevillii*), and the Yuma myotis (*Myotis yumanensis*) (U.S. Navy 2010b).

Special Status Species

Federally Listed and Candidate Species

Two federally listed species have been observed on MGRF: the Least Bell's Vireo (endangered) and Coastal California Gnatcatcher (threatened). Detailed information on the listed species found at MGRF is included in **Section 6.2.5.1 of the INRMP**.

Other Special Status Species

Other special status species, including several avian species and Belding's orange-throated whiptail, that were observed on MGRF are shown in **Table 3-3**.

Table 3-3. Special Status Species Observed or with the Potential to Occur on MGRF

Common Name	Scientific Name	Federal Status	State Status	NBSD Presence
Plants				
San Diego barrel cactus	<i>Ferocactus viridescens</i>	---	CNPS Rank 2.1	Known to occur and observed during 2009 surveys.
Palmer's grappling hook	<i>Harpagonella palmeri</i>	---	CNPS Rank 4.2	Known to occur, not observed during 2009 surveys.
Spiny rush	<i>Juncus acutus</i> ssp. <i>leopoldii</i>	---	CNPS Rank 4.2	Known to occur and observed during 2009 surveys.
California box-thorn	<i>Lycium californicum</i>	---	CNPS Rank 4.2	Known to occur and observed during 2009 surveys.
San Diego County viguiera	<i>Viguiera laciniata</i>	---	CNPS Rank 4.2	Known to occur and observed during 2009 surveys.
Birds				
Cooper's Hawk	<i>Accipiter cooperii</i>	---	WL	Observed in riparian habitat along San Diego River, although no nests were observed, there is the potential to nest on-site.
Southern California Rufous-crowned Sparrow	<i>Aimophila ruficeps canescens</i>	---	WL	Detected in the California sagebrush habitat at MGRF and is expected to breed on-site.
Sharp shinned Hawk	<i>Accipiter striatus velox</i>	---	SSC	Detected at MGRF during the 1995/1996 surveys. This species has the potential to forage on-site, but would not be expected to nest on-site.
Yellow Warbler	<i>Dendroica petechia</i>	BCC	SSC	Detected in cottonwood-willow series vegetation at MGRF. Breeds on-site, occupies the available suitable habitat on-site.

Common Name	Scientific Name	Federal Status	State Status	NBSD Presence
Birds (continued)				
White-tailed Kite	<i>Elanus leucurus</i>	---	FP	No nests were observed, this species has the potential to nest in the trees on-site.
Yellow-breasted Chat	<i>Icteria virens auricollis</i>	---	SSC	Detected in the cottonwood-willow series vegetation at MGRF. This migratory species is expected to breed on-site.
American White Pelican	<i>Pelecanus erythrorhynchos</i>	---	SSC	Observed resting on the open water within the San Diego River at MGRF.
Double-crested Cormorant	<i>Phalacrocorax auritus albociliatus</i>	---	WL	Species is expected to forage along the San Diego River, but is not expected to breed on-site.
Coastal California Gnatcatcher	<i>Poliptila californica californica</i>	FT	SSC	Observed during focused surveys on MGRF and known to breed in coastal sage scrub at MGRF.
Least Bell's Vireo	<i>Vireo bellii pusillus</i>	FE	SE	Observed during focused surveys nesting along San Diego River at MGRF.
Reptiles and Amphibians				
Belding's orange-throated whiptail	<i>Aspidoscelis hyperythrus beldingi</i>	---	SSC	Observed throughout the coastal sage habitat.
Mammals				
Western red bat	<i>Lasiurus blossevillii</i>	---	SSC	Detected east of MGRF along the San Diego River; moderate potential to occur.
San Diego black-tailed jackrabbit	<i>Lepus californicus bennettii</i>	---	SSC	Last observed in 1995.
San Diego desert woodrat	<i>Neotoma lepida intermedia</i>	---	SSC	Observed during trapping studies at MGRF.
Pocketed free-tailed bat	<i>Nyctinomops femorosaccus</i>	---	SSC	Last observed in 2002.
Big free-tailed bat	<i>Nyctinomops macrotis</i>	---	SSC	Known to occur on San Diego River at MTRP. Moderate potential for this species to occur.
Invertebrates				
Hermes copper butterfly	<i>Hermelycaena [Lycaena] hermes</i>	FC	---	Not documented on site, but host plant is present.

Source: U.S. Navy 2010b, CDFG 2011a

Key: Federal Status: FE = Federal Endangered, FT = Federal Threatened, FC = Federal Candidate, BCC = Birds of Conservation Concern

State Status: SE = State Endangered, SSC = Species of Special Concern, WL = Watch List, FP = Fully Protected

CNPS: CNPS List 4.2 = Limited distribution (Watch list). 0.2: Moderately threatened in California, CNPS List 2.1 = List 2: Rare, threatened, or endangered in California, but more common elsewhere. 0.1: Seriously threatened in California.

3.7.2.4 NBSD Special Areas

Vegetation

The NBSD special areas contain ornamental vegetation typical of residential landscaping. In addition, there are numerous native and nonnative vegetation communities within the open spaces included in several of the NBSD special areas. There are no open spaces within the following housing areas: Bonita Bluffs, Hilleary Park, La Mesa Park Townhomes, Paradise Gardens, Prospect View, Ramona Vista Apartments, Riverplace, Woodlake, and NBSD. The vegetation within the remaining special areas that have open spaces is discussed in the following paragraphs.

Bayview Hills: Certain areas of this property are covered by a PPV lease. Please see the INRMP for additional information.

Chollas Heights: Forty-six species of plants were documented within the Chollas Heights special area during the 2009 natural resources inventory, 34 species of which are native. The Chollas Heights special area contains approximately 26 acres (11 hectares) of open space located to the north, southwest, and southeast of the main Chollas Heights housing development. The northern open space area primarily consists of nonnative grassland with smaller amounts of native grassland, coastal sage scrub, and nonnative vegetation. In addition, a number of natural and created vernal pools are present in this area. The southwestern open space area primarily consists of coastal sage scrub with a component of maritime succulent scrub that is dominated by cactus species. In addition a small riparian area that is dominated by willow species occurs at the base of a small canyon along the southern border. The southeastern open space area primarily consists of coastal sage scrub with a small patch of riparian vegetation along the western edge. In addition, an area of nonnative vegetation dominated by eucalyptus occurs along the southern boundary of the site (U.S. Navy 2011). Certain areas of this property are covered by a PPV lease. Please see the INRMP for additional information.

