

**FINAL**

**INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN**  
**NAVAL WEAPONS STATION SEAL BEACH**  
**DETACHMENT NORCO**  
**NORCO, CALIFORNIA**

**2013**

*Prepared For:*



**U.S. Department of the Navy**  
**Naval Weapons Station Seal Beach**  
**Detachment Norco**  
**800 Seal Beach Boulevard**  
**Seal Beach, CA 90740**

**Prepared by:**  
**AMEC Environment & Infrastructure, Inc.**  
**San Diego, CA 92123**

**Integrated Natural Resources Management Plan  
Naval Weapons Station Seal Beach  
Detachment Norco  
Norco, California**

**APPROVAL**

This Integrated Natural Resources Management Plan (INRMP) fulfills the requirements for the INRMP in accordance with the Sikes Act (16 U.S.C. 670a et seq.) as amended and Department of Defense Instruction 4715.03 and Chief of Naval Operations Instruction 5090.1C CH-1. This document was prepared and reviewed in coordination with U.S. Department of Interior, Fish and Wildlife Service, and California Department of Fish and Wildlife Inland Deserts Region in accordance with the 2006 Memorandum of Understanding for a Cooperative Integrated Natural Resource Management Program on Military Installations.

**Approving Official-U.S. Navy Naval Weapons Station Seal Beach**

**Approved by:**

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**Martin Hardy III  
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Commanding Officer  
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**Approving Official-U.S. Navy Naval Weapons Station Seal Beach**

**Approved by:**

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**David O. Baillie**  
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**Approving Official-U.S. Navy Naval Weapons Station Seal Beach**

**Approved by:**

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**Robert Schallmann**  
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**Approving Official-U.S. Navy Naval Facilities Engineering Command Southwest/  
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**Approved by:**

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**Concurring Agency-U.S. Fish and Wildlife Service**

**Approved by:**

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**Jim Bartel**  
**Field Supervisor**  
**U.S. Fish and Wildlife Service**  
**Carlsbad Fish and Wildlife Office**  
**Carlsbad, California**

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**Concurring Agency-California Department of Fish and Wildlife**

**Approved by:**

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**Kimberly Nicol  
Regional Manager  
Inland Desert s Region  
California Department of Fish and Wildlife  
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## **EXECUTIVE SUMMARY**

The purpose of this Integrated Natural Resources Management Plan (INRMP or Plan) is to provide Naval Weapons Station (NAVWPNSTA) Seal Beach Detachment Norco (Detachment Norco or Detachment) with a viable framework for future management of natural resources on lands it owns or controls. Required by the Sikes Act (16 U.S. Code [USC] § 670 et seq., as amended) for the U.S. Department of Defense (DoD), the INRMP is a long term planning document to guide the installation commander in the management of natural resources to support the installation 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. The INRMP facilitates compliance with natural resource laws, integrates the natural resource components of all Detachment Norco plans and Instructions, and meets the requirements of all applicable DoD and U.S. Department of the Navy (DoN) regulations and policies.

Detachment Norco (formerly Detachment Corona) supports the Naval Sea Systems Command's Naval Surface Warfare Center, Corona Division (NSWC Corona). NSWC Corona has been a leader in the Navy's research, development, test, and evaluation process by providing independent assessment for nearly 50 years. Today, NSWC Corona is the Navy's premiere independent assessment agent responsible for gauging the warfighting capability of Navy ships and aircraft by assessing weapons and integrated combat systems' performance, readiness, quality, and supportability throughout the system's entire life cycle. It also provides critical warfighter support to the Navy, Marine Corps and Air Force as the range systems engineering agent helping sustain training around the world. In addition, the science and engineering command serves as the Navy Special Interface Gage technical agent and the measurement and calibration engineering agent for the Navy and Marine Corps to ensure measurement accuracy for today's precise, high-tech combat and weapon systems.

NSWC Corona is one of the newest federally designated laboratory sites in the nation, making Detachment Norco home of NSWC Corona's Joint Warfare Assessment Lab, the Measurement Science and Technology Lab, and the Daugherty Memorial Assessment Center, dedicated to Petty Officer 1st Class Steven P. Daugherty, who was killed by an IED in Iraq while supporting a SEAL team mission.

This INRMP is intended to help guide the natural resources management activities on the installation. Natural resources at Detachment Norco have been managed under the Natural Resource Management Plan (NRMP) (U.S. Soil Conservation Service (USSCS) 1990) and a draft INRMP prepared in 1998 (Naval Facilities Engineering Command (NAVFAC) Southwest 1998). In 1998, the Detachment was under the Naval Sea Systems Command.

In 2005, the Detachment came under the command of NAVWPNSTA Seal Beach. At that time it was determined that an updated INRMP was necessary for Detachment Norco.

The Plan fulfills the requirements of Chief of Naval Operations Instruction (OPNAVINST) 5090.1C CH-1, the Environmental and Natural Resources Program Manual, which charges Navy installations, with land and water resources suitable for conservation and management, to prepare and implement a comprehensive INRMP that fulfills the Sikes Act and requirements of the DoD Manual 4715.03-M Enclosure 8-INRMP Implementation and follows the *INRMP Guidance for Navy Installations* (2006). The Sikes Act requires the military services to prepare INRMPs in cooperation with the U.S. Fish and Wildlife Service (USFWS) and appropriate state fish and wildlife agencies. In California, this agency is the California Department of Fish and Wildlife (CDFW), formerly the California Department of Fish and Game (CDFG). An INRMP reflects mutual agreement of the parties concerning the conservation, protection, and management of fish and wildlife resources. This INRMP has been prepared in accordance with the Sikes Act and in cooperation with the USFWS and the CDFW.

Projects and activities were identified during the initial INRMP scoping process in three broad management categories: Lake Management, Species Management, and Landscape Management.

- Lake Management- Assess and address the aesthetics, water quality, water flow/circulation/aeration, invasive species, vector control, and vegetation management/maintenance issues. Avoid problems such as the large-scale fish die-off observed in 1993 caused by herbicide application to algae which was not removed from the lake and consequently caused the fish to die two days later.
- Species Management- Assess and address the status of Detachment Norco's species and habitats. Conduct inventories for plants, wetlands, terrestrial invertebrates, small mammals, reptiles, fishes, amphibians, birds, and vegetation communities within the installation when funding permits. Maintain a species checklist and a Global Information System (GIS) database with the results of species and habitat surveys.
- Landscape Management- Conduct landscape management planning within the historic district in accordance with the planning goals of the Integrated Cultural Resources Management Plan (ICRMP). Landscape management for the entire facility will focus on protecting, maintaining, enhancing and managing natural resources.

The overall strategy for dealing with these key management issues, as well as other issues, is addressed throughout the INRMP. The INRMP defines the strategy through a hierarchical format, starting with very broad, long-term statements (Goals) and ending with specific, short-term methods (tasks).

For Detachment Norco, the specific goals of this INRMP are threefold:

- GOAL 1: Protect the historic status of Lake Norconian and the ponds through appropriate natural resources management and enhancement, with an emphasis on maintaining water quality, vector control, and aesthetics.
- GOAL 2: Provide good stewardship to protect, manage, and enhance the land, water, and wildlife resources of Detachment Norco while fulfilling mission requirements.
- GOAL 3: Provide the organizational capacity, support, funding, and communication linkages necessary for effective strategic planning and administration of this Plan and the Detachment's natural resources.

The ASN (I&E) Memo of August 12, 1998, *DoN Policy Memo 98-06: Review of INRMPs Under NEPA*, has determined that Sikes Act requirements for INRMP implementation necessitate the preparation of National Environmental Policy Act (NEPA) statute (42 USC 4321-4370, as amended) documentation prior to INRMP approval. NEPA was created to disclose environmental concerns with human activities and resolve them to the best degree possible. In compliance with the NEPA process, NAVWPNSTA Seal Beach prepared an Environmental Assessment (EA) for implementation of this INRMP and all projects associated with it (INRMP Guidance for Navy Installations 2006, Section 6.1; See Appendix N.)

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## ACRONYMS AND ABBREVIATIONS

AMEC	AMEC Environment & Infrastructure, Inc.
amsl	Above Mean Sea Level
BCC	Birds of Conservation Concern
BMP	Best Management Practice
C	candidate
CA	Cooperative Agreement
CBC	Christmas Bird Count
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulation
CNDDDB	California Natural Diversity Database
CNIC	Commander Navy Installations Command
CNPS	California Native Plant Society
CNO	Chief Naval Operation
CNRSW	Commander, Navy Region Southwest
CO	Commanding Officer
CR	state rare
CRPR	California Rare Plant Rank
CRC	California Rehabilitation Center
CSS	coastal sage scrub
CSWRCB	California State Water Resources Control Board
CWA	Clean Water Act
Detachment Norco	Naval Weapons Station Seal Beach Detachment Norco
DoD	U.S. Department of Defense
DoDI	U.S. Department of Defense Instruction
DoI	U.S. Department of the Interior
DoN	U.S. Department of the Navy
DoN-OGC	Navy Office of General Counsel
DRI	Desert Research Institute
EA	Environmental Assessment
EIS	Environmental Impact Statement
EMS	Environmental Management System
EPA	Environmental Protection Agency
EPR	Environmental Program Requirements
EPSO	Environmental Programs and Services Office
EO	Executive Order
ESA	Endangered Species Act
FE	Federally Endangered
FSC	Federal Species of Special Concern
FT	Federally Threatened
FP	state fully protected
FWCA	Fish and Wildlife Coordination Act
GSA	General Services Administration
GIS	Geographic Information System
IAFWA	International Association of Fish and Wildlife Agencies
ICRMP	Integrated Cultural Resources Management Plan

## ACRONYMS AND ABBREVIATIONS (Cont.)

INRMP	Integrated Natural Resources Management Plan
IPM	Integrated Pest Management
IPMP	Integrated Pest Management Plan
ISO	International Organization for Standardization
LRMP	Legacy Resource Management Program
MBTA	Migratory Bird Treaty Act
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MSHCP	Multiple Species Management Plan
NAVFAC	Naval Facilities Engineering Command
NAVFACINST	NAVFAC Instruction
NAVFAC Southwest	Naval Facilities Engineering Command Southwest
NAVSEA	Naval Sea Systems Command
NAVWPNSTA	Naval Weapons Station
NCCP	Natural Communities Conservation Planning Program
NDAA	National Defense Authority Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRMP	Natural Resource Management Plan
NRHP	National Register of Historic Places
NSWC Corona	Naval Surface Warfare Center, Corona Division
O&M	Operations and Maintenance
OPNAVINST	Chief of Naval Operations Instruction
OUSD	Office of the Under Secretary of Defense
PE	Federally Proposed Endangered
PT	Federally Proposed Threatened
QRP	Qualified Recycling Program
SCAG	Southern California Association of Governments
SE	State Endangered
SEC	Sterner Environmental Consulting
SECNAVINST	SECNAV Instruction
SHPO	State Historic Preservation Office
SSC	California Species of Special Concern
ST	State Threatened
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Department of Agriculture, Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
USNPS	U.S. National Park Service
USSCS	U.S. Soil Conservation Service

## **SECTION 1 OVERVIEW**

### **1.1 Purpose**

Naval Weapons Station (NAVWPNSTA) Seal Beach Detachment Norco (Detachment Norco or Detachment- formerly Detachment Corona) supports the Naval Sea Systems Command's Naval Surface Warfare Center, Corona Division (NSWC Corona). NSWC Corona is the Navy's premiere technical agent for independent assessment, range systems engineering, and metrology and calibration agent with a workforce that includes some 900 scientists, engineers, and support staff, and 400 contractors. As one of the newest federally designated laboratory sites in the nation, Detachment Norco is home to NSWC Corona's Joint Warfare Assessment Lab, the Measurement Science and Technology Lab, and the Daugherty Memorial Assessment Center, dedicated to fallen Sailor Petty Officer 1st Class Steven P. Daugherty. These world-class labs and assessment centers are vital to ensuring the best technical capability for the Navy and Armed Services. Detachment Norco scientific and technical activities require office, laboratory, data processing, and communications facilities. No training or troop activities are conducted on the Detachment.

In 1971, weapons operations in the Southern California area were consolidated, with assessment work at Corona coming under the command of NAVWPNSTA Station Seal Beach. Throughout the ensuing decades, several additional re-organizations took place as the Navy sought to maximize efficiencies in both its weapons laboratories as well as its shore-based infrastructure in general. In 2005, the Detachment was re-designated as a detachment to NAVWPNSTA Seal Beach, with the facility's primary tenant, NSWC Corona retaining its own command structure. In 2011, the Detachment's name was changed to NAVWPNSTA Seal Beach Detachment Norco to more accurately reflect its location and strong ties to the local community. However, both iNFADS and EPR Web have not been updated to reflect the new name. Therefore, iNFADS and the EPR naming conventions still reflect the original Detachment Corona. In addition, the tenant has not adopted the name change to Norco and continues to retain Corona both in its name and as its mailing address.

The purpose of this Integrated Natural Resources Management Plan (INRMP or Plan) is to provide Detachment Norco with a viable framework for future management of natural resources on lands it owns or controls. Required by the Sikes Act (16 U.S. Code [USC] § 670 et seq., as amended (herein referred to as Sikes Act) for the U.S. Department of Defense (DoD), the INRMP is a long term planning document to guide the installation commander in the management of natural resources to support the installation 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. The INRMP facilitates compliance

with natural resource laws, integrates the natural resource components of all Detachment Norco plans and Instructions, and meets the requirements of all applicable U. S. DoD and U.S. Department of the Navy (DoN) regulations and policies.

This INRMP is intended to help guide the natural resources management activities on the installation. Natural resources at Detachment Norco (formerly Detachment Corona) have been managed under the Natural Resource Management Plan (NRMP) (U.S. Soil Conservation Service (USSCS) 1990) and a draft INRMP prepared in 1998 (Naval Facilities Engineering Command (NAVFAC) Southwest 1998). In 1998, the Detachment was under the Naval Sea Systems Command. In 2005, the Detachment came under the command of NAVWPNSTA Seal Beach. At that time it was determined that an updated INRMP was necessary for Detachment Norco. This Plan integrates the recommendations of the installation's draft INRMP (NAVFAC Southwest 1998), the Final Integrated Cultural Resources Management Plan (ICRMP) updated in 2005, and the Integrated Pest Management Plan (IPMP) updated in 2001.

This Plan fulfills the requirements of Chief of Naval Operations Instruction (OPNAVINST) 5090.1C CH-1, the *Environmental and Natural Resources Program Manual*, which charges Navy installations, with land and water resources suitable for conservation and management, to prepare and implement a comprehensive INRMP that fulfills the requirements of the Sikes Act (as amended) as well as the in Department of Defense Instruction (DoDI) 4715.03 18 March 2011 and follows the *INRMP Guidance for Navy Installations* (2006).

## **1.2 INRMP Scope**

This INRMP's scope is defined by the Sikes Act (as amended) and in DoDI 4715.03 18 March 2011 and the Navy's Environmental and Natural Resources Procedures Manual (OPNAVINST 5090.1C CH-1). This INRMP is considered a long term document, with updates to be made as necessary.

The DoD is required to ensure that ecosystem management is the basis for all management of DoD lands and waters (Office of the Under Secretary of Defense [OUSD] Memorandum of August 8, 1994, Implementation of Ecosystem Management in the Department of Defense). Based on an ecosystem approach, this INRMP takes a large geographic view to ensure achievement of the overriding goal of protecting the properties and functions of natural ecosystems.

This INRMP provides goals and objectives for the use and conservation of natural resources that integrate regional ecosystem, military, social (community), and economic matters. It establishes planning and management strategies; identifies natural resource constraints and opportunities; provides baseline descriptions of natural resources necessary for the development of conservation strategies and environmental assessment; serves as the principal information source for the preparation of future environmental documents for

proposed Detachment Norco actions; and provides guidance for annual natural resources management reviews, internal compliance audits, and annual budget submittals.

This Plan updates the Natural Resources Management Plan (NRMP) prepared in 1990 by the U.S. Soil Conservation Service (USSCS). A draft INRMP was prepared by Naval Facilities Engineering Command Southwest (NAVFAC Southwest) staff in 1998. The draft INRMP was not signed and has remained a draft document. In 2005, Detachment Norco came under the command of NAVWPNSTA Seal Beach. In 2006, the Navy briefly considered excessing Lake Norconian to an outside entity. Without the lake and its associated areas, there was little need for an INRMP. However, the lake was not excessed and continues to be a part of Detachment Norco. With Lake Norconian as the major natural resource feature, it was determined that an INRMP was required. This updated INRMP for Detachment Norco integrates the recommendations of the previous draft INRMP, the Final Integrated Cultural Resources Management Plan (ICRMP) updated in 2005 and the Integrated Pest Management Plan (IPMP) updated in 2001.

### **1.3 Goals and Objectives**

In this INRMP, a Goal is a statement that sets the course towards a successful plan. It defines an end outcome or result rather than an activity or process. INRMP goals should endure for 20 years, as a guideline. In contrast to a goal, an objective should be achievable within five years or so. An objective describes a desired future condition or successful outcome that reflects and tiers off of the goal statement, and includes a metric for attaining the objective such as a standard, quantity, or timeframe. To help achieve goals, tasks are one-time or routinely repeated short-term action items. INRMPs are required by DoD Instruction (DoDI) 4715.03, *Environmental Conservation Program*, to pursue the following goals:

- Identify, protect, conserve, and manage sensitive and significant natural resources and ecosystems.
- Promote the conservation of biodiversity whenever practicable.
- Use and care for natural resources so as to best serve our Nation's present and future needs.
- Comply with all applicable Executive Orders (EOs) and federal, state, and local statutory and regulatory requirements, both substantive and procedural.
- Support the military mission by managing for the goal of no net loss to the operational carrying capacity of installation lands.
- Be flexible enough to accommodate increased military mission requirements for use of these lands.

For Detachment Norco, the specific goals of this INRMP are threefold:

- **GOAL 1:** Protect the historic status of Lake Norconian and the ponds through appropriate natural resources management and enhancement, with an emphasis on maintaining water quality, vector control, and aesthetics.
- **GOAL 2:** Provide good stewardship to protect, manage, and enhance the land, water, and wildlife resources of Detachment Norco while fulfilling mission requirements.
- **GOAL 3:** Provide the organizational capacity, support, funding, and communication linkages necessary for effective strategic planning and administration of this Plan and the Detachment's natural resources.

These goals will ensure the success of the military mission and the conservation of natural resources. The general philosophies and methodologies used throughout the Detachment Norco natural resources management program are focused on conducting required military mission activities while maintaining ecosystem viability.

### **1.3.1 Key Issues**

Projects and activities were identified during the initial INRMP scoping process in three broad management categories: Lake Management, Species Management, and Landscape Management.

- **Lake Management** — Assess and address the aesthetics, water quality, water flow/circulation/aeration, invasive species, vector control, and vegetation management/maintenance issues. Avoid problems such as the large-scale fish die-off observed in 1993 caused by herbicide application to algae which was not removed from the lake and consequently caused the fish to die two days later.
- **Species Management** — Assess and address the status of Detachment Norco's species and habitats. Conduct inventories for plants, wetlands, terrestrial invertebrates, small mammals, reptiles, fishes, amphibians, birds, and vegetation communities within the installation when funding permits. Maintain a species checklist and a Global Information System (GIS) database with the results of species and habitat surveys.
- **Landscape Management** — Conduct landscape management planning within the historic district in accordance with the planning goals of the ICRMP. Landscape management for the entire facility will focus on protecting, maintaining, enhancing and managing natural resources.



The purpose of this hierarchy is to give direction to everyday decisions about Detachment Norco's use and management of its natural resources. The goals, objectives, and policies of this Plan should help provide the consistency and coordination needed among the various personnel at NAVWPNSTA Seal Beach, NAVFAC Southwest, and Detachment Norco involved at all levels of daily as well as annual decision-making. This INRMP can be used to provide off-Base agencies and organizations with an understanding and appreciation for Detachment Norco's strategy for natural resources and land use issues of mutual concern.

## **1.4 Roles and Responsibilities**

### **1.4.1 Internal 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 (CNRSW) N40, NAVFAC SW, and NAVWPNSTA Seal Beach, and Detachment Norco.

**CNO** — The Chief of Naval Operations (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 (DoN 2006).

**CNIC**—The Commander of Navy Installations Command (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 EPR-web project proposals (Navy 2006).

**Navy Region Southwest**— Regional Commanders ensure that installations comply with DoD, DoN, and CNO policy on INRMPs and their associated NEPA documentation. They ensure that installations under their control undergo annual reviews and formal five-year evaluations. They ensure the programming of resources necessary to maintain and implement INRMPs, which involves the evaluation and validation of EPR-web 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 (Navy 2006).

**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 R&D 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 CO signature.

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

**Office of Counsel**—The Office of the General Counsel, Commander Navy Region Southwest, provides legal services to Detachment Norco 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 base operations.

**Detachment Norco Director**— Detachment Norco Director also ensures the preparation, completion, and implementation of INRMPs and associated NEPA documentation. The Director reviews the entire INRMP and endorses the INRMP with his signature.

***Naval Facilities Engineering Command Southwest***

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

**Environmental Division**—The NAVWPNSTA Seal Beach Environmental Programs and Services Office (EPSO), as delegated by command directive, is responsible for the preparation and implementation of this INRMP. Acting through the Natural Resources Manager, EPSO is responsible for the management of natural resources as part of the overall NAVWPNSTA Seal Beach Environmental Program. NAVWPNSTA Seal Beach natural resources staff provides technical support. This INRMP is the direct “vehicle” for accomplishment of many of the responsibilities of the Commanding Officer (CO). The Installation Environmental Program Director (IEPD) reviews the entire INRMP and endorses the INRMP with his signature.



**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 Southwest is responsible for providing support for natural resources management at Detachment Norco when requested. NAVFAC Southwest personnel such as the NEPA and INRMP coordinators, have natural resources programming and/or technical support roles in developing this INRMP. The Business Line Team Leader also reviews the INRMP and endorses the INRMP with his signature.

#### *Tenant Command*

**Naval Surface Warfare Center, Corona Division-** The Commander of the tenant command reviews the INRMP to ensure that all elements of their operations are included and addressed in the INRMP.

### **1.4.2 Installation Stakeholders**

A stakeholder is “one who is involved in or affected by a course of action”. Those who are involved or affected by the implementation of this INRMP are listed below.

Stakeholders for this INRMP are:

- All NAVWPNSTA Seal Beach Departments
- NAVFAC Southwest
- Commander Navy Region Southwest
- Naval Surface Warfare Center Corona Division
- U.S. Fish and Wildlife Service
- California Department of Fish and Wildlife
- City of Norco
- Lake Norconian Club Foundation

### **1.5 Authority, Sustainability, and Compliance**

The purpose of this Plan is to ensure that natural resources conservation measures and military activities on mission land are integrated and consistent with Federal stewardship requirements. It provides a natural resources management strategy that facilitates compliance with resource protection laws and also promotes ecosystem conservation. In accordance with the Sikes Act, this INRMP “shall, to the extent appropriate and applicable, provide for:

- A) Fish and wildlife management, land management, and fish- and wildlife-oriented recreation;

- B) Fish and wildlife habitat enhancement or modifications;
- C) Wetland protection, enhancement, and restoration, where necessary for support of fish, wildlife, or plants;
- D) Integration of, and consistency among, the various activities conducted under the plan;
- E) Establishment of specific natural resources management goals and objectives and time frames for proposed action;
- F) Sustainable use by the public of natural resources to the extent that the use is not inconsistent with the needs of fish and wildlife resources;
- G) Public access to the military installation that is necessary or appropriate for the use described in subparagraph (F), subject to requirements necessary to ensure safety and military security;
- H) Enforcement of applicable natural resource laws (including regulations);
- I) No net loss in the capability of military installation lands to support the military mission of the installation; and,
- J) Such other activities as the Secretary of the military department determines appropriate.”

Secretary of the Navy Instruction (SECNAVINST) 6240.6E assigns responsibility for the development and implementation of natural resources management programs on all land and water areas of the DoN to the Chief of Naval Operations and the Commandant of the Marine Corps. The Chief of Naval Operations provides natural resources management guidance to all Navy commands afloat and ashore via OPNAVINST 5090.1C CH-1, the *Environmental and Natural Resources Program Manual*.

This Plan fulfills OPNAVINST 5090.1C CH-1 which requires natural resource management plans to be prepared for all installations with CLASS I property (installations that have custody of both land and water) suitable for the conservation and management of natural resources. INRMPs are to include land, agriculture, forest, fish, wildlife, and outdoor recreation resources of an installation. The Plan must also conform to the guidelines and standards of the DoN *Real Estate Procedure Manual*, NAVFAC P-73.

### **1.5.1 Sustainability**

DoD Manual (DoDM) 4715.03-M Enclosure 8-INRMP Implementation requires that Navy installations incorporate ecosystem management's "ten guiding principles" as the basis for land use planning and management. The ten principles of ecosystem management had first appeared in a 1994 DoD memorandum and were subsequently published as principles and guidelines in an enclosure to DoDM 4715.03. DoD principles and guidelines address key components of ecosystem management that are generally acceptable to academicians and practitioners alike, and they provide guidance pertinent to installation managers. DoDM 4715.03 also provides a DoD definition of ecosystem management as:

"A goal-driven approach to managing natural and cultural resources that supports present and future mission requirements; preserves ecosystem integrity; is at a scale compatible with natural process; is cognizant of nature's time frames; recognizes social and economic viability within functioning ecosystems; is adaptable to complex changing requirements; and is realized through effective partnerships among private, local, state, tribal, and federal interests."

The 10 guiding principles of ecosystem management (OUSD Memorandum of 08 August 1994, *Implementation of Ecosystem Management in the Department of Defense*) are as follows:

1. *Maintain and Improve the Sustainability and Native Biodiversity of Ecosystems.* Ecosystem management involves conducting installation programs and activities in a manner that identifies, maintains, and restores the "composition, structure, and function of natural communities that comprise ecosystems," to ensure their sustainability and conservation of biodiversity at landscape and other relevant ecological scales to the maximum extent that mission needs allow.
2. *Administer with Consideration of Ecological Units and Timeframes.* Ecosystem management requires consideration of the effects of installation programs and actions at spatial and temporal ecological scales that are relevant to natural processes. A larger geographic view and more appropriate ecological time frames assist in the analysis of cumulative effects on ecosystems that may not be apparent with smaller and shorter scales. Regional ecosystem management efforts are generally more appropriate than either national or installation-specific efforts. Consideration of sustainability under long-term environmental threats, such as climate change, is also important.
3. *Support Sustainable Human Activities.* People and their social, economic, and national security needs are an integral part of ecological systems, and management of ecosystems depends on sensitivity to those issues. Consistent with mission requirements, actions should support multiple use (e.g., outdoor recreation, hunting, fishing, forest timber products, and agricultural out-leasing) and

sustainable development by meeting the needs of the present without compromising the ability of future generations to meet their own needs.

4. *Develop a Vision of Ecosystem Health.* All interested parties (federal, state, tribal, and local governments, nongovernmental organizations, private organizations, and the public) should collaborate in developing a shared vision of what constitutes desirable future ecosystem conditions for the region of concern. Existing social and economic conditions should be factored into the vision, as well as methods by which all parties may contribute to the achievement of desirable ecosystem goals.
5. *Develop Priorities and Reconcile Conflicts.* Successful approaches should include mechanisms for establishing priorities among the objectives and for conflict resolution during both the selection of the ecosystem management objectives and the methods for meeting those objectives. Identifying “local installation objectives” and “urban development trends” are especially important to determine compatibility with ecosystem objectives. Regional workshops should be convened periodically to ensure that efforts are focused and coordinated.
6. *Develop Coordinated Approaches to Work Toward Ecosystem Health.* Ecosystems rarely coincide with ownership and political boundaries so cooperation across ownerships is an important component of ecosystem management. To develop the collaborative approach necessary for successful ecosystem management, installations should:
  - *Involve the military operational community early in the planning process.* Work with military trainers and others to find ways to accomplish the military mission in a manner consistent with ecosystem management;
  - *Develop a detailed ecosystem management implementation strategy for installation lands* and other programs based on the vision developed above, and those principles and guidelines;
  - *Meet regularly with regional stakeholders* (e.g., State, tribal, and local governments; nongovernmental entities; private landowners; and the public) to discuss issues and to work towards common goals;
  - *Incorporate ecosystem management goals into strategic, financial, and program planning and design budgets* to meet the goals and objectives of the ecosystem management implementation strategy;
  - *Seek to prevent undesirable duplication of effort*, minimize inconsistencies, and create efficiencies in programs affecting ecosystems.
7. *Rely on the Best Science and Data Available.* Ecosystem management is based on scientific understanding of ecosystem composition, structure, and function. It requires more and better research and data collection, as well as better coordination and use of existing data and technologies. Information should be accessible, consistent, and commensurable. Standards should be established for

the collection, taxonomy, distribution, exchange, update, and format of ecological, socioeconomic, cartographic, and managerial data.

8. *Use Benchmarks to Monitor and Evaluate Outcomes.* Accountability measurements are vital to effective ecosystem management. Implementation strategies should include specific and measurable objectives and criteria with which to evaluate activities in the ecosystem. Efficiencies gained through cooperation and streamlining should be included in those objectives.
9. *Use Adaptive Management.* Ecosystems are recognized as open, changing, and complex. Management practices should be flexible to accommodate the evolution of scientific understanding of ecosystems. Based on periodic reviews of implementation, adjustments to the standards and guidelines applicable to management activities affecting the ecosystem should be made.
10. *Implement Through Installation Plans and Programs.* An ecosystem's desirable range of future conditions should be achieved through linkages with other stakeholders. "Specific DoD activities" should be identified, as appropriate, in installation INRMPs and ICRMPs and in other planning and budgeting documents.

Finally, the Navy directed (OPNAVINST 5090.1C CH-1) that ecosystem-based management shall include:

- A shift from single species to multiple species conservation
- Formation of partnerships necessary to consider and manage ecosystems that cross boundaries
- Use of the best available scientific information and adaptive management techniques

### **1.5.2 Federal Compliance**

Preparation of this INRMP, as required by the Sikes Act, was accomplished in cooperation with the USFWS and the CDFW. This cooperation ensures the INRMP reflects mutual agreement of the USFWS and CDFW concerning the conservation, protection, and management of fish and wildlife resources at NWSSB Detachment Norco.

Department of Defense policy requires installations to review INRMPs annually in cooperation with two primary parties to the INRMP (USFWS and the state fish and wildlife agency). Annual reviews facilitate adaptive management by providing an opportunity for the parties to review the goals and objectives of the plan, as well as establish a realistic schedule for undertaking proposed actions. As this plan is considered a long term document with no set expiration date, the annual review process allows a yearly opportunity for updating the plan when necessary.

Section 101(b)(2) of the Sikes Act (as amended) specifically directs that the INRMPs be reviewed as “to operation and effect” by the primary parties “on a regular basis, but not less often than every five years”, emphasizing that the review is intended to determine whether existing INRMPs are being implemented to meet the requirements of the Sikes Act (as amended) and contribute to the conservation and rehabilitation of natural resources on military installations. The OSD guidance (May 17, 2005) states that joint review should be reflected in a memo or letters.

### **1.5.2.1 The Sikes Act**

The Sikes Act was enacted into U.S. law on September 15, 1960 to promote effectual planning, development, maintenance, and coordination of wildlife, fish, and game conservation and rehabilitation in military installations. It provides for cooperation by the Department of the Interior, DoD and state wildlife agencies in planning, development and maintenance of fish and wildlife resources on military lands.

The Secretary of Defense is authorized to carry out a program for the conservation and rehabilitation of natural resources on military installations consistent with the mission of the installation. To facilitate the program, each military department shall prepare and implement an INRMP unless it is determined that the absence of significant natural resources on a particular installation makes preparation of an INRMP inappropriate or unnecessary. Elements, required as part of the INRMP, are listed in *Section 1.5 Authority*. The program provides for:

- The conservation and rehabilitation of natural resources on military installations;
- Sustainable multipurpose use of the resources, which shall include hunting, fishing, trapping, and non-consumptive uses; and
- Public access subject to safety requirements and military security.

The Sikes Act has other provisions that relate to the implementation of this INRMP that include:

- Regular review of this INRMP and its effects, not less often than every 5 years.
- Priority for contracts involving implementation of this INRMP to state and federal agencies having responsibility for conservation of fish and wildlife.

### **1.5.2.2 National Environmental Policy Act of 1969**

NEPA was created to identify environmental concerns caused by human activities and to resolve them to the best degree possible, using public input and the best information available. NEPA is the basic national charter for the protection of the environment. It is a



procedural planning tool which primarily requires a clear evaluation of all federal decisions potentially affecting the human and natural environment. Detachment Norco must consider the environmental consequences of its actions before a commitment is made to proceed. However, NEPA itself does not prevent activities from being implemented. Unlike many other environmental regulations, the act is not an enforcement tool punishable by fines for non-compliance. The NEPA statute (as amended, 42 U.S. Code [USC] 4321-4370) and the Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulation [CFR] parts 1500-1508) combine to represent the requirements of NEPA.

To provide more specific implementation of the CEQ regulations, the DoD issued policy and procedures (32 CFR parts 188 & 214) for DoD components and also Directive 6050.1 (1979) on *Environmental Effects of DoD Actions in the U.S.* A supplement by the DoN (32 CFR part 775) followed, providing policy and assigning responsibilities to the Navy and Marine Corps. It is these DoN procedures, which meet the NEPA requirement, that require every federal agency to adopt procedures to supplement the CEQ regulations (40 CFR 1507.3[b]). Following the DoN directive, the Navy issued its own specific policy for compliance with procedural requirements under OPNAVINST 5090.1C CH-1. The latter document tasks Detachment Norco with ensuring that Navy actions (i.e., any action that spends federal money) are in accordance with the requirements of NEPA.

Environmental documents need to be reviewed at an appropriate level, without excessive paperwork but with adequate analysis. NEPA documentation for Detachment Norco projects is currently performed by NAVWPNSTA Seal Beach, NAVFAC Southwest personnel. The Detachment Norco policy strategy for NEPA planning is as follows:

- Conduct planning of mission activities having potential environmental effects by applying NEPA's requirements and policies to enhance the mission-related use and the stewardship of natural resources. Seek opportunities for streamlining environmental assessment procedures.
- 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, mitigation, and prevention.
- Ensure that any proposed Detachment Norco action that has the potential for physical impact on the human environment to undergo the NEPA process.
- Include new activities, substantive changes in continuing actions, specific actions, or adoption of programs.

In compliance with the NEPA process, NAVWPNSTA Seal Beach prepared an Environmental Assessment (EA) for implementation of this INRMP and all projects associated with it. The EA is presented in Appendix N.

## **1.6 Review and Revisions Process**

The DoD and DoN uses an Environmental Management System (EMS) to integrate environmental considerations into day-to-day activities across all levels and functions of Navy enterprise. It is a formal management framework that provides a systematic way to review and improve operations, create awareness, and improve environmental performance. Systematic environmental management as an integral part of day-to-day decision making and long-term planning processes is an important step in supporting mission readiness and effective use of resources. The most significant resource for every organization is their senior leadership's commitment and visibility in EMS implementation and sustainability. A robust EMS is essential to sustaining compliance, reducing pollution and minimizing risk to mission. The Navy EMS conforms to the International Organization for Standardization (ISO) 14001:2004 *Environmental Management System* standard.

Section 101(b)(2) of the Sikes Act [16 USC 670a(b)(2)] specifically directs that the INRMPs be reviewed "as to operation and effect" by the primary parties "on a regular basis, but not less often than every five years", emphasizing that the review is intended to determine whether existing INRMPs are being implemented to meet the requirements of the Sikes Act (as amended) and contribute to the conservation and rehabilitation of natural resources on military installations. The Office of the Secretary of Defense (OSD) guidance (17 May 2005) states that joint review should be reflected in a memorandum or letters between "the parties" at least every five years. Informal annual reviews are mandatory to facilitate adaptive management, during which INRMP goals, objectives, and "must fund" projects are reviewed, and a realistic schedule established to undertake proposed actions. This written documentation should be jointly executed or in some other way reflect the parties' mutual agreement and summarize the rationale for the conclusions the parties have reached.

DoD and DoN policy requires installations to review INRMPs annually in cooperation with the two primary parties to the INRMP (USFWS and the state fish and wildlife agency). Annual reviews facilitate adaptive management by providing an opportunity for the parties to review the goals and objectives of the plan, as well as establish a realistic schedule for undertaking proposed actions. As a guide for addressing annual INRMP review, the Navy developed the Navy Natural Resources (NR) Metrics. These NR Metrics can be used to gather and report essential information required by Congress, EOs, existing U.S. laws, and the DoD. There are seven Focus Areas that comprise the NR Metrics to be evaluated during the annual review of the Navy Natural Resources Program/INRMP:

1. Ecosystem Integrity
2. Listed Species and Critical Habitat
3. Fish and Wildlife Management for Public Use
4. Partnership Effectiveness



5. Team Adequacy
6. INRMP Project Implementation
7. INRMP Impact on the Installation Mission

A copy of the most recent NR Metrics questions are presented in Appendix E. NR Metrics are found on the Navy Conservation website.

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Recent guidance on INRMP implementation interpreted that the five-year review would not necessarily constitute a revision; this would occur only if deemed necessary. The Annual Review process is broadly guided by the NAVFAC Environmental Conservation Program Directive (DoDI 4715.03) and by OPNAVINST 5090.1C CH 1. The following policy memoranda clarified procedures for INRMP reviews and revisions:

- DUSD (I&E) Policy Memorandum October 10, 2002, which replaced a 1998 policy memorandum.
- Assistant Deputy Undersecretary of Defense (ADUSD) for Environment, Safety and Occupational Health (ESOH) Policy (November 1, 2004 Memorandum).
- (ADUSD) for (ESOH) Policy (September 2005 Memorandum).