Eucalyptus Ridge: Forty-seven species of plants were documented within the Eucalyptus Ridge special area during the 2009 natural resources inventory, 24 species of which are native. The special area contains approximately 16 acres (6 hectares) of open space located in two sections adjacent to the housing development. The northernmost section is on western side of the special area and the southernmost section is located within a power line corridor. The vegetation communities documented within the open space areas include non-native grassland and coastal sage scrub. The northernmost open space area primarily consists of coastal sage scrub. The southernmost open space area primarily consists of nonnative vegetation and nonnative grasslands with scattered native shrubs including California buckwheat and California sagebrush (U.S. Navy 2011). Certain areas of this property are covered by a PPV lease. Please see the INRMP for additional information.

Home Terrace: Property entirely covered by a PPV lease, there are no Navy-retained non-leased areas for this neighborhood. Please see the INRMP for additional information.

Howard Gilmore Terrace: Fifty-eight species of plants were documented within the Howard Gilmore Terrace special area during the 2009 natural resources inventory, 32 species of which are native. The special area contains approximately 19 acres (8 hectares) of open space. A small portion of the open space is located within the housing development itself, while the majority occurs approximately 1,000 feet (304 meters) to the southeast along High Street. The majority of the open space areas consist of coastal sage scrub. In addition, there are several patches of nonnative grassland and nonnative vegetation (U.S. Navy 2011). Certain areas of this property are covered by a PPV lease. Please see the INRMP for additional information.

Murphy Canyon Heights: A total of 116 plant species were documented within the Murphy Canyon Heights special area during the 2009 natural resources inventory, 70 species of which are native. The Murphy Canyon Heights special area contains approximately 252 acres (102 hectares) of open space adjacent to the housing development's firebreak. The majority of the open space areas consist of coastal sage scrub of varying quality, structure, and species composition. Within the drainages along the canyon bottoms, the dominant species include broom baccharis, mulefat, pampas grass, willow (*Salix* spp.), cattail, pepper tree, bulrush (*Scirpus* spp.), and fountain grass. The nonnative vegetation found within the firebreak and adjacent to road edges consists of common disturbance-related species including fountain grass, brome, mustard, wild oat, and tocolote (U.S. Navy 2011). Certain areas of this property are covered by a PPV lease. Please see the INRMP for additional information.

Pomerado Terrace: Property entirely covered by a PPV lease, there are no Navy-retained non-leased areas for this neighborhood. Please see the INRMP for additional information.

Terrace View Villas: Certain areas of this property are covered by a PPV lease. Please see the INRMP for additional information.

Wildlife

A natural resources inventory was performed in each of the NBSD special areas in 2009 (U.S. Navy 2009b). The wildlife species observed during these surveys are discussed in the following paragraphs.

Bayview Hills: Certain areas of this property are covered by a PPV lease. Please see the INRMP for additional information.

Bonita Bluffs: Property entirely covered by a PPV lease, there are no Navy-retained non-leased areas for this neighborhood. Please see the INRMP for additional information.

Chollas Heights: Mammalian species observed within the Chollas Heights special area include the desert cottontail (*Sylvilagus audubonii*), California ground squirrel, and the striped skunk (*Mephitis mephitis*). Native bird species observed include the Cooper's Hawk, Red-tailed Hawk, American Kestrel (*Falco sparverius sparverius*), Mourning Dove, Lesser Nighthawk (*Chordeiles acutipennis texensis*), Anna's Hummingbird, Costa's Hummingbird (*Calypte costae*), California Quail (*Callipepla californica californica*), Nuttall's Woodpecker (*Picoides nuttallii*), and several songbird species. Reptiles and amphibians observed within Chollas Heights include the Pacific treefrog (*Hyla regilla*), western fence lizard, and the California kingsnake. Invertebrate species observed within special area include San Diego fairy shrimp (*Branchinecta sandiegonensis*), spiders, butterflies, pyralid moths, plant bugs (family Miridae), seed bugs, leaf beetles, jewel beetles (family Buprestidae), darkling beetles (family Cerambycidae), dermestid beetles (family Dermestidae), leafhoppers, aphids (family Aphididae), narrow-winged damselflies, shorthorn grasshoppers (family Acrididae), flies, water midges (family Chironomidae), true wasps, leafcutting bees, yellow-faced bees, spider wasps (family Pompilidae), sphecid wasps (family Sphecidae), bees, and honey bees (U.S. Navy 2011). Certain areas of this property are covered by a PPV lease. Please see the INRMP for additional information.

Eucalyptus Ridge: Mammalian species observed within the Eucalyptus Ridge special area in 2009 include the California ground squirrel and the coyote (*Canis latrans*). Native bird species documented include the Red-tailed Hawk, Mourning Dove, Anna's Hummingbird, California Quail, Nuttall's Woodpecker, Greater Roadrunner (*Geococcyx californianus*), and several species of songbirds. Belding's orange-throated whiptail was the only reptile species documented and no amphibians were observed. Invertebrates observed during the 2009 inventory include several species of spiders, skippers, butterflies, stink bugs, seed bugs, leaf beetles, leafhoppers, spittlebugs (family Cercopidae), aphids, shorthorn

grasshoppers, house flies, Argentine ants, harvester ants (*Pogonomyrmex* spp.), true wasps, leafcutting bees, sweat bees, and bees (U.S. Navy 2011). Certain areas of this property are covered by a PPV lease. Please see the INRMP for additional information.

Hilleary Park: Property entirely covered by a PPV lease, there are no Navy-retained non-leased areas for this neighborhood. Please see the INRMP for additional information.

Home Terrace: Property entirely covered by a PPV lease, there are no Navy-retained non-leased areas for this neighborhood. Please see the INRMP for additional information.

Howard Gilmore Terrace: Mammalian species observed within the Howard Gilmore Terrace special area during the 2009 inventory include the desert cottontail and the coyote. Native bird species observed include the Red-tailed Hawk, Mourning Dove, Anna's Hummingbird, Costa's Hummingbird, and several species of songbirds. The Belding's western fence lizard was the only reptile species observed and no amphibians were documented. Invertebrate species observed include spiders, butterflies, scarab beetles, darkling beetles, ladybird beetles, leafhoppers, spittle bugs, aphids, shorthorn grasshoppers, flesh flies, long-legged flies, tachinid flies, bee flies, Argentine ants, true wasps, spider wasps, sweat bees, and bees (U.S. Navy 2011). Certain areas of this property are covered by a PPV lease. Please see the INRMP for additional information.

La Mesa Park Townhomes: Property entirely covered by a PPV lease, there are no Navy-retained non-leased areas for this neighborhood. Please see the INRMP for additional information.