The most recent guidance on INRMP reviews is found in DoD 4715.03. The Annual Review reports on the status of INRMP implementation toward meeting natural resources conservation program measures of merit to DUSD (I&E) at each Environmental Management Review and to Congress in the Defense Environmental Programs ARC. The report summarizes:

- Each installation’s compliance with Sikes Act.
- Annual feedback received from the USFWS or NOAA Fisheries Service.
- Annual feedback received from the state fish and wildlife agency.
- Funding requirements per Fiscal Year needed to implement the INRMP: the amount required for recurring projects, and the amount required for non-recurring projects.

According to OPNAVINST 5090.1C CH-1, Annual Reviews must verify that:

- Current information on all conservation metrics is available.
- All *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 revising the INRMP.
- All required coordination has occurred.
- All significant changes to the installation's mission requirements or its natural resources have been identified.
- The INRMP goals and objectives remain valid.

## **1.7 Management Strategy**

An integrated planning approach was used to develop the policies, guidelines, and projects for each natural resource area within the Plan. Implementation of this management plan will support Detachment Norco's military mission while maintaining, protecting, and enhancing the ecological integrity of the lands and the biological communities inhabiting them, thereby protecting Detachment Norco ecosystems and their components.

Plan expectations include the following:

- Provide guidance for future natural resources management and staff;
- Establish a framework for implementing natural resources programs and ecosystem management;
- Provide centralized information on the natural resources program;
- Identify environmental constraints so that military use can be synchronized with ecosystem sustainability;
- Identify mission-related impacts to natural resources and options for conflict resolution;
- Serve as a baseline of existing environmental conditions for future environmental planning and compliance projects;
- Assist installations in complying with environmental regulations; and
- Identify, prioritize and provide a timeline for long-term budget requirements.

The typical management programs addressed in an INRMP include land management, forest management, aquatic and terrestrial habitat management, special natural area management, fish and wildlife management, rare, threatened, and endangered species management, pest management, wildland fire management, recreational resource and activity management, and agricultural program management. The INRMP is a mission-driven plan, created with a dual goal:

- To allow for the conduct of appropriate military use at levels necessary to maintain a full readiness posture for national defense and civil missions; and
- To provide for management of natural resources in an ecosystem-oriented, sustainable manner, consistent with federal, state, and local regulations.

Benefits of the INRMP to the military mission include sustained use of Detachment Norco installation lands, better distribution of military activities, and integration of the military mission with natural resources management. The INRMP facilitates long-range, sustainable use of Detachment Norco.

This INRMP emphasizes an ecosystem management approach to natural resources management, consistent with DoD policies presented in Appendix C Legislation, Executive Orders, Regulations, and Instructions. Ecosystem management supports the use of natural resources on Detachment Norco for both military and other human-related values and purposes. The goal of ecosystem management is to protect the properties and functions of natural ecosystems. Ecosystems extend beyond installation boundaries, and management of Detachment Norco natural resources will include development of partnerships with neighbors. Detachment Norco mission activities are integrated and consistent with federal stewardship requirements and ensure the sustainability of quality lands to accomplish Detachment Norco's military mission.

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## **SECTION 2**

### **MISSION, LAND USE, AND REGIONAL SETTING**

#### **2.1 Location and Mission**

##### **2.1.1 Location**

Detachment Norco (formerly Detachment Corona) is located in northwest Riverside County, within the city limits of Norco, California. It is approximately 3 miles north of the City of Corona, 15 miles west of downtown Riverside, and 45 miles inland (or east) of Santa Monica Bay. Principal access to Detachment Norco is by Interstate 15 (Figure 1). The property is situated within 1 mile of the Santa Ana River. The current facility boundaries encompass 247 acres including Lake Norconian (Figure 2). The California Rehabilitation Center (CRC), operated by the State Department of Corrections, adjoins the Detachment at its northern border and occupies a former Navy hospital site. Historic changes in ownership and use are described in Section 2.2.

##### **2.1.2 Detachment Norco Mission**

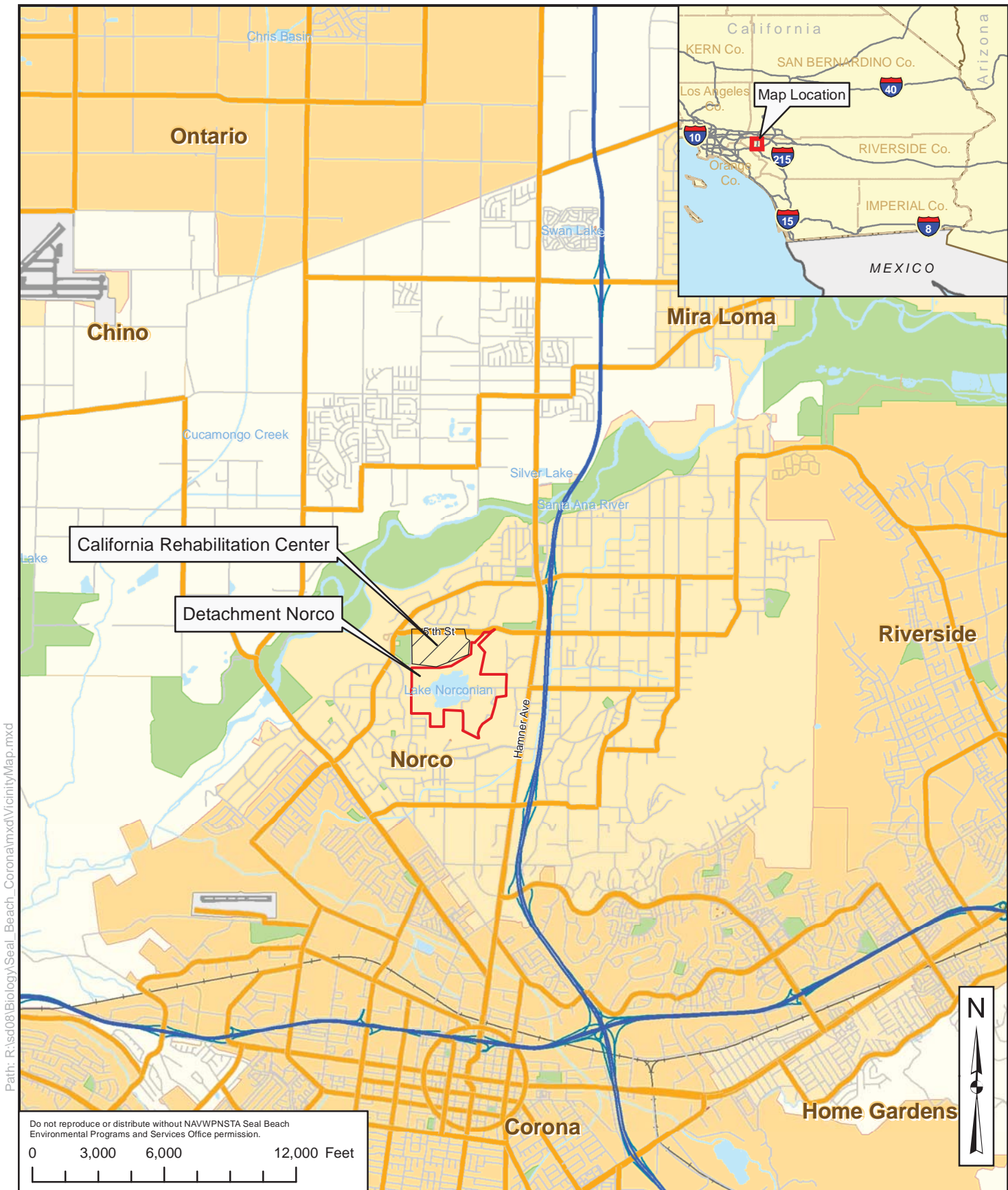
NAVWPNSTA Seal Beach and its detachments provide shore-based infrastructure support to the Navy's ordnance mission and other fleet and fleet support activities (CNIC 2009). The stated vision of the NAVWPNSTA Seal Beach and its detachments is to be the CNIC model for shore-based infrastructure support, seamlessly enabling tenant commands to excel in serving the fleet while embracing a culture of continuous improvement, transparency, and execution (CNIC 2009).

Detachment Norco supports the NSWC Corona mission, which is to *“Serve warfighters and program managers as the Navy's independent performance assessment agent throughout systems' lifecycles by gauging the Navy's warfighting capability of weapons and integrated combat systems, from unit to force level, through assessment of those systems' performance, readiness, quality, supportability, and the adequacy of training. Execute other responsibilities as assigned by the Commander, Naval Surface Warfare Center.”* In order to carry out this mission, NSWC Corona possesses a number of unique capabilities. Among these are the Joint Warfare Assessment Lab, the cornerstone of NSWC Corona's integrated approach to warfare assessment and the focal point of internal and external interconnectivity; the Daugherty Memorial Assessment Center; and the Measurement Science and Technology Lab.

## **2.2 Historic Use**

### **2.2.1 Pre-Navy Use**

The Homestead Act of 1862 gave rise to many farms and ranches in the Riverside area. The subsequent addition of railroads and imported water from Owens Valley uncapped previous population limitations and the region grew very rapidly. Rex B. Clark purchased 5,409 acres, including the site currently occupied by Detachment Norco, in the early 1920's and planned to subdivide the land for farms and homes.

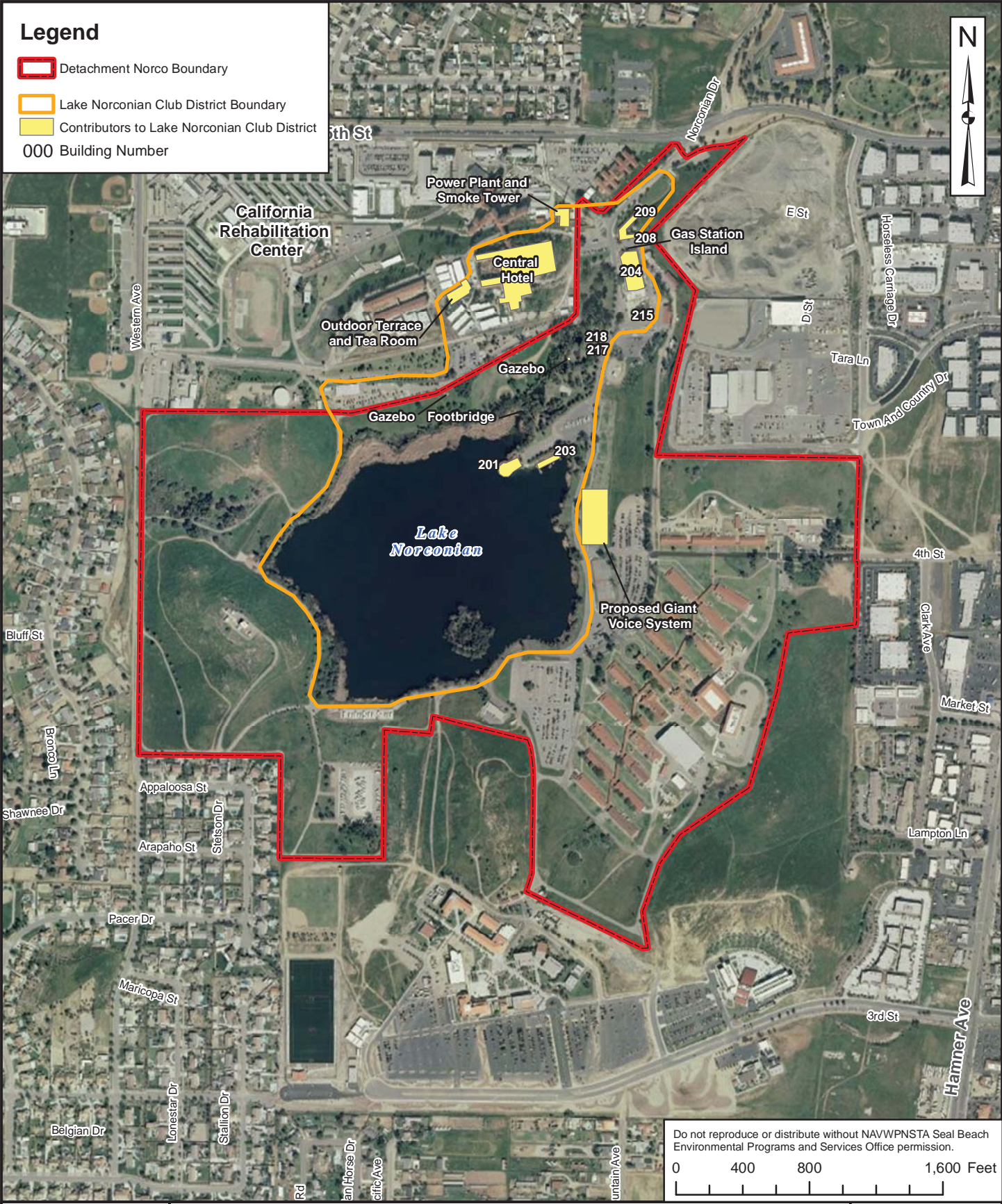


**General Vicinity Map**  
**Naval Weapons Station Seal Beach Detachment Norco,**  
**Norco, CA**

**FIGURE**  
**1**

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**Site Map**  
**Naval Weapons Station Seal Beach Detachment Norco,**  
**Norco, CA**

**FIGURE**  
**2**

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However, the discovery of natural hot mineral springs (sulfur wells) were discovered near the property in 1921, which changed these plans to the development of a world-class luxury resort on the site in 1927 (USSCS 1990). The Lake Norconian Club opened in 1929 and included a casino, golf course, 58-acre man-made lake, a hot sulfur spring spa, an airport, a 5-story luxury hotel, a maid's/chauffeur's quarters, a garage for the guests to keep their cars, a laundry facility, and a power plant. It was designed with elaborate architecture to attract only the wealthy and film stars of the era. However, with the stock market crash of October 1929 and the onset of the Great Depression, the resort suffered economically and was scaled back considerably.



Lake Norconian Club Circa 1929

### 2.2.2 Historic Navy Use

The resort was purchased by the DoN on December 8, 1941 with the intent of converting the facility into a Naval Hospital for casualties of World War II. The first phase construction effort during the World War II years involved converting the hotel into a hospital and constructing a six-story addition to the hotel, nurses' quarters, a three-story corpsmen's building near the chauffeur's quarters, as well as a fire station, two security guard houses, a fire pump shelter, three one-story corpsmen's buildings, two sick officers' quarters, six one-story ward buildings, a recreation building, and an administration building. The designs of these and later buildings are Spanish Colonial Revival in style, and in some cases the new buildings were linked with the existing resort buildings. The hotel's sulfur baths were converted to functional hydrotherapy mineral baths.

In May of 1943, a 250-bed tuberculosis “hospital group” was constructed. This resulted in the Unit II buildings east of the lake. This complex included an administration building, six wards, two sick officers’ quarters, a subsistence building, a recreation building, nurses’ quarters, corpsmen’s and cooks’ quarters, a power plant, shops, gatehouse, walkways and roads.

The hospital was deactivated after the Korean War in 1957, and missile testing and tracking became the primary functions of the facility. On March 30, 1962, the northwest portion of the site that included the main hotel/hospital building and adjunct facilities were transferred to the State of California for use as a narcotics rehabilitation center. This was the first facility set up by the state to deal with the growing problem of drug addiction. The state took possession of the hotel building and additions, power plant, and outdoor terrace.

The Navy retained the remainder of the original site including the lake, casino, boathouse, maid’s quarters (also referred to as the chauffeur’s quarters), garage/laundry, the 1941-46 buildings adjacent to the service buildings, and the World War II tuberculosis hospital Unit II, which had been adapted for use as laboratories.

In 1971, weapons operations in the Southern California area were consolidated, with assessment work under the command of NAVWPNSTA Seal Beach. Between 1971 and 2005, several additional reorganizations took place as the Navy sought to maximize efficiencies in both its weapons laboratories as well as its shore-based infrastructure in general. In July 2005, the Corona site was redesigned as a detachment of NAVWPNSTA Seal Beach, with the facility’s primary tenant, NSWC Corona Division, retaining its own command structure.

### **2.2.3 Cultural Resources**

#### **2.2.3.1 Pre-historic Cultural Resources**

There are numerous indigenous cultural sites in the vicinity of the Detachment Norco property; however, only one (CA-RIV-1230) is recorded on the site itself (NAVFAC Southwest 2005). The Gabrieleno people who occupied the Corona-Norco area (named for those tribes associated with Mission San Gabriel Archangel), were part of a larger, Southern California coastal territory with linguistically related but separate tribes.

No known Native American resource sites are present within the Detachment Norco facility.

### **2.2.3.2 Historic Cultural Resources**

The major development of the Detachment Norco property occurred during the mid-1920s when the property was developed as a resort. In 2000, the Lake Norconian Club Historic District which includes 13 structures, were placed on the National Register of Historic Places (NRHP). The Lake Norconian Club District is a resource that occupies approximately 92 acres on Navy-owned land at Detachment Norco, with the remainder of the district located just north of Detachment Norco within the CRC, owned by the State of California. The district contains 13 contributing elements; including buildings, structures, and a historic landscape. Nine contributing elements fall within the boundaries of Detachment Norco (Figure 2). These include:

- Lake Norconian
- Historic Landscape within the NRHP Historic District boundary
- The Pavilion- Building 201
- The Gas Station Island
- The Boat House - Building 203
- Footbridge
- The Maid's/Chauffeur's Quarters - Building 209
- Gazebo located east of Lake Norconian
- Gazebo located north of Lake Norconian
- The Laundry/Garage Building- Building 204

Officially, the Lake Norconian Club Historic District is “significant under National Register Criteria A and C in the areas of Exploration/Settlement and Architecture. The handsome multi-building complex is a fine example of Southern California resort architecture from the early twentieth century rendered in the regional Spanish Colonial Revival style. The hotel and resort complex was built by Rex B. Clark, an important local entrepreneur, and it served as an important focal point for local development in this portion of rural Riverside County during the period before the Great Depression.”

The 1997 NRHP nomination makes the case for listing under Criteria A and B, for its significance in local development and association with Rex Clark. The nomination, however, was amended by the Keeper to delete Criterion B and add Criterion C, explaining that “the current nomination fails to adequately justify the significance of any persons directly associated with this property. The nomination does provide sufficient information to justify the significance of the property in the area of Architecture, as a fine example of

Southern California resort architecture rendered in the regional Spanish Colonial Revival style.” The Lake Norconian Club resort became a NRHP-listed historic district on February 4, 2000.

Primary management issues related to the use of the historic buildings within the Detachment are maintenance, repair, alteration, and productive use of the structures listed on the NRHP and their surroundings in accordance with the ICRMP. More information on the eligibility of the district and its contributing elements can be found there.

Management issues related to historic land features such as the lake and historic ornamental landscape (trees and shrubs planted in the late 1920s) include the preservation and maintenance of these features. Although it was historically fed by well water, the level of the lake is currently maintained with a mix of non-potable well water fed into the lake near the west dam and potable water fed via the upper ponds provided by the City of Norco. The water provided to Detachment Norco is used both for the general operation of the installation, landscape irrigation and for the maintenance of the lake. There are no specific requirements for landscape maintenance for the district other than projects be reviewed by CR personnel through the usual NEPA process.

It is important that the recommendations in both this INRMP and the ICRMP be coordinated and consistent with one another because Lake Norconian and the surrounding maintained landscape are part of the historic district and the significant elements of the landscape must be preserved.

## **2.3 Current Use**

### **2.3.1 Operations and Activities**

Detachment Norco (formerly Detachment Corona) is under the command of NAVWNSTA Station Seal Beach. Detachment Norco supports the Naval Sea Systems Command’s (NAVSEA) NSWC Corona. NSWC Corona is the Navy’s premiere technical agent for independent assessment, range systems engineering, and metrology and calibration with a workforce that includes some 900 scientists, engineers, and support staff, and 400 contractors. As one of the



**NSWC Corona Joint Warfare Assessment Laboratory**

newest federally designated laboratory sites in the nation, Detachment Norco is home to NSWC Corona’s Joint Warfare Assessment Lab, the Measurement Science and Technology Lab, and the Daugherty Memorial Assessment Center. The Joint Warfare Assessment Lab and Daugherty Memorial Assessment Center are secure facilities with

satellite connectivity that allows the integration and merging of Navy test exercise data needed to assess the performance of Navy ships, aircraft, and combat systems, among other functions. The Measurement Science and Technology Laboratory is a metrology, calibration and gage lab used to conduct precise measurements in support of sophisticated Navy and Marine Corps systems. Smaller portions of the site are devoted to supporting other uses including offices for Administration, functional buildings for Public Works and Supply Support Areas, and safety-related and recreational facilities for Community Support Areas.

Unlike NAVWPNSTA Seal Beach and Detachment Fallbrook, Detachment Norco does not store or handle explosive ordnance materials. No training or troop activity is conducted on the Detachment. Detachment Norco research and analysis activity requires only office, laboratory, data processing, and communications facilities. Detachment Norco represents one of the Navy's largest scientific and engineering computer operations and analytical complexes.

Potential hazardous material issues at Detachment Norco include:

- One 6,000-gallon diesel aboveground storage tank (AST) at Bldg. 544.
- One 1,000-gallon diesel AST NE of Bldg. 507 and SE of Bldg. 505.
- Two portable generators that each hold 30 gallons (not likely to be used in the vicinity of Lake Norconian).
- Sewer lift station sewer spills. This has been an ongoing problem; however, there have not been any sewer spills into Lake Norconian. There is a project currently being pursued to replace the sewer system and eliminate the need for the lift station.
- The prison adjacent to Detachment Norco has a chlorination system. Twice, the Sodium Hypochlorite solution has spilled onto Detachment Norco. The first occurred in December 2006. The spill was amplified by the flushing of the solution with potable water, increasing the affected area but further diluting the concentration. The second spill occurred in May 2008. It was a smaller spill in volume but was considerably higher in concentration as it had not been flushed with potable water. There remains the potential threat to the lake in the event of an uncontained chlorine spill.
- There are periodic construction projects; however, contractors are required to have an approved storm water pollution prevention plan (SWPPP) and to use Best Management Practices (BMPs) to minimize environmental impacts.

## **2.4 Regional Land Use and Conservation Programs**

Regional land use provides a context for understanding the circumstances under which the Detachment Norco currently operates and a starting point for understanding its conservation role, as a result of land development trends, regional socio-economics, land planning decisions made by agencies other than the DoD and regional conservation efforts. Understanding regional land uses and conservation efforts also provide a context for predicting future trends. Land use and conservation efforts (or lack thereof) in the region also affect the installation.






Southern California has a substantial number of federally listed threatened and endangered species; however, these species do not occur on Detachment Norco. Due to the high number of endemic species in southern California and the loss of habitat caused by increasing human population and development, Riverside County in particular is expected to experience dramatic residential and commercial development over the next twenty years (County of Riverside 2003). Such development will involve many large scale construction projects which may encroach on biological resources, potentially impacting sensitive communities, special status species, and biological diversity. Military installations in southern California, with their requirement for large natural areas for training, are among some of the last remaining places for the region's listed and sensitive species.

### **2.4.1 Regional Land Use**


















Detachment Norco is within the limits of the City of Norco (Figure 3) which was incorporated in 1964. The City of Norco is an animal-keeping and equestrian-oriented community known as "Horsetown USA", which is situated along Interstate 15 in western Riverside County. City limits cover an area of approximately 15 square miles, with a population of approximately 27,255 as of 2008 (Southern California Association of Governments [SCAG 2009]). The City maintains more than 400 acres of parkland and 120 miles of pedestrian/equestrian trails. Norco is also home to the CRC and the Norco College (formerly the Riverside Community College, Norco Campus). The majority of the land that comprises the City of Norco is developed. The land that borders Detachment Norco is made up mostly of commercial, industrial, residential, and agricultural uses.



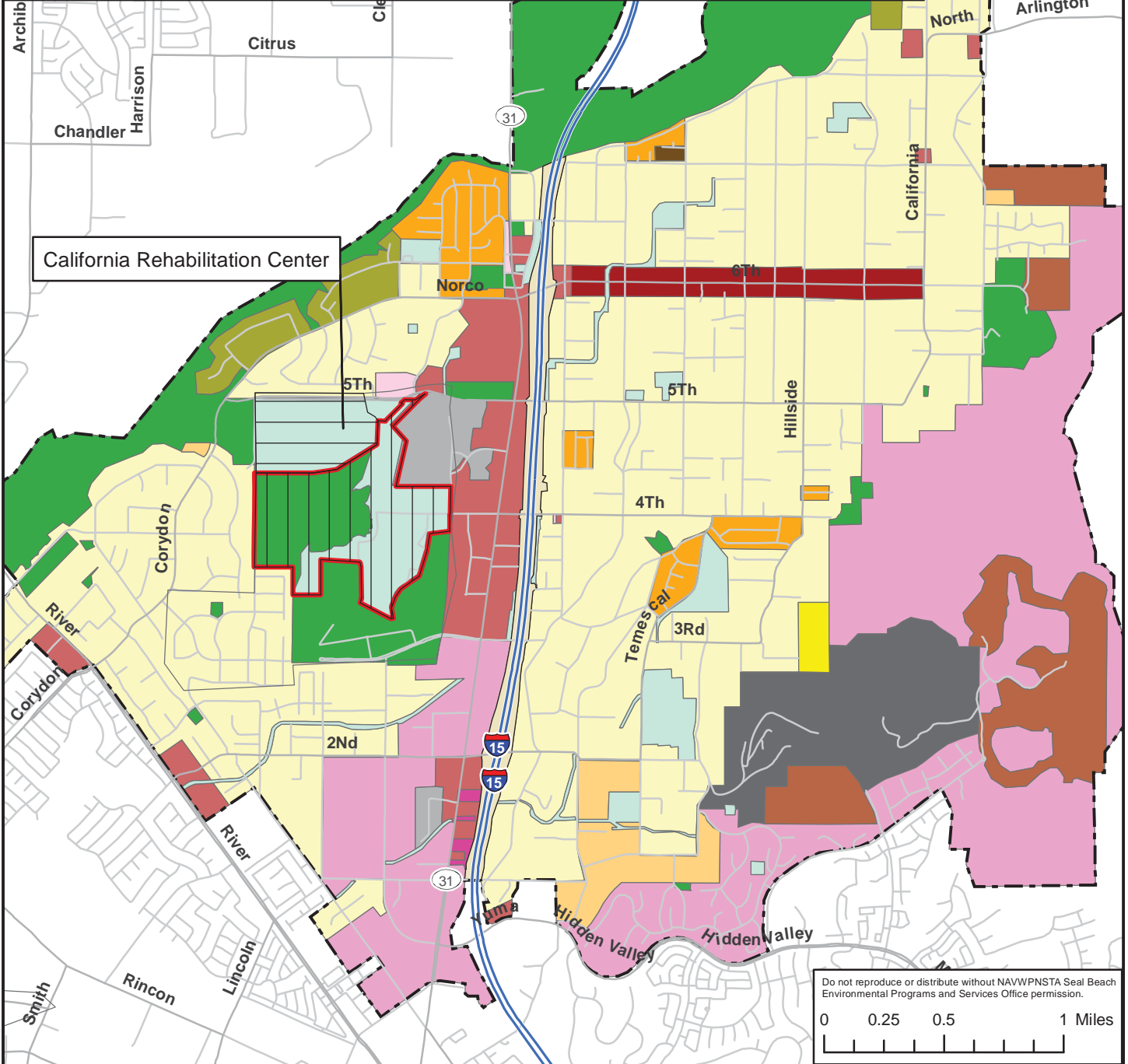
**Legend**

-  Detachment Norco Boundary
-  Norco City Limits
- Owner**
-  Military
-  State Lands--State Lands Commission
-  Unclassified

**Land Use Zones 5/2/2007**

-  Agricultural - Low Density 10 ac.
-  Agricultural - Low Density 20,000 sq. ft.
-  Agricultural - Low Density 40,000 sq. ft.
-  Agricultural Estate
-  Commercial
-  Commercial General
-  Commercial Office
-  General Manufacturing
-  Heavy Commercial/Light Manufacturing
-  Hillside Agricultural - Low Density
-  Interstate
-  Limited Development
-  M-1 (CTO-1) Commercial Transition Overlay
-  Open Space
-  R-1-10 (AKO) Animal-Keeping Overlay
-  Residential - Single Family 10,000 sq. ft.
-  Specific Plan

Data Source: City of Norco Zoning Map, May, 2007



**Land Ownership and Land Use**  
**Naval Weapons Station Seal Beach Detachment Norco,**  
**Norco, CA**

**FIGURE**  
**3**

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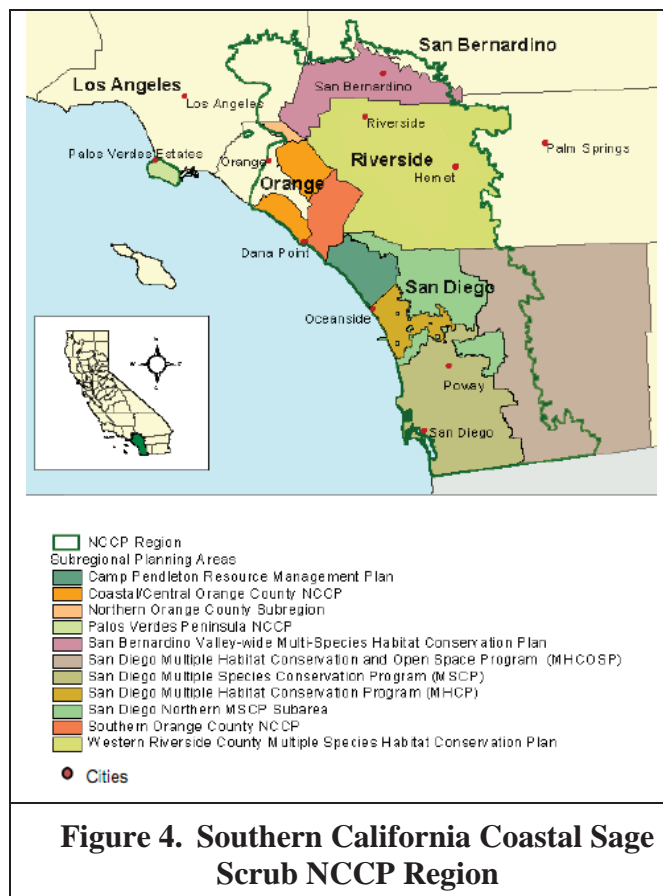
## 2.4.2 Natural Communities Conservation Planning Programs

Regional conservation planning efforts that focus on ensuring the continued survival of sensitive plant and wildlife species and their associated habitats have been facilitated by the Natural Community Conservation Planning (NCCP) Act of 1991 passed by the State of California. The NCCP process was developed to encourage the conservation of natural communities before species within those communities are threatened with extinction. The program is designed to be a voluntary, collaborative effort and its approach represents an ecosystem view.

NCCP program goals were developed to provide a regional framework for long-term protection of natural communities and species, while allowing continued development and economic growth of selected private lands (California Department of Fish and Game [CDFG] 2009).

NCCP members include State and local governments, developers, conservation groups, and small landowners, but not federal agencies. Applicants, consisting of the same non-federal entities that participate in the NCCP process, may receive authorization for incidental impacts to federally listed species under Section 10(a)(1)(A) of the ESA.

Since coastal sage scrub habitat represents a community in southern California with many sensitive species, including the federally listed coastal California gnatcatcher (*Polioptila californica californica*), this community became the first focus of the program. The southern California coastal sage scrub region is organized into 11 NCCP planning "subregions" (Figure 4). This NCCP area includes parts of San Diego, Orange, Riverside, Los Angeles, and Santa Barbara counties.



Several subregional plans have been or are being developed in Southern California under the NCCP program umbrella (Figure 4). Some of these plans contain subarea plans, specific to political jurisdictions or geographic areas within the plan area, and may be pending completion and permitting or have been permitted. Military lands are usually not included in the NCCP plans, as they typically have adopted INRMPs in place and similar to NCCP plans, they take an ecosystem approach to identifying and managing natural resources.

#### **2.4.2.1 Western Riverside Multiple Species Habitat Conservation Plan**

The City of Norco is participating in the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) in cooperation with all county stakeholders, including landowners and state and federal resource management agencies that are part of the Western Riverside County Integrated Planning (RCIP) program (County of Riverside 2003). Detachment Norco is excluded from the MSCHP.

State and federal regulators approved Riverside County's MSHCP on June 22, 2004, issuing permits required to implement the plan and proceed with creating a reserve system in western Riverside County. The MSHCP is a comprehensive, multi-jurisdictional HCP focusing on conservation of species and their associated habitats in western Riverside County.

The MSHCP area encompasses approximately 1.26 million ac (1,966 square miles) and will create an MSHCP Conservation Area in excess of 500,000 acres. The Core Area reserves include habitats such as riparian, oak woodland, and 15,000 ac of coastal sage scrub habitat. The MSHCP Conservation Area includes approximately 347,000 acres on existing Public/Quasi-Public lands and approximately 153,000 acres of additional reserve land. It includes all unincorporated Riverside County land west of the crest of the San Jacinto Mountains to the Orange County line, and the jurisdictional areas for the cities of Temecula, Murrieta, Lake Elsinore, Canyon Lake, Norco, Corona, Riverside, Moreno Valley, Banning, Beaumont, Calimesa, Perris, Hemet, and San Jacinto (County of Riverside 2003).

The MSHCP provides a conservation area for 146 special-status species, including federal- and state-listed endangered and threatened species, and provides incidental take permits for development projects that impact these conserved "covered" species. Under the MSHCP, the USFWS and CDFW will grant "Take Authorization" for otherwise lawful actions, such as public and private development that may incidentally take or harm individual species or their habitat outside of the MSHCP Conservation Area in exchange for the assembly and management of a coordinated MSHCP Conservation Area (County of Riverside 2003).

## **SECTION 3 NATURAL RESOURCES**

### **3.1 Physical Environment**

#### **3.1.1 Climate**

Detachment Norco experiences Mediterranean climate conditions with hot, dry summers; mild, moist winters; and erratic annual rainfall totals. Average summer temperature is 74.8°F, with peak temperatures of 95°F in late July and August. Winter temperatures average 51.6° F, with temperatures rarely reaching the freezing point. Temperatures in the area have ranged from a record low of 27°F to a high of 110°F (DRI 2009).

Average annual precipitation at Detachment Norco falls as rain. In past reports about the facility, a range of annual rainfall values has been reported: from 11.6 inches to 12.43 inches (USSCS 1990), to 13.5 inches (DRI 2009). Based on the closest precipitation gage, located at the City of Norco's Fire Station near the Santa Ana River, the data for 72 years of record indicate an average of 11.21 inches. However, a 100-year projected average amounted to 10.94 inches, as determined by the Riverside County Flood Control District (RCFCD). The majority of precipitation occurs from October through March.

#### **3.1.2 Topography**

Detachment Norco is located in the Southern California Coastal Plain geographic province, within rolling hills in a large intermediate valley bordered by the Santa Ana Mountain Range to the west, San Gabriel and San Bernardino mountains to the north, San Jacinto Mountains to the east, and a range of smaller hills at the southern boundary. Elevations on the property range from 604 feet (184 m) to 720 feet (220 m), with slopes generally 2 to 15 percent; a large hill to the southwest consists of 50 percent slopes. Lake Norconian (without its associated ponds) spans 47 acres in the center of Detachment Norco.

#### **3.1.3 Geology and Soils**

Detachment Norco lies within the Peninsular Range geological province. The major geological unit on the site is the rather coarse-grained granodiorites and tonalites of the Southern California Batholith. When weathered, these rocks produce decomposed granitic soils that are non-cohesive and highly erodible. Towards the Santa Ana River to the west, Quaternary alluvium of unconsolidated, poorly sorted gravel, sand, silt, and clay overlies older tertiary sediments of conglomerate, sandstone, and siltstones (DoN 1994).

Detachment Norco is located on predominantly flat areas that have historically been used for grazing and agriculture. The installation and its soils have been altered from their natural state by years of human use. The U.S. Department of Agriculture (USDA) Soil Survey of Western Riverside Area, California (USDA 1971) indicates that Detachment Norco is underlain by primarily sandy loam soil types (Table 1, Figure 5).