Murphy Canyon Heights: Mammalian species observed within the Murphy Canyon Heights special area during the 2009 inventory include the desert cottontail, California ground squirrel, coyote, and the southern mule deer (*Odocoileus hemionus*). Observed native bird species include the Turkey Vulture (*Cathartes aura*), Red-tailed Hawk, Northern Harrier (*Circus cyaneus*), American Kestrel, Mourning Dove, White-throated Swift (*Aeronautes saxatalis*), Anna's Hummingbird, Nuttall's Woodpecker, and several songbird species. Reptilian species observed include the western fence lizard and Belding's orange-throated whiptail. No amphibians were documented. Invertebrate species observed within the special area include San Diego fairy shrimp, spiders, skippers, butterflies, seed bugs, brown lacewings, leaf beetles, jewel beetles, soft-winged flower beetles (family Melyridae), dermestid beetles, ladybird beetles, leafhoppers, aphids, narrow-winged damselflies, flies, yellow-faced bees, spider wasps, and bees (U.S. Navy 2011). Certain areas of this property are covered by a PPV lease. Please see the INRMP for additional information.

Paradise Gardens: Property entirely covered by a PPV lease, there are no Navy-retained non-leased areas for this neighborhood. Please see the INRMP for additional information.

Pomerado Terrace: Property entirely covered by a PPV lease, there are no Navy-retained non-leased areas for this neighborhood. Please see the INRMP for additional information.

Prospect View: Property entirely covered by a PPV lease, there are no Navy-retained non-leased areas for this neighborhood. Please see the INRMP for additional information.

Ramona Vista Apartments: Property entirely covered by a PPV lease, there are no Navy-retained non-leased areas for this neighborhood. Please see the INRMP for additional information.

Riverplace: Property covered by PPV lease. Please see the INRMP for additional information.

Terrace View Villas: Property entirely covered by a PPV lease, there are no Navy-retained non-leased areas for this neighborhood. Please see the INRMP for additional information.

Woodlake: Property entirely covered by a PPV lease, there are no Navy-retained non-leased areas for this neighborhood. Please see the INRMP for additional information. **NBSD:** No mammals, amphibians, reptiles, or invertebrates were documented within the NBSD special area (the housing area consisting of two units) during the 2009 inventory. Native bird species observed include the Mourning Dove, Black Phoebe, Wrentit (*Chamaea fasciata*), and House Finch (U.S. Navy 2011).

Special Status Species

Federally Listed and Candidate Species

Five federally listed species, the endangered San Diego button celery (*Eryngium aristulatum* var. *parishii*), the endangered San Diego mesa mint (*Pogogyne abramsii*), the threatened Coastal California Gnatcatcher (*Polioptila californica californica*), the endangered Least Bell's Vireo (*Vireo bellii pusillus*), and the San Diego fairy shrimp (*Branchinecta sandiegonensis*) have been documented within the NBSD special areas (U.S. Navy 2011). **Table 3-4** lists the federally and state-listed rare, threatened, and endangered species and other species of concern that have been documented within the NBSD special areas or have the potential to occur.

Other Special Status Species

Other special status species on NBSD special areas that have focused management in the INRMP are listed in **Table 3-4**. Detailed information on other Special Status Species is included in **Section 7.3.4.2 of the INRMP**.

Table 3-4. Special Status Species Observed or Have the Potential to Occur at NBSD Special Areas

Common Name	Scientific Name	Federal Status	State Status	Special Area
Plants				
San Diego button celery	<i>Eryngium aristulatum</i> var. <i>parishii</i>	FE	SE, CNPS Rank 1B,1	Chollas Heights
San Diego barrel cactus	<i>Ferocactus viridescens</i>	--	CNPS Rank 2.1	Chollas Heights Howard Gilmore Murphy Canyon
Graceful tarplant	<i>Holocarpha virgata</i> ssp. <i>elongata</i>	---	CNPS Rank 4.2	Chollas Heights Murphy Canyon
San Diego goldenstar	<i>Muilla clevelandii</i>	--	CNPS Rank 1B	Murphy Canyon
San Diego mesa mint	<i>Pogogyne abramsii</i>	FE	SE, CNPS Rank 1B	Murphy Canyon
San Diego viguiera	<i>Viguiera laciniata</i>	--	CNPS Rank 4.2	Chollas Heights Howard Gilmore Murphy Canyon
Birds				
Southern California Rufous-Crowned Sparrow	<i>Aimophila ruficeps</i> <i>canescens</i>	--	WL	Howard Gilmore Murphy Canyon
Coastal California Gnatcatcher	<i>Polioptila californica</i> <i>californica</i>	FT	SSC	Chollas Heights Eucalyptus Ridge Howard Gilmore Murphy Canyon
Least Bell's Vireo	<i>Vireo bellii pusillus</i>	FE	SE	Chollas Heights
Reptiles				
Belding's orange-throated whiptail	<i>Aspidoscelis hyperythrus</i> <i>beldingi</i>	--	SSC	Eucalyptus Ridge Murphy Canyon
Invertebrates				
San Diego fairy shrimp	<i>Branchinecta sandiegonensis</i>	FE	--	Chollas Heights Murphy Canyon
Hermes copper butterfly*	<i>Hermelycaena hermes</i>	FC	--	Eucalyptus Ridge, Mission Gorge Recreational Facility

Source: U.S. Navy 2011, CDFG 2011a, CDFG 2011b

Note: Species with * have the potential to occur but are not known to occur at NBSD.

Key:

Federal Status: FE = Federal Endangered, FT = Federal Threatened, FC = Federal Candidate, BCC = Birds of Conservation Concern

State Status: SE = State Endangered, ST = State Threatened, SSC = Species of Special Concern, WL = Watch List, FP = Fully Protected

CNPS: CNPS List 1B = Rare, threatened, or endangered in California and elsewhere. CNPS List 4.2 = Limited distribution (Watch list). 0.2: Moderately threatened in California, CNPS List 2.1 = List 2: Rare, threatened, or endangered in California, but more common elsewhere. 0.1: Seriously threatened in California.

3.7.3 Evaluation Standards

Under the ESA Section 7(a)(2), each Federal agency is required to ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered or threatened species, or adversely modify or destroy designated Critical Habitat. Under the ESA, “jeopardy” occurs when an action is reasonably expected, directly or indirectly, to diminish a species’ numbers, reproduction, or distribution so that the likelihood of survival and recovery in the wild is appreciably reduced. Federal agency action proponents are responsible for making one of the following effects determinations (16 U.S.C. § 1531–1543):

- “No Effect” is the appropriate determination when a proposed action would have no effect on listed species or designated Critical Habitat. For this determination, the effects of a proposed action should be temporally or spatially separated from the listed species. This determination is made by the Federal action agency and does not require further consultation.
- “May Affect, but Not Likely to Adversely Affect” is the appropriate determination when the effects of the action on listed species or designated Critical Habitat would be discountable, insignificant, or wholly beneficial. In order to receive concurrence with this determination, the action agency must initiate informal Section 7 consultation.
- “Likely to Adversely Affect” is the appropriate determination if any adverse effects on listed species or designated Critical Habitat could occur as a direct or indirect result of a proposed action or its interrelated or interdependent actions, and the effect is not discountable, insignificant, or beneficial. Initiation of formal Section 7 consultation would be required and the USFWS or NMFS would be responsible for completing a biological opinion on the action (and could issue an incidental take statement).