**Table 1. Soil Types Present Within Detachment Norco**

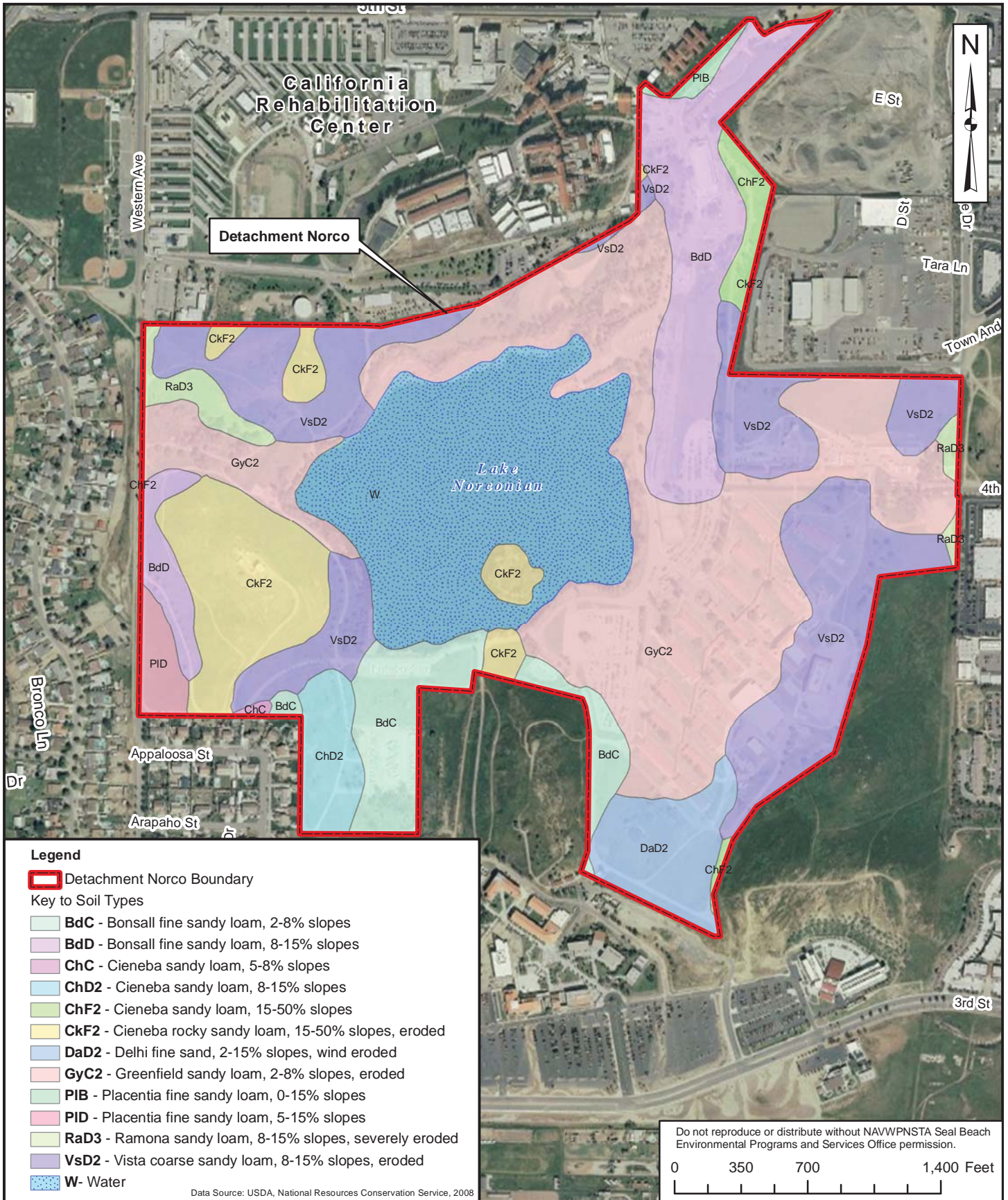
<b>Soil Type</b>	<b>Code</b>	<b>Acres</b>
Bonsall fine sandy loam, 2-8% slopes	BdC	13.39
Bonsall fine sandy loam, 8-15% slopes	BdD	24.69
Cieneba sandy loam, 5-8% slopes	ChC	0.28
Cieneba sandy loam, 8-15% slopes	ChD2	5.59
Cieneba sandy loam, 15-50% slopes	ChF2	3.23
Cieneba rocky sandy loam, 15-50% slopes, eroded	CkF2	20.58
Delhi fine sand, 2-15% slopes, wind eroded	DaD2	9.29
Greenfield sandy loam, 2-8% slopes, eroded	GyC2	69.67
Placentia fine sandy loam, 0-15% slopes	PIB	0.95
Placentia fine sandy loam, 5-15% slopes	PID	2.94
Ramona sandy loam, 8-15% slopes, severely eroded	RaD3	3.97
Vista coarse sandy loam, 8-15% slopes, eroded	VsD2	45.33

Soils within the installation primarily developed in granitic material that was either weathered or washed down from upland areas. Granitic soils that washed to alluvial fans and terraces are Delhi, Greenfield, Placentia, and Ramona. Cieneba soils formed in coarse-grained igneous rock. The soils adjacent to the lake are classified as severely erodible. Detachment Norco soils are very deep, well drained to excessively drained, nearly level to moderately steep soils that have a surface layer of sand to sandy loam (USSCS 1990). The distribution of soils within Detachment Norco is depicted on Figure 5, descriptions of these soil types are presented in Appendix D, and Table 1 presents the acreage of each soil type on the installation.

### **3.1.4 Hydrology and Watershed**

The property is located in the middle of the Santa Ana River watershed, about 1 mile east of the river (Figure 6). Surface runoff from the property tends to flow southerly towards the Temescal Wash (about 3 miles away), and then south-westerly to the Santa Ana River at the Prado Basin north of Prado Dam. The Santa Ana River is also a major recharge source for important ground water basins in the vicinity, such as Chino (to the north),



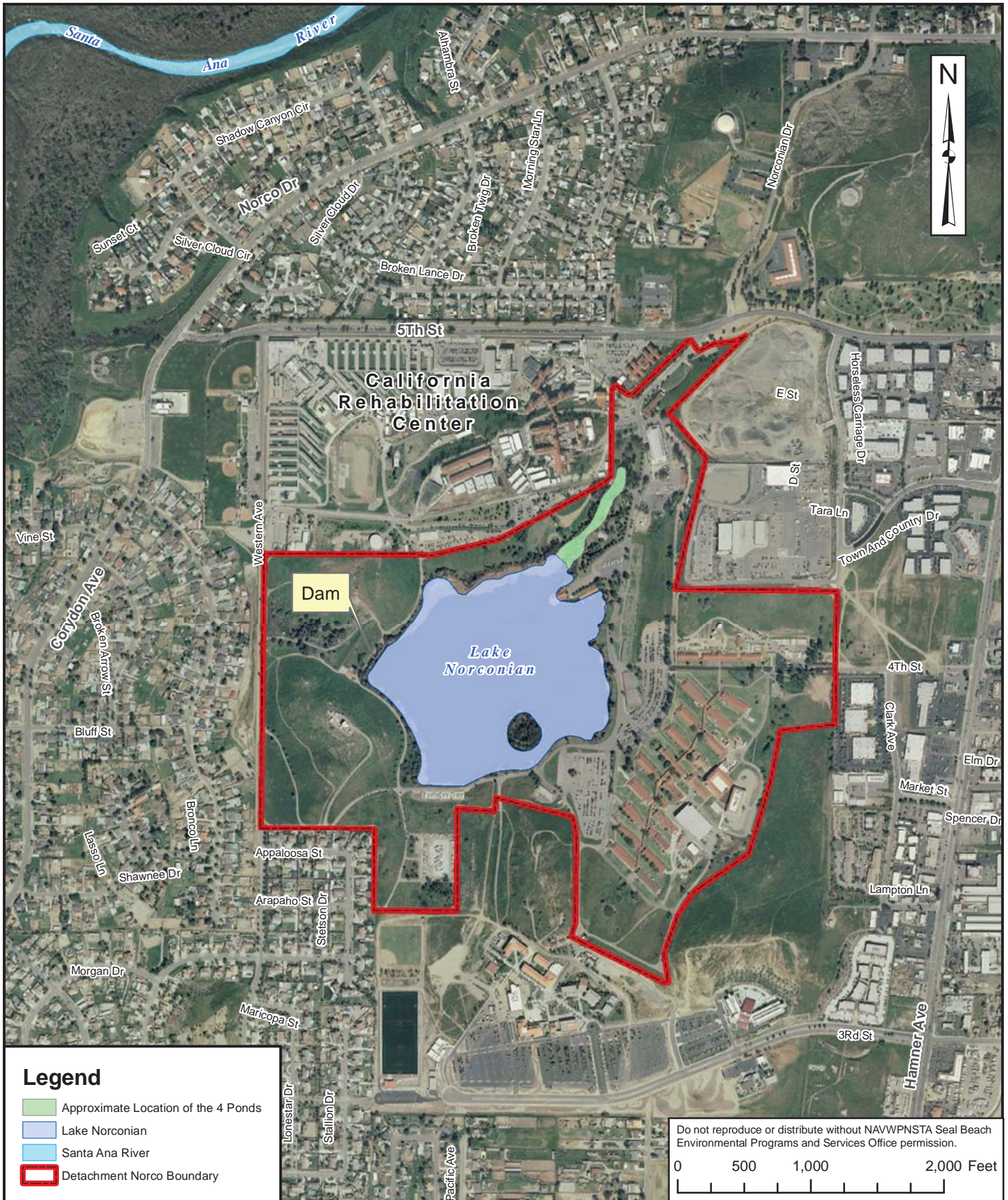


**Soil Types**  
**Naval Weapons Station Seal Beach Detachment, Norco**  
**Norco, California**

**FIGURE**  
**5**

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**Water Resources**  
**Naval Weapons Station Seal Beach Detachment Norco**  
**Norco, California**

**FIGURE**  
**6**

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Temescal, and Prado basins. Flows in the river during the dry season consist mainly of highly treated municipal wastewater discharges (California State Water Resources Control Board [CSWRCB] 1995). Hot sulfur wells were discovered near the property in 1921, which lead to the development of a resort on the site in 1927-29 (USSCS 1990).

### **3.1.4.1 Lake Norconian and Ponds**

Lake Norconian is the primary natural resource feature at Detachment Norco (Figure 6). This 47-acre (though often cited as 55-acre) artificial lake was constructed in 1928 as an attraction for the site's original development, the Lake Norconian Club resort. The lake encompasses about 22 percent of the Detachment Norco property.

Above the lake is a series of four small ponds. Although it was historically fed by well water, the level of the lake is currently maintained with a mix of non-potable well water fed into the lake near the west dam and potable water fed via the upper ponds. In 1989-90, the west dam was rebuilt; however, it does not meet state seismic safety standards (USSCS 1990).



**Lake Norconian**

Lake Norconian is not a typical lake as described in most lake management manuals (McComas 1993; Cooke et al. 1993). Its primary water source does not originate from the watershed but is piped in from a groundwater source that is blended to meet domestic drinking water standards. Except in very wet years, the lake essentially has no outflow. Evaporation causes the greatest loss of water from the lake, which is partly compensated by the imported water. Winter conditions are quite mild so the lake does not freeze or have significant seasonal differences. Although artificial, the lake is not operated like a water supply reservoir with regular draw-downs.

### **3.1.4.2 Water Supply, Water Rights, and Lake Level**

#### ***Water Supply***

The lake and ponds are primarily fed by groundwater imported from a well field near the Santa Ana River. The lake also receives water from runoff, precipitation, groundwater seepage, and the seepage recharge system.

The Navy, along with the City of Norco and the CRC, signed an Memorandum of Agreement (MOA) pertaining to water availability to Detachment Norco in 2009 (Appendix J). Under the MOA, the City of Norco manages the water well field and provides Detachment Norco with water to fill the lake. The City also provides a water connection to the Detachment that provides potable water to the facility. A new sewer connection will be installed to provide a gravity feed to a different municipal sewer line thus eliminating the need for the current lift station. In addition, this MOA provided a reliable source of water to Lake Norconian and the Navy now has a water supply that is independent of the CRC, which became the purveyor for the facility when ownership of the Navy Hospital transferred from the Navy to the State of California in 1962. The City is planning on installing a reclaimed water line that will bring high quality reclaimed water to Detachment Norco to supply the lake and landscape irrigation needs. Since the evaporation rate is very high in this arid environment, the lake would dry up without the supplemental water from the water system. Annual total flow depends on the amount of rainfall (drought, wet, normal years) and the water system's capability.

#### ***Water Rights***

When the State acquired the old Navy hospital site at Detachment Norco for the CRC facility in 1962, the water system was excluded. The State was instead granted the right to use the water system in exchange for providing the Navy with free water. Several successive 5- to 6-year Navy licenses described this right and responsibility. The most recent one, which also required lake level maintenance, expired on December 31, 1984. Upon transfer ("excessing") in 1985 of the water system to the State, the Navy was no longer in a position to require a license.

An examination of the correspondence (1972-81) on the issue of accessing the three water system parcels reveals the strong intent of the Navy (NAVWPNSTA Seal Beach) to protect the "existing level" of the lake or the provision of a guarantee of "adequate supply of quality water" to the lake following transfer of the system. In addition, the Superintendent of the CRC stated in his letter of interest to the Navy for the water system parcels that they are "extremely critical" to the "continued maintenance of the Norconian Lake and its natural habitats" (CRC 1978). A gap unfortunately exists in the record from 1981-1985 concerning how the Navy's suggested lake protection or water supply conditions for these parcels were addressed by the General Services Administration (GSA)

and subsequently the U.S. Department of Health and Human Services (the federal name on the deed) in the transfer of the property, such as in attachments to the deeds. One condition in the deed to ensure the State uses the property "in accordance with the proposed program and plan of the Grantee" is that the CRC must submit annual reports on the "operation and maintenance of the property". Whether the operation and maintenance of the water supply for Lake Norconian is in the CRC's program and plan is not able to be determined without knowledge of the complete GSA deed records. Unfortunately, the GSA's policy at the time was to not attach any "strings" to excessed property.

A legal argument could certainly be made that the federal intent of the 1985 transfer of ownership of the water system was to maintain the then-existing level of services to the Navy by the State, services which included the maintenance of Lake Norconian as well as a domestic water supply. However, with the signing of the MOA (Appendix J), water supply is now protected for Lake Norconian.

### ***Lake Level***

When the lake level is down one to two feet, various problems can occur: the lake is less attractive with a brown shoreline of mud and may smell due to hydrogen sulfide in exposed sediment; birds and fish are forced to concentrate into a smaller area, creating more stressful conditions and possibly helping facilitate the spread of disease; and, exposed, decaying shoreline vegetation may smell, attract flies, and contribute more organic and nutrient matter to lake sediment.

High lake levels occur infrequently during intense storm runoff periods. After a heavy rainfall, the lake level may be one foot over the docks at the northeast edge. The west dam has reportedly spilled three times within the past 15 years, such as in 1983 and 1998 (C. Quinn, NSWC Corona, pers. comm.).

Draw downs during late spring and early summer favor submerged plants, while weedy plants are favored as the result of mid- and late summer draw downs. The growth of submerged aquatic plants improves when the area is re-flooded due to physical and chemical improvement of the soil. The timing of draw downs is also critical; May seems to be the best month for producing plant successions beneficial to waterfowl. The timing must not conflict with nesting season (8 species breed at Lake Norconian) nor with other critical periods, such as wintering use by migrating waterfowl. Unfortunately, no bird counts have been made during the July through October period to evaluate bird use when lake levels may fluctuate the most.

### ***Lake Water Quality***

As with most small, shallow, urban lakes, Lake Norconian is a eutrophic (nutrient-rich) lake. This condition is qualitatively indicated by the greenish water color, the low clarity (< 2 feet secchi disk depth), large beds of aquatic vegetation, and the emission of hydrogen sulfide when sediments are disturbed (SEC 1996). Quantitatively, Lake Norconian rates between eutrophic and hypereutrophic on the Trophic State Index (Marine Biochemists 1994-95).

In the warm, arid climate of southern California, the combination of low precipitation and high evaporation rates effectively prevents outflow from the lake in most years. Without sufficient flow-through or dilution, nutrient concentrations are likely to increase, leading to algal blooms, excessive vegetative growth, anoxic conditions, and, under certain conditions, significant fish kills. Very little vertical temperature stratification occurred in the lake when measured in September 1995, which is good since stratified water resists mixing and can contribute to anoxic conditions at the bottom strata (the hypolimnion) of the lake. Nitrogen and phosphorus levels of the inflow appear to be well within domestic standards and, by themselves, do not explain the high biological productivity observed in the lake.

#### **3.1.4.2.1 Lake Nutrient Enrichment**

##### ***Natural Sources***

Natural sources of lake enrichment usually include surface water runoff, wind-borne particulates, vegetation, and waterfowl guano. The amount and type of nutrients found in surface runoff is related to the condition and character of the watershed. Soils adjacent to Lake Norconian are classified as severely erodible (USSCS 1990) and unvegetated or disturbed soils greatly accelerate the movement of materials into the lake in the form of water-borne sediments. In the dry, sparsely vegetated regions of southern California, the movement of soils by wind is a primary erosion process. Strong, desert winds such as the Santa Ana can, over time, deposit large quantities of nutrient-rich topsoil into the lake (SEC 1996).

The lake's community of aquatic and emergent vegetation is a major nutrient source, especially in the fall and winter when a season's growth dies back and begins to decompose. Internal nutrient loading from aerobic and anaerobic sediment is another significant source. When there is a lack of oxygen in the bottom water, the phosphorus (measured at 120 mg/Liter [L] in the lake's sediment) can be released from the sediments and become available again as a plant nutrient. (With oxygen, the cycle reverses and the phosphorus compounds precipitate.) Blue-green algae are nitrogen-fixing plants, meaning they can convert atmospheric nitrogen to nitrate for uptake. However, they must have a phosphorus source also. A primary source of natural nutrient enrichment also comes from guano produced by the thousands of waterfowl using the lake each winter-spring season.

Aquatic plants within Lake Norconian and associated ponds provide the following benefits:

- Waterfowl Food: Chara, pond weeds (*Potamogeton* spp.), duckweeds, etc.
- Waterfowl Cover: Cattails, bulrush
- Fish Habitat: Lily pads (for bass)
- Nutrient Uptake: All aquatic plants
- pH Balance: Cattails, bulrush

A balance must be sought between the benefits of aquatic plants in Lake Norconian and its ponds and the open water values. Trade-offs also occur in the balance of algae and macrophytes, as the reduction of algal blooms will increase lake clarity which will in turn stimulate increased macrophyte growth in the littoral zone.

#### ***Man-made Causes of Enrichment***

Man-made causes of enrichment include fertilizers, landscaping debris, and stormwater runoff. The ornamental landscaping, trees, and extensive lawns surrounding the lake contribute enriched runoff if irrigation or rainfall flushes fertilizer, leaves or debris into the water. Excessive irrigation was clearly evident at a number of sites. Irrigation and natural runoff also can carry nutrients generated by the breakdown of a large volume of decaying ornamental vegetation, such as lawn clippings, and leaf litter. A significant source of nutrients derives from the decomposition of this debris within the ponds and lake.

#### **3.1.4.2.2 Lake Norconian Physical Changes Over Time**

The original drawings for the constructed lake system have not been found, although a historic photograph (circa late 1940s) displayed at the NSWCC Corona Facilities Department's office depicts a few differences from today, most notably extensive emergent vegetation (e.g., cattails and bulrush) along the eastern edge of the lake. The ponds are edged in stone or concrete and apparently have not been changed in size.

Sedimentation and vegetation decay have undoubtedly altered the depth of the lake over the past eight decades. Some sediment was apparently removed by dredging in the 1970s. In 1984, the lake's water depth was kept to 3 feet until dam safety reports were completed, but no dredging apparently occurred (Murkland 1984). Maximum height of the lake was reached in February 1998, only the third time in the past 15 years (C. Quinn, NSWCC Corona, pers. comm.).



Spillover occurs at both the west and south dams, with the west dam the lowest. To determine the current depths and sub-surface shape of Lake Norconian, a bathymetric survey was conducted in September 1995 and October 1996. These measurements indicate a maximum depth of 14 feet and a volume of 327 acre-feet when the lake's surface is at 47 surface acres, or 3.5 feet below the dam spillway.

## **3.2 Biological Environment**

### **3.2.1 Ecosystem Classification**

Detachment Norco lies within the Californian Coastal Scrub biogeographic province, which is part of the warm-temperate scrublands (Brown 1994). This area is mainly composed of low hills, foothills, and valleys from sea level to approximately 980 to 1,970 feet above mean sea level (amsl), reaching the lower reaches of the California Chaparral biogeographic province. The Californian Coastal Scrub province mainly comprises low, shallow-rooted shrubs, including California sagebrush (*Artemisia californica*) and laurel sumac (*Malosma laurina*). Most plant species of this province readily sprout after fires, permitting rapid recovery. Ground cover in this province is commonly less than 50 percent and may not exceed 25 percent on steep slopes.

The Navy NR Metrics were developed to support the annual Natural Resources Program reviews between the Navy and its Sikes Act partners, the USFWS and state fish and wildlife agencies. There are seven (7) Focus Areas that comprise the NR Metrics to be evaluated during the annual review of the Natural Resources Program and associated INRMP.

According to the DoDI 4715.03, 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. Over the long term, that approach shall maintain and improve the sustainability and biological diversity of terrestrial and aquatic (including marine) ecosystems while supporting sustainable economies, human use, and the environment required for realistic military training operations. The "Ecosystem Integrity" Focus Area is intended to define the ecosystems that occur on the installation and assess the integrity of these ecosystems. The term, integrity, refers to the quality of state of being complete, unbroken condition, wholeness, entirety, unimpaired, without significant damage, good condition, or general soundness. Terrestrial ecosystems, as defined by Nature Serve's "Ecological Systems of the United States: A Working Classification of US Terrestrial Systems" were selected from a list and assigned to each installation. Locally-defined ecosystems were added, if necessary. The ecosystem at Detachment Norco is further defined in Nature Serve as "Central and Southern California Coastal Sage Scrub Group".



### 3.2.2 Flora

The Detachment supports a variety of ornamental and natural vegetation communities. A total of 120 plant species comprise the Detachment’s major plant communities. Appendix F presents an inventory of plants identified on Detachment Norco during surveys conducted in 1996.

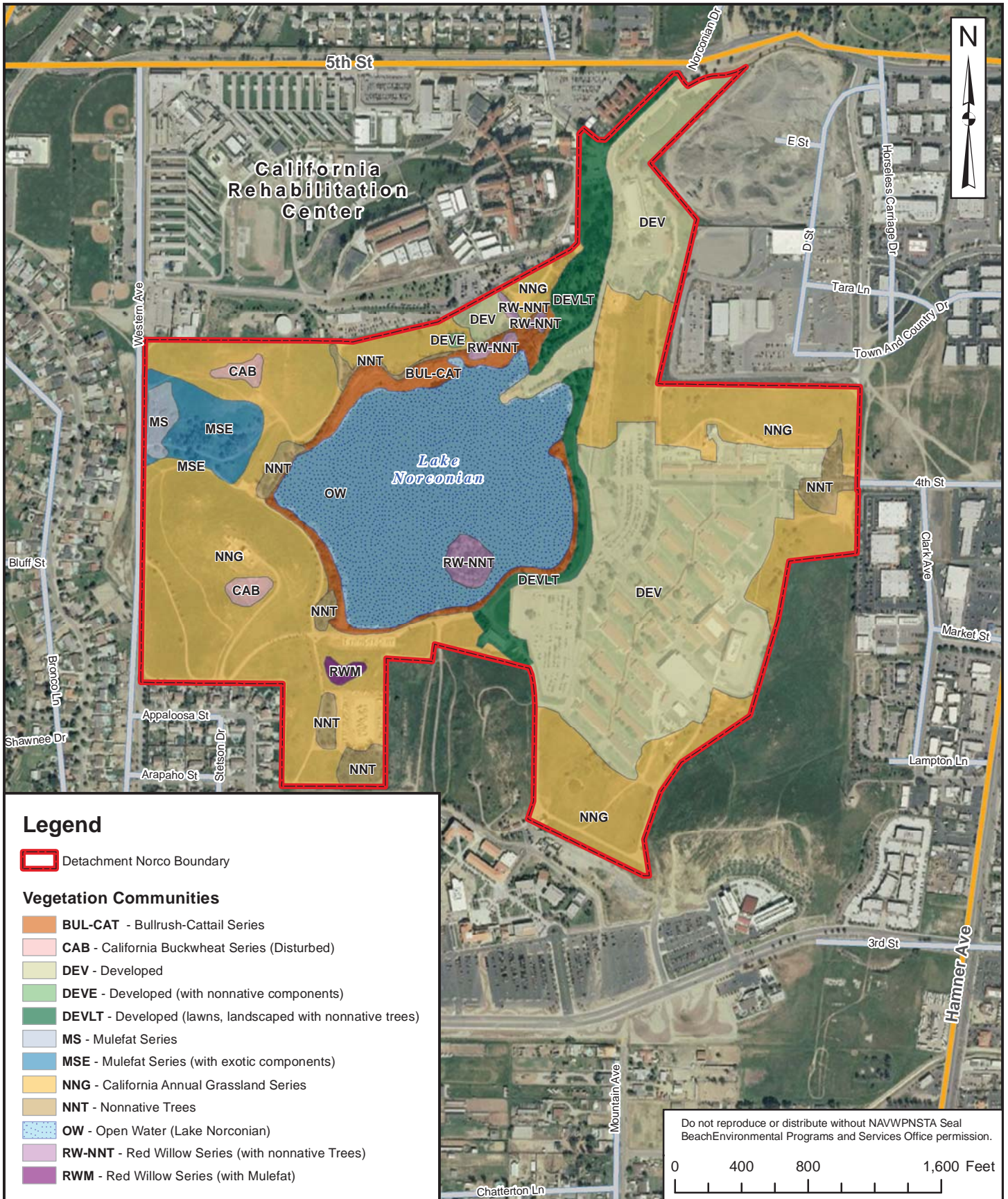
#### 3.2.2.1 Vegetation Communities

Vegetation communities present on Detachment Norco were mapped using aerial photograph interpretation and were ground-truthed during 2009 field surveys (AMEC Earth & Environmental, Inc. [AMEC] 2009). Vegetation classification is based on *A Manual of California Vegetation* (Sawyer et al. 2009).

The installation is characterized by eight major vegetation community types, which include non-native grassland, coastal sage scrub, developed and riparian/wetland communities (Table 2). Figure 7 illustrates the distribution of these communities within Detachment Norco (AMEC 2009). A description of each plant community type is provided below.

**Table 2. Vegetation Communities Present Within Detachment Norco**

<b>Vegetation Community</b>	<b>Acreage</b>
<b>Upland Vegetation Communities</b>	
Non-native grassland: California Annual Grassland Series	93.6
Coastal Sage Scrub: California Buckwheat Series	1.6
Non-native Trees	6.0
Developed	77.9
<b>Riparian/Wetland Vegetation Communities</b>	
Bulrush Cattail Series	7.8
Mulefat Series	7.8
Red Willow Series	3.1
Open Water	43.1
<b>Total</b>	<b>240.9</b>



**Vegetation Map**  
**Naval Weapons Station Seal Beach Detachment Norco**  
**Norco, California**

**FIGURE**  
**7**

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### 3.2.2.1.1 Upland Communities

#### **Non-Native Grassland**

**California Annual Grassland Series**- This extensive vegetation series is composed of many alien and native annual species. Plant composition typically is site specific (i.e., soils, aspect, etc.) and varies among stands. Grasslands are likely to be dominated by several species of grasses that have evolved to persist in concert with human agricultural practices such as slender oat (*Avena barbata*), wild oat (*Avena fatua*), fox tail chess (*Bromus madritensis*), soft chess (*Bromus hordeaceus*), ripgut grass (*Bromus diandrus*), barley (*Hordeum* spp.), Italian rye grass (*Lolium multiflorum*), English ryegrass (*Lolium perenne*), rat-tail fescue (*Vulpia myuros*), and Mediterranean schismus (*Schismus barbatus*) (Sawyer et al. 2009).

A majority of Detachment Norco is vegetated by non-native grassland (93.6 acres) (Figure 7). Typical annual species on the installation include wild oats, brome (*Bromus* sp.), burclover (*Medicago* sp.), dove weed (*Eremocarpus* sp.), wild mustard (*Brassica* sp.), and Russian thistle (*Salsola tragus*). Some of these areas are maintained for fuel management through periodic mowing.

Non-native grassland is not considered a sensitive habitat; however, it may be a significant resource for wildlife species, support sensitive plant species, and/or serve as a habitat linkage.



**Non-native Grassland Vegetation Community  
located on Detachment Norco.**

#### **Coastal Sage Scrub**

Coastal sage scrub within the Riverside area is comprised of low, soft-woody subshrubs to about 3 ft (1 m) high, many of which are facultatively drought-deciduous. This association is typically found on dry sites, such as steep, south-facing slopes or clay-rich soils that are slow to release stored water. Per *A Manual of California Vegetation*, this vegetation community is thought of as a collection of series based on the composition of coastal sage scrub species (Sawyer et. al 2009).

Coastal sage scrub is listed in the California Natural Diversity Database (CNDDDB) with a global ranking of G3 (21 to 80 Element Occurrences or 3,000 to 10,000 individuals or 10,000-50,000 acres) and a State Ranking of S3.2 (threatened) (CNDDDB 2013). Several sensitive wildlife species are dependent upon coastal sage scrub including coastal

California gnatcatcher (*Polioptila californica californica*), cactus wren (*Campylorhynchus brunneicapillus*), rufous-crowned sparrow (*Aimophila ruficeps*), orange-throated whiptail (*Aspidoscelis hyperythra beldingi*), as well as many sensitive plant species known to occur within Riverside County (County of Riverside 2003)..

**California Buckwheat Series:** This vegetation community is considered a component of coastal sage scrub and is dominated by flat-topped buckwheat (*Eriogonum fasciculatum*). Subdominant shrub species include California sagebrush, coyote brush (*Baccharis pilularis*), deerweed (*Lotus scoparius*), and bush monkeyflower (*Mimulus aurantiacus*) (Sawyer et. al 2009).

The California buckwheat vegetation community on Detachment Norco is considered “disturbed” due to the high percentage of non-native species and its fragmentation. Associated species within include non-native grassland species listed above interspersed with flat-topped buckwheat, California sagebrush (*Artemisia californica*), chamise (*Adenostoma fasciculatum.*), and goldenbush (*Isocoma menziesii*). Approximately 1.6 acres of coastal sage scrub occur within the installation (Figure 7).

### **Non-native Trees**

This vegetation community is comprised of non-native trees, usually intentionally planted, which are not maintained or artificially irrigated. Non-native tree stands within the installation include eucalyptus (*Eucalyptus* spp.), Brazilian pepper tree (*Schinus molle*), pine (*Pinus* spp.), and other decorative species including palm tree species. This habitat type has potential for nesting raptors and other bird species. Approximately 6 acres of non-native trees occurs on Detachment Norco (Figure 7). Detachment Norco proposes to remove some of the non-native trees within the riparian habitats associated with Lake Norconian.

### **Developed**

Developed areas are categorized as areas that have been constructed upon or otherwise physically altered to an extent that native vegetation is no longer supported. Developed land is characterized by permanent or semi-permanent structures, pavement or hardscape, and landscaped areas that often require irrigation. Areas where no natural land is evident due to a large amount of debris or other materials being placed upon it may also be considered

A majority of Detachment Norco (77.9 acres) is occupied by developed areas including the scientific and engineering computer operations and analytical complexes (Figure 7). Some trees and shrubs remain from the original plantings for the Lake Norconian Club and represent varieties popular in the 1920s in Southern California gardens.

Landscaping around the buildings consists of lawns, mature trees, and shrubs. A variety of mature trees are evident, including eucalyptus, California sycamore (*Platanus racemosa*), Brazilian pepper tree, fan palm (*Washingtonia* sp.), date palm (*Phoenix* sp.), ash (*Fraxinus* sp.), carob (*Ceratonia siliqua*), white poplar (*Populus alba*), pines (*Pinus* sp.), oaks (*Quercus* sp.), and willows (*Salix* sp.). Lawns are primarily comprised of Bermuda grass (*Cynodon dactylon*).

### **3.2.2.1.2 Riparian and Wetland Communities**

#### **Freshwater Marsh**

***Bulrush-Cattail Series***- The bulrush-cattail vegetation series is dominated by cattail (*Typha* spp.) and bulrush (*Scirpus* sp.). It occupies freshwater or brackish wetland habitats that are permanently flooded, regularly flooded, semi-permanently flooded, seasonally flooded, irregularly flooded, or irregularly exposed (Sawyer et. al 2009).

Bulrush-cattail vegetation occupies approximately 7.8 acres along the lake margins (Figure 7). Stands of cattail and bulrush provide nest sites and cover for a variety of birds that utilize the lake. Invasive giant reed (*Arundo donax*) also occurs in small patches along the lake margin.

#### **Riparian Scrub**

***Mulefat Series***- This community is dominated by mulefat (*Baccharis salicifolia*) and occurs within seasonally flooded and saturated canyon bottoms; irrigation ditches, and stream channels (Sawyer et. al 2009).

On Detachment Norco, mulefat vegetation occurs within a small drainage within the southwest portion of the installation (Figure 7). Associated species include mulefat, yerba mansa (*Anemopsis californica*), and Mexican elderberry (*Sambucus mexicana*). Approximately 7.8 acres of mulefat habitat occur within the installation.

### **Riparian Woodland**

**Red Willow Series-** This vegetation community generally occupies freshwater wetland habitats that are seasonally flooded, or saturated. It is typically found in ditches, flood-plains, lake edges, low-gradient depositions along rivers, streams (Sawyer et. al 2009).

The willow vegetation community includes a variety of willows (*Salix* spp.) mixed with nonnative species including Brazilian pepper tree, date palm, and fan palm. This habitat is found along the lake



**Vegetation present within the island located on Lake Norconian.**

margin north of the Lake Norconian Club and on the small island located within the lake (Figure 7). The island habitat provides breeding and roosting habitat for many species and also includes snags (standing, partly or completely dead tree) which are considered suitable habitat for nesting raptors. Approximately 3.1 acres of this community occurs on the installation.

### **Open Water/Aquatic Vegetation**

Lake Norconian is characterized as open water, but also supports phytoplankton (composed of diatoms), various species of algae, and submergent aquatic plants. Filamentous algae can be found along the shoreline and in the ponds during warm weather but are usually absent during the winter. Submergent vegetation including lilies (*Nymphaea mexicana*) are found in the northeast portion of the lake, near the inflow from the ponds. Additional species that can be found throughout the lake include muskgrass (*Chara* spp.), brittle naiad (*Najas flexilis*), and sago pondweed (*Potamogeton pectinatus*), some of which are considered aesthetic nuisances at the lake.

### **3.2.3 Wetlands**

Wetlands on Detachment Norco are described per a wetland delineation conducted in May 1998 (NAVFAC Southwest 1998; Appendix G). Two types of wetland communities were delineated on the property:

- ***Scirpus validus* - *Typha latifolia* Marsh Wetland:** Occurs around the margins of Lake Norconian (NAVFAC Southwest 1998).
- ***Salix lasiolepis* - *Anemopsis californica* Riparian Scrub-Shrub Wetland:** Occurs within a small area in a depression below the main dam that impounds Lake Norconian. This area contains significant cover of two obligate hydrophytes (*Anemopsis californica* and *Juncus balticus*) (NAVFAC Southwest 1998).

Additional areas on the installation include the riparian draws and lake margins, the margins of the five small ponds that drain into the lake, and other small drainages. In the 1998 wetland delineation, Lake Norconian did not fall under the definition of Waters of the U.S (WUS) (the lake is not hydrologically connected to navigable waters), and so did not fall under the jurisdiction of the federal Clean Water Act (CWA) as an artificial lake that is fed by pumped groundwater in an upland situation (NAVFAC Southwest 1998).

Since 1998, the U. S. Army Corps of Engineers (USACE) has issued new wetland delineation regulations. Consequently, a new wetland delineation should be prepared which reflects the change in regulations and may warrant a different determination for Lake Norconian.

### **3.2.4 Fauna**

Animal species confirmed through surveys conducted to date include: 142 birds, 6 fish, 2 amphibians, 6 reptiles, and 15 mammals. A description of species identified within the installation as a result of inventories and studies (presented in appendices of this INRMP) are summarized below.

#### **3.2.4.1 Birds**

Lake Norconian is the primary natural resource feature at Detachment Norco. Waterfowl, herons, hawks, shorebirds, swallows, and songbirds are just some of the types of birds that use the lake and ponds, or forage or nest in the surrounding habitat. The grasslands within the installation also provide foraging habitat for variety of raptors.

Formal bird surveys were first conducted within Detachment Norco in 1996, these surveys noted a remarkably diverse presence of avifauna species (approximately 114 terrestrial and aquatic bird species during winter and spring). No threatened or endangered species were detected during these surveys with the exception of on peregrine falcon (*Falco peregrinus anatum*) (assumed to be a migrant), which was observed perched on a snag on the island in Lake Norconian (Aigner and Koehier 1996). The peregrine falcon has since been delisted from its federally endangered listing status; however, continues to be listed as a state listed endangered species.



**Clark's Grebe chick riding on the back of one of its parent on Lake Norconian**



During the winter months, the lake may support thousands of migrating waterfowl and water birds. Annual Christmas Bird Counts (CBCs) have been conducted on Lake Norconian by members of the San Bernardino Valley Audubon Society. These CBCs reveal 106 different species of birds within the vicinity of the lake. The most abundant documented species are mallards (*Anas platyrhynchos*), American widgeons (*A. americana*), northern pintails (*A. acuta*), northern shovelers (*A. clypeata*), cinnamon teals (*A. cyanoptera*), ruddy ducks (*Oxyura jamaicensis*), American coots (*Fulica americana*), and ring-billed gulls (*Larus delawarensis*). Less common visitors include the fulvous whistling duck (*Dendrocygna bicolor*), white-faced ibis (*Plegadis chihi*), and white pelican (*Pelecanus erythrorhynchos*). A variety of raptors noted in flight or perched on large trees or snags surrounding the lake include osprey (*Pandion haliaetus*), northern harrier (*Circus cyaneus*), sharp-shinned hawk (*Accipiter striatus*), Cooper's hawk (*Accipiter cooperii*), red-tailed hawk (*Buteo jamaicensis*), and American kestrel (*Falco sparverius*). Appendix Q presents Lake Norconian CBC data collected between 2000 and 2007. More current surveys are to be conducted in 2012 or later.

The most recent bird census within Detachment Norco was conducted between December 14, 2008 and June 25, 2009 (AMEC 2009; Appendix Q). All of Detachment Norco was censused, with the exception of restricted areas within the central eastern and southeastern portions of the installation (AMEC 2009). The facility was surveyed five times during winter and five times during spring and early summer during this survey period. These surveys documented 118 species (AMEC 2009). Additional species detected during previous CBCs and 1995-1996 (Aigner and Koehler 1996) surveys bring the total list of bird species for the installation to 142 species. Appendix Q presents bird count data associated with these surveys.