3.7.4 Environmental Consequences

3.7.4.1 Proposed Action

Beneficial impacts on vegetation, wildlife, or protected and sensitive species would occur from implementation of the Proposed Action.

Vegetation. Long-term, beneficial effects on native vegetation would occur from the implementation of habitat improvement projects such as noxious weed/invasive plant removal and revegetation with native plant species. The removal and control of invasive plants would increase native plant species cover and diversity within the open space areas on NBSD.

Wildlife. Long-term, beneficial effects on wildlife would occur from the implementation of habitat improvement projects to protect habitats, removal of invasive vegetation, and revegetation with native plants. These habitat improvement projects would increase the amount and quality of habitat available for native wildlife species. Long-term, beneficial effects on wildlife species, particularly songbirds and small mammals, would result from the control of feral animal populations on NBSD.

Long-term, beneficial effects on herons and egrets would occur from the implementation of management provisions for herons and egrets per a revised Heron and Egret Management Plan. Long-term, beneficial effects on certain bird and bat species would result from the installation of bird and bat boxes on NBSD.

Under the INRMP, several habitat and wildlife population surveys would be conducted and management measures would be developed based on their results. These include habitat surveys, pollinator species

surveys, and herpetofauna population surveys. Minor short-term, adverse effects could occur as a direct result of conducting surveys, however ultimately long-term, beneficial impacts on targeted habitats and populations would occur from these proposed projects.

Special Status Species. Long-term, beneficial effects on protected and sensitive species would occur from the implementation of habitat improvement projects to protect habitats, removal of invasive vegetation, and revegetation with native plants. These habitat improvement projects would increase the amount and quality of habitat available for protected and sensitive species.

Long-term, beneficial effects on potential federally and state-listed threatened and endangered species and other protected and sensitive species would result from regular (approximately every 2 years) surveys for these species on NBSD facilities. By continuously updating known and potential protected and sensitive species habitats, NBSD would be able to effectively avoid adverse impacts on these species and provide for their protection from installation activities in the future. Development and implementation of best management practices will also avoid disturbance and adverse impacts to sensitive species and their habitats.

Long-term, beneficial effects on Coastal California Gnatcatchers and Least Bell's Vireos would result from invasive plant species control in nesting and foraging sites on MGRF and special areas due to habitat improvement for these species.

As stated above, implementation of the Proposed Action would result in long-term beneficial impacts to NBSD vegetation, wildlife and protected and sensitive species. Therefore, there would be no significant impact to biological resources from implementation of the Proposed Action.

3.7.4.2 No Action Alternative

Beneficial impacts on biological resources would result from the implementation of the No Action Alternative. Management strategies which benefit biological resources (i.e., invasive vegetation removal, revegetation with native species, feral animal control, and surveys for protected and sensitive species) are identified in the 2002 INRMP. Under the No Action Alternative, NBSD would continue to implement these strategies in accordance with the 2002 INRMP.

The revised INRMP would include all properties addressed in the 2002 INRMP, and 18 naval special areas that have since been assigned to NBSD. For those properties not covered in the revised INRMP, the installation has established measures and programs for the management of biological resources in these areas to ensure they are managed in compliance with Federal, state and local environmental laws and regulations. Overall beneficial impacts to biological resources would occur. Therefore, no significant impacts would occur to biological resources by implementing the No Action Alternative.

3.8 Hazardous Materials and Wastes

3.8.1 Definition of the Resource

Hazardous materials are defined by 49 CFR § 171.8 as “hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (49 CFR § 172.101), and materials that meet the defining criteria for hazard classes and divisions” in 49 CFR § 173. Transportation of hazardous materials is regulated by the U.S. Department of Transportation regulations within 49 CFR §§ 105–180.

Hazardous wastes are defined by the Resource Conservation and Recovery Act (RCRA) in 42 U.S.C. § 6903(5), as amended by the Hazardous and Solid Waste Amendments, as “a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.” Certain types of hazardous wastes are subject to special management provisions intended to ease the management burden and facilitate the recycling of such materials. These are called universal wastes and their associated regulatory requirements are specified in 40 CFR § 273. Special hazards are those substances that might pose a risk to human health and are addressed separately from other hazardous substances.

Pesticides are regulated under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended (7 U.S.C. 136 et seq.), the USEPA Regulations for Pesticide Programs (40 CFR Parts 150–186), and the USEPA Regulations on Insecticide, Fungicide, and Rodenticide Use (40 CFR Part 162). The regulations require these chemicals to be handled, stored, transported, disposed of, or recycled in compliance with applicable regulations.

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) was passed in 1980 (also known as Superfund) and the Superfund Amendments and Reauthorization Act (SARA) passed in 1986 to address cleanup of abandoned or uncontrolled hazardous waste sites. The SARA legislation created the DON’s Environmental Restoration Program (ERP) to address hazardous waste sites on military properties. The mission of the ERP is to identify, characterize, and clean up contamination on military installations resulting from formerly accepted use and disposal practices of hazardous waste in order to protect human health and the environment. The Navy’s ERP was established to characterize, clean up, and control releases from past hazardous waste disposal operations. The ERP is carefully coordinated with Federal, state, and local environmental agencies during each step of the process. Depending upon the circumstances, ERP sites are identified, investigated, and cleaned up in accordance with RCRA, CERCLA, or with an integrated approach based on both laws.

3.8.2 Existing Conditions

As of 2011, 24 active Environmental Restoration sites were identified for NBSD. Of these 24 sites, 8 (IRP Sites 3, 5, 7, 8, 9, 11, 12, and 13) have been closed or require no further action. IRP Sites 14, 15, 16, and 19 were never officially established because these sites were termed Solid Waste Management Units (SWMU’s) under the RCRA before being implemented in the IRP. The Navy has also identified 30 SWMUs and 2 Areas of Concern. These 30 SWMU sites have since been closed with Regulatory concurrence.

The remaining IRP sites (IRP Sites 1, 2, 4, 6, 10, 17, 18, 20, 22, 23, and 24) continue under various stages of investigation and remedial action (NBSD 2011) and will remain open until the nature and extent of contamination is fully characterized, or the necessary clean up actions completed.