#### **3.2.4.2 Mammals**

Twelve native mammals are known to occur on the property (Phillips 1996; Appendix O). However, the most common species noted are both native and non-native species which include: California ground squirrels (*Spermophilus beecheyi*), desert cottontail rabbits (*Sylvilagus audubonii*), Botta's pocket gophers (*Thomomys bottae*), western harvest mice (*Reithrodontomys megalotis*), house mice (*Mus musculus*), black rats (*Rattus rattus*), coyote (*Canis latrans*), long-tailed weasel (*Mustela frenata*), striped skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*), and gray fox (*Urocyon cinereoargenteus*). Non-native species including black rats, house mice, and feral cats also are known to occur within the installation.

### **3.2.4.3 Fishes**

Lake Norconian supports fish species typical of warm water lakes and ponds in the region. The once stocked game and forage fish of Lake Norconian include largemouth bass (*Micropterus salmoides*), bluegill (*Lepomis macrochirus*), sunfish, and/or various hybrids thereof (*Lepomis* spp.), channel catfish (*Ictalurus punctatus*), mosquito fish (*Gambusia affinis*), and threadfin shad (*Dorosoma petenense*) (SEC 1995; C. Quinn, NSWV Corona, pers. comm.). The artificial (or non-ephemeral) nature of these ponds and lakes precludes the possibility of encountering any listed fish species or species of special concern.

### **3.2.4.4 Reptiles and Amphibians**

The herpetofauna at Detachment Norco are represented by six species: Pacific tree frog (*Pseudacris hypochondriaca*), bullfrog (*Lithobates catesbeianus*), western fence lizard (*Sceloporus occidentalis*), southern alligator lizard (*Elgaria multicarinata*), western blind snake (*Rena humilis*), and gopher snake (*Pituophis catenifer*). Of these, western fence lizards are the most predominant on the property (Phillips 1996). Although turtles were not found in the 1996 survey, observers and photos have confirmed the presence of pond sliders (*Chrysemys scripta*) in the lake (C. Quinn, NSWV Corona, pers. comm.).

### **3.2.4.5 Invertebrates**

A survey of terrestrial invertebrates was conducted on the property during a 14-month period from September 1995 to November 1996. A total of 127 species of invertebrates were caught in malaise traps and 51 species in pitfall traps during the survey. A complete list of all the invertebrates observed can be found in Appendix H (Mattoni 1998).

### **3.2.5 Special-status Species: Threatened and Endangered Species and Species of Concern**

Threatened and Endangered (T&E) are species listed by the federal government as threatened, endangered, proposed for listing as threatened and endangered, or are candidates for such listing. Also included in this category are Birds of Conservation Concern (BCC) and species protected by the Bald Eagle and Golden Eagle Protection Act of 1940 (16 U.S.C. 668-668d, 54 Stat. 250) as amended (Eagle Act) and Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-712; Ch. 128). Birds of Conservation Concern are migratory and non-migratory birds that without additional conservation actions are likely to become candidates for listing under the Endangered Species Act (ESA) of 1973” (Fish and Wildlife Conservation Act amended 1988). Per the statutory requirements of the Sikes Act (as amended), in coordination with the USFWS and CDFW, Detachment Norco is to ensure proper consideration of T&E species as well as their associated federally

designated critical habitat. A list of all bird species observed on Detachment Norco with their federal status is provided in Appendix I. The applicable federal classification system for special-status species is as follows:

- Endangered (FE) - Any species that is in danger of extinction throughout all or a significant portion of its range.
- Threatened (FT) - Any species that is likely to become an endangered species within foreseeable future through all or a significant portion of its range.
- Proposed (PT, PE) - Any species that has been proposed for listing as threatened or endangered species.
- Birds of Conservation Concern (BCC) - All Nongame birds, gamebirds without hunting seasons, subsistence-hunted nongame birds in Alaska; and Endangered Species Act candidate, proposed endangered or threatened, and recently delisted species.
- Candidate (C) - Species for which there is sufficient information on biological vulnerability and threats to support proposals to list them as endangered or threatened.
- Fully Protected (FP) - Golden eagle is fully protected by the Eagle Act.
- Species of Special Concern (FSC) - Species formerly under consideration by the USFWS for status changes (includes Category 1, 2, and 3 taxa). As of February 1996, the USFWS discontinued the use of these designations, but remains concerned about these species and encourage further study into their conservation status. As more information is obtained on such species, their protected status could change (USFWS 1996).

### **3.2.5.1 Threatened and Endangered Species**

No T&E plant or wildlife species were observed within Detachment Norco during recent surveys; however, species that have the potential to occur within the installation include the southwestern willow flycatcher (*Empidonax traillii extimus*), coastal California gnatcatcher, least Bell's vireo (*Vireo bellii pusillus*), and Delhi Sands flower-loving fly (*Rhaphiomidas terminatus abdominalis*). These species and their status on Detachment Norco are described below.

### 3.2.5.1.1 Southwestern Willow Flycatcher (*Empidonax traillii extimus*)

**Federal Status:** Endangered (1995), Critical Habitat (Final Rule 2005; Revised Critical Habitat Proposed Rule 2011)

**State Status:** Endangered; Fully Protected (1995)

**Regional Status:** MSHCP Covered Species (2003)



Southwestern willow flycatcher  
(*Empidonax traillii extimus*)

The southwestern willow flycatcher measure about 5.75 inches in length. Overall, it is roughly the size of a small sparrow. Both sexes look alike. The flycatcher's appearance is overall greenish or brownish gray above, with a white throat that contrasts with a pale olive breast. The belly is pale yellow. Two white wing bars are visible, but the eye ring is faint or absent. The southwestern willow flycatcher breeds in areas from near sea level to over 2,600 meters (m) (8,500 feet [ft]) in vegetation alongside rivers, streams, or other wetlands (riparian habitat). It establishes nesting territories, builds nests, and forages where mosaics of relatively dense and expansive growths of trees and shrubs are established, near or adjacent to surface water or underlain by saturated soil (USFWS 2011). The Southwestern willow flycatcher is a neotropical migrant. The breeding season of the southwestern willow flycatcher extends from 15 March through 31 August. Factors contributing to the decline of this species are attributed to loss and degradation of nesting habitat, nest parasitism by cowbirds and human disturbance. There is no Critical Habitat designated for this species on Detachment Norco. The nearest designated Critical Habitat for this species occurs approximately 12 miles from the site near the San Bernardino County border (within the Santa Ana River) (USFWS 2005).

#### **Status on Detachment Norco**

Southwestern willow flycatcher was not detected during the 2008-2009 surveys (AMEC 2009). Marginal nesting habitat for this species occurs at two locations on the installation: the riparian woodland and scrub near the northwest corner, and willow woodland mixed with nonnative trees along the lake margin north of the Lake Norconian Club (Figure 8). Both of these areas contain nonnative trees and shrubs, but are suitable in vegetation structure and density to support this species. While there is appropriate vegetation as it relates to habitat, there is no flowing water within these areas. The nearest breeding population of this species occurs approximately 3 miles southwest of the installation within the Santa Ana River (CNDDDB 2013).

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**Special-status Species Map**  
**Naval Weapons Station Seal Beach Detachment Norco,**  
**Norco, CA**

**FIGURE**  
**8**

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### 3.2.5.1.2 Coastal California Gnatcatcher (*Polioptila californica californica*)

**Federal Status:** Threatened (1993); Critical Habitat (2007a)

**State Status:** Species of Special Concern

**Local Status:** MSHCP Covered Species (2003)

The coastal California gnatcatcher (gnatcatcher) is a small, long-tailed member of the thrush family Muscicapidae. This subspecies occurs almost exclusively within the coastal sage scrub vegetation community. On occasion, it can also be found in chaparral, grassland, or riparian communities adjacent to sage scrub habitat (USFWS 1997a). The southern limit of its range coincides with the distributional boundary of this distinctive vegetation community.



**Coastal California Gnatcatcher**  
*(Polioptila californica californica)*

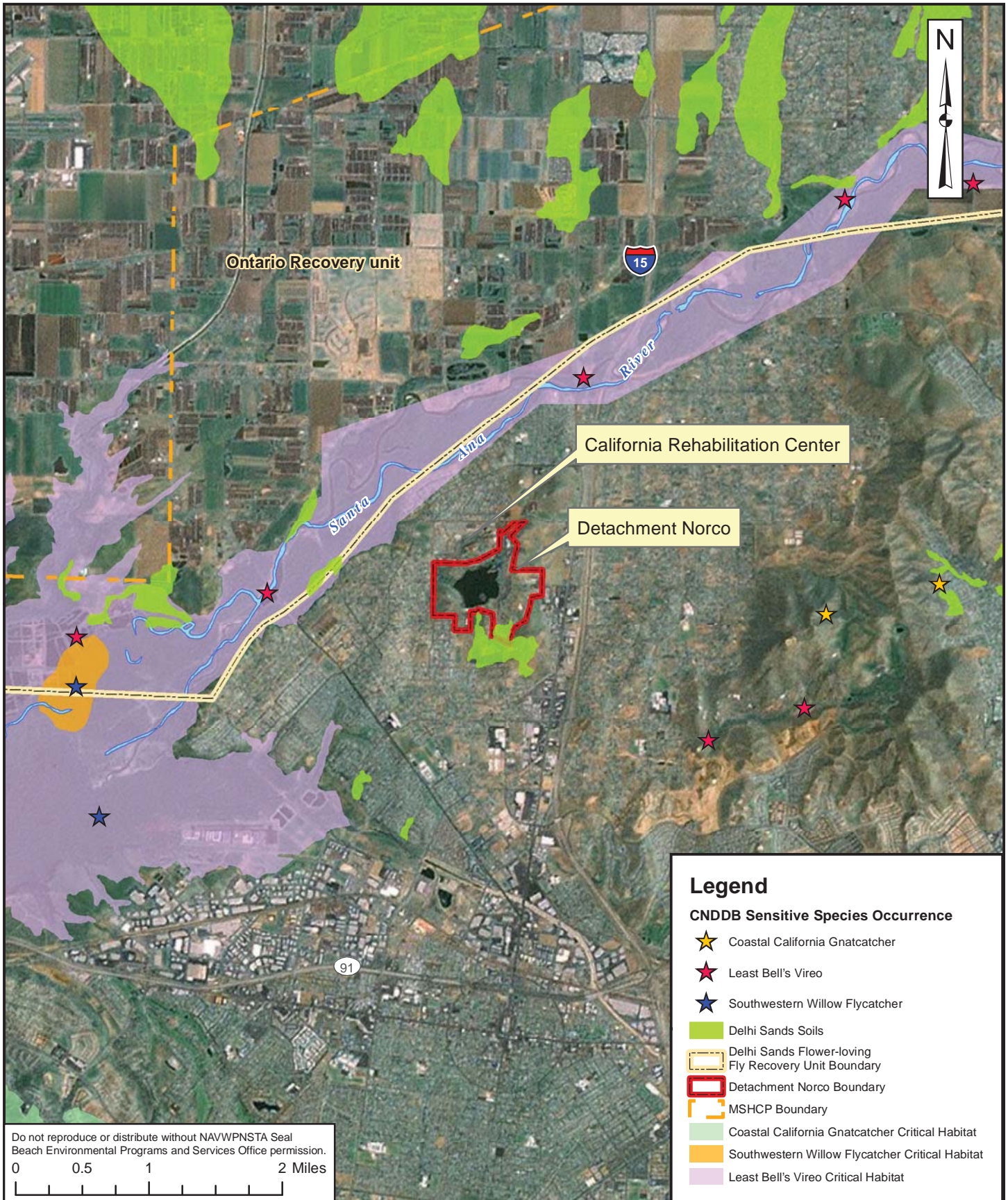
The gnatcatcher is non-migratory and maintains a permanent territory. It occurs on coastal slopes of Southern California, ranging from southern Ventura County southward to San Diego County and into Baja California, Mexico (to El Rosario at approximately 30°N) (Atwood 1991).

Breeding season for gnatcatcher occurs between late February and July, but nest initiation occurs most often between mid-March and mid-May. Nests are small, cup-shaped baskets usually constructed using materials, such as grasses, bark strips, small leaves, spider webs, down, and other materials. Nests are typically constructed within California sagebrush approximately 3 feet above the ground. The gnatcatcher is an insectivorous species that feeds on arthropods that most often are gleaned from California sagebrush and California buckwheat (USFWS 1993a).

The primary cause of gnatcatcher decline has been the cumulative loss of coastal sage scrub vegetation due to urban and agricultural development (Atwood et al. 1995). In October 2000, critical habitat was designated for this subspecies, comprising 13 defined geographic units (USFWS 2000). In 2003, following a legal challenge to the designated critical habitat, the USFWS proposed a revised critical habitat for the gnatcatcher (USFWS 2003). Revised designation of critical habitat for the gnatcatcher was finalized in 2007 (USFWS 2007a). Critical habitat for gnatcatcher neither occurs nor is proposed for designation at Detachment Norco. The nearest Critical Habitat for this species is approximately 4.8 miles southwest of the installation (Figure 9).

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**Regional Critical Habitat Designation  
Naval Weapons Seal Beach Detachment Norco,  
Norco, CA**

**FIGURE**

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### ***Status on Detachment Norco***

Coastal sage scrub within the installation is considered marginal to support a gnatcatcher breeding and is fragmented into grasslands (Figure 7). The nearest sightings of the species are in the Norco Hills, approximately 2.4 miles east of Lake Norconian (CNDDDB 2013). Considering the proximity of known occurrences, it is possible that dispersing juveniles could appear on the installation, but nesting is unlikely given the marginal habitat structure.

#### **3.2.5.1.3 Least Bell's Vireo (*Vireo bellii pusillus*)**

**Federal Status:** Endangered (1986), Critical Habitat (1994)

**State Status:** Endangered (1980)

**Regional Status:** MSHCP Covered Species (2003)



**Least Bell's Vireo**  
(*Vireo bellii pusillus*)

The least Bell's vireo is a small, migratory bird (4.5 to 5 inches in length) with short, rounded-wings and a short, straight-bill. Plumage is mostly gray above and pale below, with a faint white-eye ring. Vireos primarily inhabit dense, willow-dominated riparian habitats with lush understory vegetation. The breeding season of the least Bell's vireo extends from 15 March through 31 August. The decline of the least Bell's vireo is mainly from loss of riparian habitat and nest parasitism by brown-headed cowbirds (CNDDDB 2013). Critical Habitat for this species is not designated within Detachment Norco lands. Critical Habitat for this species occurs approximately 0.3 mile west of Detachment Norco within the Santa Ana River (USFWS 1994).

### ***Status on Detachment Norco***

Marginal nesting habitat for the least Bell's Vireo occurs at two locations on the installation: the riparian woodland and scrub near the northwest corner, and willow woodland mixed with nonnative trees along the lake margin north of the Lake Norconian Club (Figure 8). Both of these areas contain nonnative trees and shrubs, but are suitable in vegetation structure and density. No least Bell's vireos were detected during the 2008-2009 surveys. However, least Bell's vireo was identified within the installation in 1996 (believed to be a migrant) (Aigner and Koehler 1996). The species nests commonly along the nearby Santa Ana River and has been pioneering habitats in recent years (AMEC 2009). The closest breeding population of this species occurs approximately 0.75 mile west of the site within the Santa Ana River (CNDDDB 2013).

#### 3.2.5.1.4 Delhi Sands Flower-Loving Fly (*Rhaphiomidas terminatus abdominalis*)

**Federal Status:** Endangered (1993)

**State Status:** None

**Regional Status:** MSHCP Covered Species (2003)

The Delhi Sands flower-loving fly is restricted to open habitats underlain by fine, sandy soils associated with the "Delhi" series (USFWS 1993b). Habitat conditions are typically relatively intact with open, sparse, native vegetation (desert sand-verbena vegetation series) with less than 50 percent vegetative cover (USFWS 1997b). The Delhi Sands flower-loving fly reproductive period generally occurs in August and September, when the adults emerge from pupae and take flight. The current known distribution in Riverside



**Delhi Sands flower-loving fly**  
(*Rhaphiomidas terminatus abdominalis*)

County is fairly well understood and is limited to the northern portion of Riverside County in the vicinity of Mira Loma, Jurupa, and the Agua Mansa area (County of Riverside 2003). A USFWS Recovery Plan was developed for this species in 1997 (USFWS 1997b). Detachment Norco is located approximately 0.62 mile from the Ontario Recovery Unit (Figure 9); for a detailed map of the Ontario Recovery Unit, refer to Appendix B - Figures 3 and 6 of the Recovery Plan (USFWS 1997b). No Critical Habitat has been designated for this species.

#### ***Status on Detachment Norco***

Detachment Norco is underlain by approximately 9.29 acres of soils associated with the Delhi series (Delhi fine sand soil type). No presence/absence surveys have been conducted for this species within the installation; however, the installation does not likely support suitable vegetation communities (desert sand-verbena) open sandy microhabitats to sustain this species.

### 3.2.6 Federal Species of Special Concern

The burrowing owl is the only known FSC on Detachment Norco. Burrowing owl is also a Bird of Conservation Concern along with seven other species that were observed on Detachment Norco. A description of each species and its status on the installation is provided below.



### 3.2.6.1 Burrowing Owl (*Athene cunicularia*)

**Federal Status:** FSC, covered under the MBTA; and USFWS Birds of Conservation Concern (BCC)

**State Status:** California Species of Special Concern

**Regional Status:** MSHCP Criteria Area Species (2003)

The burrowing owl is a small, ground-dwelling owl found in open, dry grasslands, agricultural and range lands, as well as desert habitats with low-growing vegetation (Haug et al. 1993). Burrowing owls are often associated with other burrowing animals. They reside in burrows primarily created, then abandoned by, species such as ground squirrels (*Spermophilus beecheyi*) and coyotes (*Canis latrans*) (Karalus and Eckert 1987).



**Burrowing owl**  
(*Athene cunicularia*)

Burrowing owls are capable of excavating their own burrows when other burrowing species are absent, but rarely do so. In the absence of created burrows, researchers have observed structures such as culverts, piles of concrete rubble, and pipes also being actively used; the owls also are known to use artificial burrows (Klute et al. 2003). Burrowing owl nesting season begins in late March or April. Incubation lasts from 28 to 30 days.

The elimination of burrowing mammals through control programs and habitat loss has been identified as the primary factor responsible for the decline of burrowing owls (Klute et al. 2003). Additional threats to burrowing owls include habitat fragmentation, predation (including domestic pets), illegal shooting, pesticides and other contaminants, collision with automobiles, destruction of burrows by off-road vehicles, and general harassment by humans (Klute et al. 2003).