3.8.3 Environmental Consequences

3.8.3.1 Proposed Action

Long-term, beneficial impacts would occur from implementation of the Proposed Action. The integrated pest management program for NBSD requires physical and cultural controls for the removal and prevention of invasive and exotic plants and pests, where feasible, and the use of chemical applications as a last resort. Under the Proposed Action, the reduction in the use of pesticides, rodenticides, and

herbicides on NBSD facilities would result in an overall decrease in the use of hazardous materials and a decrease in the generation of hazardous wastes. Besides pesticides, rodenticides, and herbicides, no other hazardous substances would be intentionally applied at NBSD under the revised INRMP. Any unintentional spills, such as oil leaks from vehicles, would be reported and cleaned up according to Navy policy. Projects in the INRMP that generate hazardous wastes, such as used fertilizer buckets or treated wood stakes, would have the proper plan to dispose of the waste in a permitted landfill. Therefore, the Proposed Action would have no significant impact on the environment from hazardous materials or wastes. The long-term reduction of pesticides, herbicides, and rodenticides would be a beneficial impact.

3.8.3.2 No Action Alternative

Under the No Action Alternative, existing natural resources management activities and associated use of hazardous materials occurring on NBSD facilities would continue as prescribed in the 2002 INRMP. Use of hazardous materials would primarily occur during integrated pest management activities. There would be no change in current management of hazardous materials in the 18 naval special areas that have become part of NBSD since the 2002 INRMP. Therefore, no significant impacts on hazardous materials and wastes would occur by implementing the No Action Alternative.

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4. Cumulative Impacts Analysis

4.1 Cumulative Impacts

The approach taken to analyze cumulative impacts follows the objectives of the NEPA CEQ regulations and guidance. The CEQ regulations (40 CFR §§ 1500–1508) provide the implementing procedures for NEPA.

4.1.1 Cumulative Impacts Definition

Cumulative impacts are the environmental impacts resulting from “the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions” (40 CFR Part 1508.7).

4.1.2 Scope of Cumulative Impacts Analysis

CEQ guidance in considering cumulative impacts states that the first steps in assessing cumulative effects involves defining the scope of the other actions and their interrelationship with a proposed action. The scope of the cumulative impacts analysis involves both timeframe and geographic extent in which effects could occur, as well as a description of what resources could potentially be cumulatively affected. Cumulative impacts on environmental resources result from the incremental impact of the Proposed Action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts could result from individually minor but collectively significant actions taking place over a period of time by various agencies (e.g., Federal, state, and local) or individuals. Informed decision-making is served by consideration of cumulative impacts resulting from projects that are proposed, under construction, recently completed, or anticipated to be implemented in the reasonably foreseeable future. The six resource areas examined in this cumulative impacts analysis are: land use; air quality; topography, geology, and soils; water resources; biological resources; and hazardous materials and wastes.

4.2 Other Past, Present, and Reasonably Foreseeable Future Actions

The following regional projects and plans occurring within the NBSD vicinity represent the past, present, and reasonably foreseeable actions identified for this cumulative impacts analysis.

An Activity Overview Plan (AOP, 2006) has been developed for NBC to define the direction of operational and support facilities in broad mission readiness, functional, and geographic terms. Once the AOP has been finalized, projects from the final plan will be included within this INRMP. For planning, the most important aspect is to focus on those projects that may impact natural resources (i.e., those that may develop existing habitat or have an indirect effect on protected species. These types of projects will go through the NEPA process and avoidance and/or minimization will be used to ensure impacts are not significant. Therefore, together with the INRMP no significant impacts would occur to NBSD natural resources.

Regional Plans and Programs

California Wildlife Action Plan--The California Wildlife Action Plan was completed in 2007 and identified statewide and regional conservation issues based on regional landscape types, regional habitats, and ecosystem-level species needs and requirements, rather than prescribing management actions using a species-by-species approach (CDFG 2007). NBSD falls within the south coast region.

San Diego Bay INRMP--In September 2000, the Navy partnered with San Diego Unified Port District to develop an INRMP for the San Diego Bay. The purpose of the plan was to develop an ecosystem-based plan for the San Diego Bay that incorporates natural resources, natural and human uses of the San Diego Bay, and the missions of each stakeholder who manages, or operates, within the San Diego Bay (Navy et al. 2000). The overall goal of the plan is to “flesh out a progression towards... a San Diego Bay that is wilder, with softer shorelines, richer and more abundant in native life... that, while used for thriving urban, commercial, and military needs, has an increasing proportion of use... [that include] public access, recreation, education and enjoyment of the myriad benefits of a healthy, dynamic ecosystem” (Navy et al. 2000). The San Diego Bay INRMP is being revised, and a finalized version of the revised document is expected to be published in 2013. In order to fulfill the regulatory requirements, an EA is being prepared for that INRMP.

Multiple Species Conservation Program--Section 10(a)(1)(B) of the ESA and the California Natural Community Conservation Plan Act of 1991 (California Fish and Wildlife Code 2800–2835) allow the development of Habitat Conservation Plans (HCPs) under California law, to manage multiple species and their habitats in a given geographical area. Section 10(a)(1)(B) of the ESA defines HCPs as “planning documents required as part of an application for an incidental take permit...[that] describe the anticipated effects of the proposed taking; how those impacts will be minimized, or mitigated; and how the HCP is to be funded.” In addition, HCPs provide management recommendations for listed and nonlisted species and their habitats.

The MSCP for southwestern San Diego County, which includes NBSD, recommends developing conservation reserves throughout the county that connect various regions of species habitat to encourage protection of regional biodiversity (City of San Diego 1998). In addition, the plan states that Federal and state governments will “contribute 36,510 acres (14,775 hectares) of existing Federal and state lands, excluding military lands, to permanent habitat conservation and management; acquire 13,500 acres (5,463 hectares) of privately owned habitat lands in the MSCP preserve from willing sellers; and manage and monitor the Federal and state share of the MSCP preserve” (City of San Diego 1998). NBSD is not required to contribute, or acquire lands, to meet MSCP goals.

San Clemente Island, Naval Base Coronado, and Naval Base Point Loma INRMP Revisions--The Navy Region Southwest recently revised and released the 2012 INRMP for Naval Base Point Loma, the 2013 INRMP for Naval Base Coronado, and the 2013 INRMP for San Clemente Island. Revised INRMPs include updates to facilities covered under the previous 2002 INRMPs and management prescriptions for facilities that have since come under jurisdiction of the Navy Region Southwest. The INRMPs will provide for management and stewardship of all natural resources present on the installations. In order to fulfill the regulatory requirements, separate EAs are being prepared for those INRMPs.

4.3 Potential Cumulative Impacts by Resource Area

4.3.1 Land Use

Implementation of the Proposed Action, construction and demolition projects, and regional plans and programs would result in land use management for NBSD that would benefit, and be consistent with, activities (e.g., military mission and recreation activities) conducted on-installation and adjacent to the installation. Land management strategies developed by the Proposed Action would be incorporated into subsequent construction projects or plans as appropriate, to provide greater overall benefit to existing resources.

An Encroachment Action Plan was developed for NBSD in January 2013 consistent with OPNAVINST 11010.40 (*Encroachment Management Program*), and Commander, Naval Installation Command Instruction 11010.1 (*Encroachment Management Program*) guidance. The NBSD Encroachment Action Plan identifies and prioritizes specific encroachment threats and recommends strategies and actions that can be applied at the installation level to prevent or mitigate potential mission impacts (U.S. Navy 2013).

Therefore, implementation of the Proposed Action, when considered with other past, present, and reasonably foreseeable future actions being implemented in the San Diego region, would provide a beneficial, cumulative effect on the region's land use, and there would be no significant cumulative impacts to land use.

4.4 Air Quality/Climate Change

Criteria Pollutants

Construction and demolition activities would generate air emissions. Construction-related activities would include the use of heavy equipment for site preparation and development that would result in criteria pollutant and greenhouse gas emissions within the immediate area. However, air emissions would be temporary and typical of standard construction activities. Overall, construction activities at and within the vicinity of NBSD would collectively increase air emissions in the area temporarily, but variations in the timing of cumulative projects, and the relatively short duration of project effects, would moderate impacts over space and time. Cumulatively, construction-related air emissions would be a small percentage of overall air emissions in the San Diego Intrastate Air Quality Control Region.

Cumulatively, no significant, cumulative impacts on air quality would be expected because these projects would not result in an exceedance of the San Diego County Air Pollution Control District's emission budgets, cause or contribute to a violation of any National Ambient Air Quality Standards or California Ambient Air Quality Standards, increase the frequency or severity of a violation of any ambient air quality standard, expose sensitive receptors to substantially increased pollutant concentrations, delay the attainment of any standard or other milestone contained in a State Implementation Plan or permit limitations, or exceed any Evaluation Criteria established by a State Implementation Plan.

Greenhouse Gas (GHG) Emissions

The potential impacts from proposed GHG emissions are by nature global and cumulative, as individual sources of GHG emissions are not large enough to have an appreciable effect on climate change. Therefore, an appreciable impact on global climate change would only occur when proposed GHG emissions combine with GHG emissions from other man-made activities on a global scale.

GHGs are primarily produced by the burning of fossil fuels and through industrial and biological processes. On 22 September 2009, the USEPA issued a final rule for mandatory GHG reporting from large GHG emissions sources in the United States. The purpose of the rule is to collect comprehensive and accurate data on carbon dioxide and other GHG emissions that can be used to inform future policy decisions. In general, the threshold for reporting is 25,000 metric tons (27,557.8 short tons) or more of carbon dioxide equivalent emissions per year but excludes mobile source emissions. The Proposed Action would not result in increases in stationary source potential emissions; therefore, these GHG requirements would not apply to the Proposed Action.

The Navy recognizes that there are opportunities for GHG reductions through their energy conservation programs and their use of alternative fuels and other renewable energy sources. The Navy has established goals for reducing GHG emissions, including the following:

- Mandate that energy use, efficiency, life-cycle costs, and other such factors be part of the Navy's decision when acquiring new equipment systems, and a part of vendor's efficiency or energy policies
- By 2015, cut petroleum use by half in the Navy's fleet of commercial vehicles by phasing in new hybrid vehicles to replace older ones
- By 2020, procure half the power at Navy shore installations from alternative energy sources, and where possible, supply power back to the grid
- By 2020, reach the goal that half of the Navy's total energy consumption for ships, aircraft, tanks, vehicles, and shore installations comes from alternative energy sources.

The potential GHG emissions resulting from implementation of the Proposed Action would primarily be from motorized vehicles transporting personnel and materials to and from worksites.

Construction activities would also contribute directly to emissions of GHGs from the combustion of fossil fuels. Construction-related activities would include the use of heavy equipment for site preparation and development that would result in temporary GHG emissions within the immediate area.

Cumulatively, the Proposed Action and adoption and implementation of the California Wildlife Action Plan; San Diego Bay INRMP; Multiple Species Conservation Program; and INRMPs for San Clemente Island, NBC, and NBPL would bolster the enhancement and restoration of native habitats, thus providing future support to the area in alleviating the possible impacts of sea level rise.

The impacts from the Proposed Action, when added to the impacts from the other past, present, and reasonably foreseeable future actions, would be minor and not large enough to have an appreciable effect on GHGs and climate change. Therefore, there would be no significant, cumulative impacts on GHGs or global climate change.

4.4.1 Topography, Geology, and Soils

During construction activities associated with the construction of a gas station near gate 25 and deep draft dredging of pier 6, there would be temporary impacts on soils from ground-disturbing activities (e.g., grading, trenching, dredging). Additionally construction projects, such as the development of several quality of life facilities (e.g., new theatre, Laundromat, family services building), would increase the amount of impervious surfaces at the project locations. Implementation of low impact development practices and BMPs (e.g., wetting of soils or soil stabilizers, silt fencing, straw wattles, and detention basins) during construction activities, as appropriate, would avoid and minimize potential impacts from erosion and sedimentation into receiving water bodies and habitat. The Proposed Action would also evaluate the stability of streams and develop actions to restore unstable stream reaches. Construction activities associated with projects such as the construction of a gas station near gate 25 and development of several quality of life facilities (e.g., new theatre, Laundromat, family services building) would not significantly alter the topography or geologic features of the installation. The management of topography, geology, and soils at NBSD during implementation of these projects would benefit, and be consistent with, the resources on-installation and resources adjacent to the installation. Topography, geology, and soils management strategies developed by the Proposed Action would be incorporated into construction projects such as the construction of a gas station near gate 25 and development of several quality of life facilities (e.g., new theatre, Laundromat, family services building), as appropriate, to minimize construction and long-term impacts to existing resources.

Cumulatively, the Proposed Action and adoption and implementation of the California Wildlife Action Plan; San Diego Bay INRMP; Multiple Species Conservation Program; and INRMPs for San Clemente Island, NBC, and NBPL would reduce impacts to future construction projects and increase the enhancement and restoration of native habitats. Habitat areas throughout NBSD installations will benefit through management strategies from the Proposed Action such as stream restoration, pollution management, the development of specifications and standards for reseeding/revegetation projects monitor and rehabilitate degraded soil resources, and development of an outdoor recreation plan for NBSD. Therefore, implementation of the Proposed Action, when considered with other past, present, and reasonably foreseeable future actions being implemented in the San Diego region, would provide a beneficial, cumulative effect on the region's topography, geology, and soils, and there would be no significant cumulative impacts.

4.4.2 Water Resources

During activities associated with construction projects such as the construction of a bridge that crosses Harbor Drive at Vesta Street and replacement of Piers 6 and 8, runoff from site improvements could result in temporary, localized increases in turbidity within receiving water bodies. Increases in impervious surfaces resulting from proposed construction projects would increase stormwater runoff into adjacent water resources and habitats. Potential impacts from an increase in turbidity would be minimized with implementation of BMPs (e.g., reviewing erosion control BMPs, increased mapping of water resources, wetting of soils, silt fencing, and detention basins and low impact development practices, and adherence to erosion and storm water management practices, as determined by the Navy, to contain soil and runoff. Implementation of monitoring and management strategies for soil resources and stream channels developed by the Proposed Action would identify areas of concern and avoid and minimize long-term impacts to adjacent resources. Upon completion of the construction of a bridge that crosses Harbor Drive at Vesta Street and replacement of Piers 6 and 8; hydrologic conditions of the areas not developed with impermeable surfaces should be restored to mimic predevelopment site hydrology. In addition, revegetation should occur in the areas not developed with impermeable surfaces. Storm water runoff, as a result of increased impervious surface area, would be managed in accordance with the installation's Stormwater Pollution Prevention Plan for industrial activities. By implementing the management strategies, as appropriate, construction activities would not degrade the water quality or affect beneficial uses of surface water or groundwater resources.

Cumulatively, the Proposed Action and adoption and implementation of the California Wildlife Action Plan; San Diego Bay INRMP; Multiple Species Conservation Program; and INRMPs for San Clemente Island, NBC, and NBPL would reduce impacts to future construction projects and increase the enhancement and restoration of native habitats. Habitat areas throughout NBSD installations will benefit through management strategies from the Proposed Action such as stream restoration, pollution management, the development of specifications and standards for reseeding/revegetation projects and monitor and rehabilitate degraded soil resources. In addition, water resource management objectives for these projects and plans would reduce sediment within the effluent from urban storm water drainages that cross NBSD facilities.

Therefore, implementation of the Proposed Action, when considered with other past, present, and reasonably foreseeable future actions being implemented in the San Diego region, would provide a beneficial, cumulative effect on the region's water resources, and there would be no significant cumulative impacts to water resources.

4.4.3 Biological Resources

Minor, localized, impacts on biological resources could occur from removal of vegetation and increased noise from construction activities associated with the construction of a Boat Ramp for port operations at Paleta Creek and replacement of Piers 6 and 8. Areas not developed with impermeable surfaces would be revegetated upon completion of the construction activities. Low impact development practices would be implemented as appropriate for all construction projects. The implementation of the Proposed Action, including the implementation of appropriate BMPs to protect soil and water resources and migrating bird and pollinator species, to protect biological resources at NBSD during implementation of these projects would avoid and minimize potential impacts, and be consistent with, the resources on-installation and resources adjacent to the installation. Biological resources management strategies implemented by the Proposed Action would be incorporated into the projects such as the construction of a Boat Ramp for port operations at Paleta Creek and replacement of Piers 6 and 8, as appropriate, to reduce potential impacts to existing resources. Additionally the Proposed Action would develop and implement BMPs for routine maintenance, such as grounds maintenance and mowing, to minimize stress on biological resources from regular maintenance activities.

Cumulatively, the Proposed Action and adoption and implementation of the California Wildlife Action Plan; San Diego Bay INRMP; Multiple Species Conservation Program; and INRMPs for San Clemente Island, NBC, and NBPL would reduce impacts to future construction projects and increase the enhancement and restoration of native habitats. Habitat areas throughout NBSD installations will benefit through management strategies from the Proposed Action such as stream restoration, pollution management, the development of specifications and standards for reseeded/revegetation projects monitor and rehabilitate degraded soil resources, and development of an outdoor recreation plan for NBSD. In addition, the Proposed Action, when combined with the California Wildlife Action Plan; San Diego Bay INRMP; Multiple Species Conservation Program; and INRMPs for San Clemente Island, NBC, and NBPL, would result in long-term, beneficial, cumulative impacts on biological resources by providing greater awareness and documentation of existing biological resources.

Therefore, implementation of the Proposed Action, when considered with other past, present, and reasonably foreseeable future actions being implemented in the San Diego region, would provide a beneficial, cumulative effect on the region's biological resources, and there would be no significant cumulative impacts to biological resources.

4.4.4 Hazardous Materials and Waste

The management of hazardous materials and wastes at NBSD during implementation of the Proposed Action; construction activities; California Wildlife Action Plan; San Diego Bay INRMP; Multiple Species Conservation Program; and INRMPs for San Clemente Island, NBC, and NBPL would benefit, and be consistent with, the resources on-installation and resources adjacent to the installation.

Therefore, implementation of the Proposed Action, when considered with other past, present, and reasonably foreseeable future actions being implemented in the San Diego region, would provide a beneficial, cumulative effect on the region's hazardous materials and waste management, and there would be no significant cumulative impacts to hazardous materials management.

5. Other NEPA Considerations

5.1 Compatibility of the Proposed Action and Alternatives with the Objectives of Federal, Regional, State, and Local Land Use Plans, Policies, and Controls

Impacts as a result of the Proposed Action would occur within the boundaries of NBSD. Beneficial effects on adjoining lands and water resources would occur from removal of invasive vegetation, habitat improvement projects, and creation and implementation of BMPs that would improve surface water quality. The implementation of a revised INRMP would not result in any significant or incompatible land use changes on or off the installation. The Proposed Action would not conflict with any applicable off-installation land use ordinances.

5.2 Energy Requirements and Conservation Potential of Various Alternatives and Mitigation Measures Being Considered

Natural resources management activities on NBSD facilities would occur as a result of the Proposed Action. None of these impacts would be significant. Any project specific energy requirements and mitigation measures would be addressed in subsequent NEPA documents.

5.3 Irreversible and Irrecoverable Commitments of Resources

Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that use of these resources will have on future generations. Irreversible effects primarily result from use or destruction of a specific resource that cannot be replaced within a reasonable time frame (e.g., energy and minerals). The irreversible and irretrievable commitments of resources that would result from implementation of the Proposed Action involve the consumption of material resources used for construction, energy resources, land, and human labor resources. The use of these resources is considered to be permanent.

No significant irreversible and irretrievable commitments of nonrenewable resources would result from the Proposed Action. Negligible amounts of energy resources (e.g., petroleum) would be required for vegetation management efforts (e.g., invasive species removal).

5.4 Relationship Between Short-term Use and Long-term Productivity

Short-term uses of the biophysical components of the human environment include direct impacts, usually related to construction activities that occur over a period of less than 5 years. Long-term uses of the human environment include those impacts that occur over a period of more than 5 years, including permanent resource loss. The Proposed Action would not result in significant short-term resource uses that would compromise long-term productivity. Several management objectives made in the short-term under the Proposed Action would increase long-term productivity of natural resources at NBSD, such as healthy habitats and wildlife populations; and higher quality surface and drinking water.

5.5 Unavoidable Adverse Impacts

Negligible unavoidable adverse impacts would result from implementation of the Proposed Action; however, none of these impacts would be significant. Although the amount of pesticides used at NBSD would be decreased under the Proposed Action, invasive vegetation removal efforts would still likely

require the use of these hazardous materials. The quantity of products containing hazardous materials used during invasive species removal would be minimal, and their use would be localized and of short duration.

6. List of Agencies and Persons Contacted

The individuals and agencies contacted during the INRMP revision process as part of the preparation of that document are listed as follows.

For a complete list of external stakeholders that were invited to participate in the development of the INRMP, see **Section 13** of that document.

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8. References

- California Division of Mines and Geology California, State of 1975 Geology of the San Diego Metropolitan Area, California Bulletin 200. Division of Mines and Geology. Plate 3A.
- CDFG 2007 California Wildlife Conservation Challenges: California's Wildlife Action Plan. Available online <<http://www.dfg.ca.gov/habitats/wdp/>>. 2007.
- CDFG 2011a CDFG. 2011a. State and Federally Listed Endangered and Threatened Animals of California. January 2011.
- CDFG 2011b CDFG. 2011. State and Federally Listed Endangered, Threatened, and Rare Plants of California. January 2011.
- CNIC 2009 Commander, Naval Installation Command (CNIC). 2009. Available online <<http://www.cnic.navy.mil/Coronado/About/MissionAndVision/index.htm>>. Accessed 15 May 2011.
- Deméré 1994 Deméré, Thomas A., and Stephen L. Walsh. 1994. Paleontological Resources, County of San Diego. Department of Paleontology, San Diego Natural History Museum. August.
- NAVFAC SW 2009 Naval Facilities Engineering Command Southwest (NAVFAC SW). 2009. Draft Final Report for the Natural Resources Baseline Inventory for Navy San Diego Metro Housing Areas at Naval Base San Diego, Naval Base Coronado, and Naval Base Point Loma, San Diego County, California.
- Navy 1998. U.S. Department of the Navy, Naval Base San Diego (Navy). 1989. Master Plan - Naval Station, San Diego.
- NBSD 2009 NBSD. 2009. *Naval Base San Diego (NBSD) Environmental Cleanup Program*. September 2009.
- NBSD 2011 NBSD Environmental Restoration Program, Site Management Plan, NAVFAC, 2011.
- U.S. Navy 2002a U.S. Navy. 2002. Naval Base San Diego Integrated Natural Resources Management Plan. August 2002.
- U.S. Navy 2002b U.S. Navy. 2002. Environmental Assessment for Naval Base San Diego Integrated Natural Resources Management Plan. August 2002.
- U.S. Navy 2005 U.S. Navy. 2005. Environmental Assessment for Homeporting of Littoral Combat Ship (LCS) Flight 0. April 2005.
- U.S. Navy 2006a U.S. Navy. 2006a. Integrated Natural Resources Management Program Guidance, and Integrated Natural Resources Management Plan Guidance. April 10, 2006.

U.S. Navy 2006b U.S. Navy. 2006. Environmental Assessment for Redevelopment of Navy Broadway Complex. May 2006.

U.S. Navy 2008 Navy. 2008. *Phase II (P-793 Final) Environmental Assessment for the Base Realignment and Closure (BRAC) Actions Relocating Naval Station Ingleside, Texas EMR and AMIMS Systems to San Diego, California*. February 2008.

U.S. Navy 2009 U.S. Navy. 2009. Integrated Pest Management Plan Naval Base San Diego, Naval Base Point Loma, Naval Base Coronado, San Diego Metro Area, San Diego, CA. December 2009.

U.S. Navy 2010b U.S. Navy. 2010b. Final Natural Resources Inventory Report for Naval Base San Diego, San Diego, California. August 2010

U.S. Navy 2011 U.S. Navy. 2011. Final Report for the Natural Resources Baseline Inventory for Navy San Diego Metro Housing Areas at Naval Base San Diego, Naval Base Coronado, and Naval Base Point Loma, San Diego County, California. January 2011.

U.S. Navy 2013 U.S. Navy. 2013. Final Naval Base San Diego Encroachment Action Plan, San Diego, California. January 2013.

U.S. Navy et al. 2011b U.S. Navy Region Southwest, San Diego Unified Port District, and Merkel % Associates. 2011. San Diego Bay Eelgrass Inventory Update. December 2011.

APPENDIX A

**LIST OF PROPOSED INRMP PROJECTS FOR NBSD
(SEE INRMP APPENDIX C)**

APPENDIX B

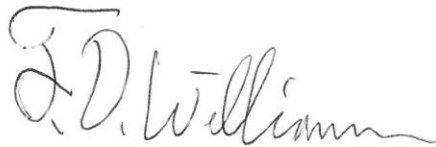
RECORD ON NON-APPLICABILITY (RONA)

Record of Non-Applicability
Department of Defense U. S. Navy
Record of Non-Applicability (RONA)
Integrated Natural Resources Management Plan at
Naval Base San Diego, San Diego, California

Pursuant to Section 176(c) of the Clean Air Act (CAA), as amended by the 1990 amendments; the general Conformity Rule at 40 CFR Parts 51 and 93; and the Chief of Naval Operation Interim Guidance on Compliance with the CAA Conformity Rule (CNO Guidance), the Department of Navy determined that the potential actions and management practices outlined in the Naval Base San Diego (NBSD) Revised 2014 Integrated Natural Resources Management Plan (INRMP) are exempt from conformity requirements in accordance with sections 40 CFR 93.153 (c)(2)(ii), (iv), (vi), (vii), (viii), (ix), (x), and (xiii). The INRMP outlines many routine and continuing activities for NBSD, located in the San Diego County Air Pollution Control District, which would result in no emission increase or an increase that is clearly *de minimis*. Development of projects and future implementation of planning guidelines for a range of activities, including habitat restoration and landscape maintenance projects, are also expected to result in emissions increases that would be *de minimis*; however, specific analyses would be performed to verify that emissions do not exceed *de minimis* levels when specific actions are proposed. Consequently, the proposed action is exempt from the conformity determination requirements of the Environmental Protection Agency's conformity rule.

To the best of my knowledge, the information contained in this Record of Non-Applicability is correct.

Signature



Date

5-14-14

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APPENDIX M

PUBLIC COMMENTS AND AGENCY CORRESPONDENCE

The Navy and external stakeholders were invited to participate in the development of this document. The individuals who contributed to the preparation of this document are listed below.

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* These individuals contributed to or provided input on the 2014 revision of the NBSD INRMP.

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