#### ***Status on Detachment Norco***

The burrowing owl was confirmed as a nesting species in 1996 (Aigner and Koehler 1996), but the area containing the active nest is now part of the restricted access area that was not surveyed in 2008-2009 (Figure 8). Anecdotal reports from security personnel on the installation indicate that there has been recent occupation by burrowing owls within the nonnative grassland habitat behind Buildings 501, 502, and 503, but no owls were observed by AMEC biologists (AMEC 2009). At least two burrows in this area contain rodent bones, indicating somewhat recent occupation. An additional area, near the northwest corner of Lake Norconian, is occupied commonly by ground squirrels, and their burrows and the open habitat at this location is suitable for burrowing owls. Both of these areas are shown on Figure 8.

### 3.2.6.2 Other Birds of Conservation Concern

**Common Yellowthroat (*Geothlypis trichas*).** The common yellowthroat is a BCC. This small songbird was identified on Detachment Norco during CBC's conducted between 2000 and 2010 (Appendix I). The breeding habitats of these birds are marshes and other wet areas with dense low vegetation; it may also be found in other areas with dense shrub.



**Lawrence's goldfinch (*Spinus lawrencei*).** Lawrence's goldfinch is a BCC that breeds across a small range in the woodlands of California and Baja California. Its highly erratic movements from year to year make assessment of its population trends very difficult. This species was observed on Detachment Norco in 2011 (Appendix I).



**Peregrine Falcon (*Falco peregrinus anatum*).** Only one peregrine falcon has been detected on Detachment Norco during the 2001 CBC. In California, peregrine falcons inhabit coastal sage scrub communities that are associated with coastal dunes, perennial grasslands, annual grasslands, croplands, pastures, forests, coastal oak woodlands, montane hardwood woodlands, and chaparral communities.



**Prairie falcon (*Falco mexicanus*).** The prairie falcon is a BCC and CDFW Watch List species. This bird of prey was detected on Detachment Norco in 2006 and 2012 (Appendix I). In California, it is an uncommon permanent resident that ranges from southeastern deserts northwest throughout the Central Valley and along the inner Coast Ranges and Sierra Nevada that is associated primarily with perennial grasslands, savannahs, rangeland, some agricultural fields, and desert scrub areas



**Song sparrow (*Melospiza melodia*).** The song sparrow is a BCC that is a year-round resident in many regions. The song sparrow has the greatest number of genetically distinct populations of any bird in North America. This species has been documented on Detachment Norco several times between 1997 and 2012 (Appendix I).



**Spotted towhee (*Pipilo maculatus*).** The spotted towhee is a BCC. Their breeding habitat is chaparral, thickets or shrubby areas across western North America. The spotted towhee was detected on Detachment Norco in 1996 and between 2000 and 2002 during CBBs.



**Loggerhead Shrike (*Lanius ludovicianus*).** The loggerhead shrike is a CDFW SSC and was confirmed as a breeder in 1996, but appears to no longer occur on the installation. A population decline of this species has been noted on the coastal slope of southern California in recent years (Humple 2008).



### 3.2.7 Migratory Birds

Many of the birds that use the Detachment Norco site for foraging and breeding habitat are protected by federal law under the MBTA (16 USC § 703 et seq.) and EO 13186. The MBTA, enforced by the USFWS, makes it unlawful “by any means or manner, to pursue, hunt, take, capture [or] kill” any migratory bird except as permitted by regulation. The number of bird species covered by the MBTA is extensive, includes listed and non-listed species, and is listed at 50 CFR § 10.13. The regulatory definition of “migratory bird” is broad and includes any mutation or hybrid of a listed species and includes any part, egg, or nest of such bird (50 CFR §10.12.).

To provide guidance for conflicts arising between military readiness activities and the MBTA, the USFWS issued the final rule on, "Migratory Bird Permits: Take of Migratory Birds by the Armed Forces" (50 CFR Part 21 in FR 28 February 2007, pages 8931-8950), hereinafter referred to as the Migratory Bird Rule. The Migratory Bird Rule authorizes the military to "take" migratory birds during military readiness activities under the MBTA without a permit. However, if the military determines that the activity will have a “significant adverse effect” on a population of migratory birds, they must work with the USFWS to develop and implement conservation measures to minimize and/or mitigate the effects. Currently there are no anticipated takes of migratory birds that would fall under this exemption.

Conservation measures under the Migratory Bird Rule require monitoring and record-keeping for years from the date the Armed Forces commence their conservation action. During INRMP reviews, the Armed Forces must report to the USFWS migratory bird conservation measures implemented and the effectiveness of the conservation measures in avoiding, minimizing, or mitigating take of migratory birds.

### **3.2.8 Other Species of Regional Special Concern**

Species of regional special concern include former candidates for federal listing as T&E, state endangered or threatened, species of special concern to the state of California, and species that are regionally rare or of limited distribution. Although protection of non-listed species is not mandatory on federal installations, management of these species contributes to the overall maintenance of their natural populations and reduces the likelihood that these species will be given additional legislative protection in the future. Ecosystem-based management is a process that considers the environment as a complex system functioning as a whole, not as a collection of parts. Accordingly, managing for keystone species, such as these species, and their habitat also benefits other species.

Applicable classifications for these species are follows:

- California Species of Special Concern (SSC) - Potentially jeopardized taxa. The status of these taxa could possibly change to threatened or endangered, or be removed from the list when further data are available.
- State Endangered (SE) - Any species that is in danger of extinction throughout all or a significant portion of its California range.
- State Threatened (ST) - Any species that is likely to become an endangered species within foreseeable future through all or a significant portion of its California range.
- State Rare (CR) - A plant species, subspecies, or variety not presently threatened with extinction, but found in such small numbers throughout its California range that it may be endangered if its environmental worsens.
- State Fully Protected (FP) – These species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock.

#### **3.2.8.1 Wildlife Species of Regional Special Concern**

As described in section 3.2.8, these species include former candidates for federal listing as T&E, state endangered or threatened, species of special concern to the state of California, and species that are regionally rare or of limited distribution. The following is a description of the birds of regional concern observed on Detachment Norco (Appendix I).



**Cooper's Hawk (*Accipiter cooperii*).** The Cooper's hawk is a CDFW "watch list" species. It was confirmed as a successful breeder on June 15, 2009, when two fledglings were observed near their nest in a Brazilian pepper tree (*Schinus molle*) that occurs in the eastern portion of the installation (Figure 8). This species is also observed during some winters on CBCs (four of ten years during 1998-2007), and is probably best described as an uncommon winter visitor and migrant, and an occasional breeder.



**Southern California Rufous-crowned Sparrow (*Aimophila ruficeps canescens*).** The southern California rufous-crowned sparrow is a CDFW "watch list" species. This subspecies is a permanent, non-migratory resident of coastal southern California that exhibits a distinct preference for rocky hillsides and steep slopes in open grass and coastal sage scrub habitats (Collins 1999). A singing rufous-crowned sparrow was detected during the 2008-2009 surveys along the central-eastern boundary of the installation (Figure 8). This bird was frequenting low, planted shrubbery just outside the boundary fence, but undoubtedly ventured onto the installation during foraging. The date range of the detections suggested that the bird was on a breeding territory, although it was unknown whether the bird had a mate (AMEC 2009).



**Great Blue Heron (*Ardea herodias*).** The great blue heron is listed as a "special animal" by the CDFW (CNDDDB 2013). A great blue heron rookery (nesting area) occurs on the island located within Lake Norconian. Six active nests were observed throughout the spring and early summer of 2009, and chicks were visible during May and June. During the CBCs of 1998-2007, a mean of 2.2 birds were observed. If nesting at the installation is a recent occurrence, winter numbers may increase, as this species may be a year round resident.



**Redhead (*Aythya americana*).** The redhead is a CDFW SSC (nesting) and uncommon winter visitor. This species was observed during 2008-2009 surveys and is known as a locally uncommon nesting bird on the coastal slope of southern California, and future nesting at Lake Norconian is possible.



**Yellow Warbler (*Dendroica petechia brewsteri*).** The yellow warbler is a CDFW SSC that breeds in lowland and foothill riparian woodlands. Three territorial males were present around Lake Norconian in 2009 (Figure 8). Along the nearby Santa Ana River, the yellow warbler is quite common (CNDDDB 2013).



**Horned Lark (*Eremophila alpestris*).** The horned lark is a CDFW “watch list” species and was not recorded during the 2008-2009 surveys, but was observed in 1996. This species occurs in very open habitats, including nonnative grasslands, and especially areas with barren ground (such as recently graded areas).



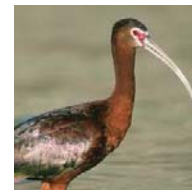
**American White Pelican (*Pelecanus erythrorhynchos*).** The American white pelican is a CDFW SSC (nesting colonies). Based on the present surveys and recent CBCs, the American white pelican is a rare to uncommon winter visitor and migrant. However, this species is somewhat more frequently observed at nearby water bodies such as Lake Mathews and Hidden Valley Wildlife Area. The American white pelican is not believed to nest within Detachment Norco lands.



**Double-crested Cormorant (*Phalacrocorax auritus*).** The double-crested cormorant is on the CDFW “watch list” (rookery site). During winter numbers of this species vary widely: the high count was 196 on the CBC of 17 December 2000, but as few as three have been detected on the CBCs (28 December 2003). During surveys in 2009, numbers steadily declined from winter into summer, and none were present on surveys in late May and mid June.



**White-faced Ibis (*Plegadis chihi*).** The white-faced ibis is a CDFW “watch list” (rookery site) species. One record: a flock of 200 were at Lake Norconian on 16 December 2007. White-faced Ibis is a fairly common winter resident in the Chino and Prado Basin areas.





**Black-crowned Night-Heron (*Nycticorax nycticorax*).** The black-crowned night heron is listed as a “Special Animal” by the CDFW. This species roosts on the island located within Lake Norconian. A maximum of eight were present during the surveys, but as many as 23 have been counted on the CBCs (18 December 2005). They are known to nest in the region, but no breeding has been observed at Lake Norconian.



### **3.2.8.2 Rare and Sensitive Plants**

Rare plants in California are also listed in the California Native Plant Society’s (CNPS). The CNPS is a private plant conservation organization dedicated to the monitoring and protection of sensitive species in the state. CNPS has compiled an inventory comprised of the information focusing on geographic distribution and qualitative characterization of rare, threatened, or endangered vascular plant species of California. The list serves as the candidate list for listing as threatened and endangered by the CDFW.

CNPS has developed five California Rare Plant Rank (CRPR) categories of rarity (CNPS 2013):

- List 1A: Presumed Extinct
- List 1B: Rare, threatened, or endangered throughout their range
- List 2: Rare, threatened, or endangered in California, but more common in other states
- List 3: Plant species for which additional information is needed before rarity can be determined
- List 4: Species of limited distribution in California (i.e., naturally rare in the wild), but whose existence does not appear to be susceptible to threat.

In addition to the above CRPRs, the CNPS Threat Rank is an extension added onto the CRPR and designates the level of endangerment by a 1 to 3 ranking with 1 being the most endangered and 3 being the least endangered. A following Threat Rank is present for all CRPR 1B's, 2's, 4's, and the majority of CRPR 3's (CNPS 2013):

- 0.1-Seriously threatened in California (over 80 percent of occurrences threatened / high degree and immediacy of threat)
- 0.2-Fairly threatened in California (20-80 percent occurrences threatened / moderate degree and immediacy of threat)

- 0.3-Not very threatened in California (<20 percent of occurrences threatened / low degree and immediacy of threat or no current threats known)

The most recent plant surveys were conducted in 1996; however, no rare or sensitive plants were identified during these surveys (NAVFAC Southwest 1998). A review of the Corona North USGS quadrangle in the CNDDDB and CNPS Online *Inventory of Rare and Endangered Plants* (CNPS 2013) indicates that two rare plants (presented below) are known to occur within the vicinity of Detachment Norco within similar habitats that are present on the installation.

**Chaparral Sand-verbena (*Abronia villosa* var. *aurita*)-**

Chaparral sand verbena is a CNPS List 1B.1 species that occurs in sandy soils of chaparral, coastal scrub and dune habitats (CNPS 2013). Although the coastal sage scrub on the installation is underlain by sandy soils, this habitat has low potential to support this species in its disturbed fragmented state.



**Smooth Tarplant (*Centromadia pungens* ssp. *laevis*)-**

Smooth tarplant is a CNPS List 1B.1 species that occurs in a variety of habitat including chenopod scrub, meadows and seeps, playas, riparian woodland and grasslands (CNPS 2013). The grassland and riparian habitat on the installation have high to moderate potential to support this species.



## **SECTION 4 NATURAL RESOURCES MANAGEMENT**

### **4.1 Natural Resources Management Overview**

The Sikes Act defines the purpose of natural resources management on military lands as “the conservation and rehabilitation of natural resources on military installations; the sustainable multipurpose use of the resources, which shall include hunting, fishing, trapping, and non-consumptive uses; and subject to safety requirements and military security, public access to military installations to facilitate the use [of these resources].”

Detachment Norco’s approach to natural resources management takes a long-term view of ecosystem processes and human activities and integrating conservation and management of biological resources with the military mission of the installation. The installation’s natural resources conservation and management programs are to be directed toward achieving the overarching natural resource management goals.

For Detachment Norco, the specific goals are threefold:

- GOAL 1: Protect the historic values of Lake Norconian and the ponds through appropriate natural resources management and enhancement, with an emphasis on maintaining water quality, vector control, and aesthetics.
- GOAL 2: Provide good stewardship to protect, manage, and enhance the land, water, and wildlife resources of Detachment Norco while fulfilling the mission requirements.
- GOAL 3: Provide the organizational capacity, support, funding, and communication linkages necessary for effective strategic planning and administration of this Plan and the Detachment’s natural resources.

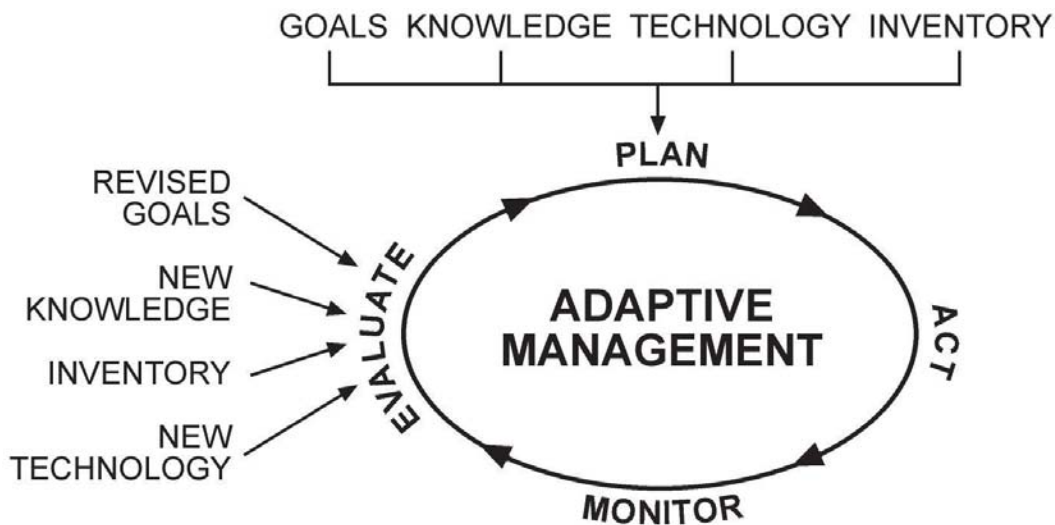
These goals will ensure the success of the military mission and the conservation of natural resources. The general philosophies and methodologies used throughout the Detachment Norco natural resources management program are focused on conducting required military mission activities while maintaining ecosystem viability.

#### **4.1.1 Ecosystem Management Approach**

Ecosystem management, through habitat protection, maintenance, and enhancement, is the central focus of this INRMP. The DoD defines ecosystem management goals as follows:

*“Ensure that military lands support present and future training and testing requirements while preserving, improving, and enhancing ecosystem integrity. Over the long term, that approach shall maintain and improve the sustainability and biological diversity of terrestrial and aquatic ecosystems while supporting sustainable economies, human use, and the environment required for realistic military training operations” (DoD 1994).*

Development of this INRMP is based on the concept of adaptive management of ecosystems. Adaptive management is founded on the idea that management of renewable natural resources involves continual learning process (Walters 1986). This approach recognizes that there is incomplete data when dealing with natural resources and that, through continued research and monitoring of the effects of management practices, new information will be developed. In addition, an adaptive management approach recognizes that protection and management actions are often implemented, by necessity, with imperfect knowledge. Recognition of this uncertainty allows development of monitoring and research approaches to progressively improve knowledge, and thus enhance decision-making and management capabilities. The adaptive management process is illustrated in Figure 10.



**Figure 10. Adaptive Management Strategy**

#### **4.1.2 Defining Impact to the Military Mission**

Under the Sikes Act, NAVWPNSTA Seal Beach must ensure that there is no net loss to the military mission due to implementation of this INRMP. To do this, the link between land use and the mission of shore-based infrastructure support to the Navy’s ordnance mission and other fleet and fleet support activities, and the missions of other tenant users, needs to be disaggregated into component parts. Many security concerns are compatible with the

natural resource part of the Navy mission, such as the need to establish barrier distances from Navy assets and the ability to do this with landscaping. Also, enhancement of natural resources that are protected by law can be used to help “anchor the Station down” with respect to outside pressures and encroachment. In order to accomplish the mission of national security, the public has endowed the Navy with an investment in public lands. The common denominator between national security and public land stewardship is the concept of sustainability. Sustainability is a relative condition of the ecosystem and the military mission that can be measured. The most widely used definition of sustainability was developed by the World Commission on Environment and Development (1987): “[Sustainable resource management is] the capacity to meet the needs of the present without compromising the ability of future generations to meet their own needs.” Measures of sustainability are scale-dependent. As Detachment Norco, does not support ground or air training activities, its mission is benign on a day-to-day basis compared to other installations.

## **4.2 Natural Resources Consultation Requirements**

Detachment Norco consults with the USFWS and the CDFW to manage natural resources located within the installation. Cooperative management of the Detachment’s natural resources is required under the Sikes Act and the Fish and Wildlife Coordination Act (FWCA) (16 USC 661-667e).

## **4.3 National Environmental Policy Act (NEPA) Compliance**

NEPA is the basic national charter for the protection of the environment. It is a procedural planning tool which primarily requires a clear evaluation of all federal decisions potentially affecting the human and natural environment. Detachment Norco must consider the environmental consequences of its actions before a commitment is made to proceed. NEPA documentation for Detachment Norco is performed by NAVWPNSTA Seal Beach personnel.

In compliance with the NEPA process, the DoN prepared an EA for implementation of this INRMP and all projects associated with it. The EA is presented in Appendix N.

## **4.4 Beneficial Partnerships and Collaborative Resource Planning**

The success of natural resources management and the implementation of this INRMP require a cooperative planning effort among the parties directly responsible for operating and maintaining Detachment Norco. The level of success can be enhanced by developing partnerships among other parties that have a vested interest in the responsible management of the natural resources within the installation. Cooperative planning groups often include representatives from federal, state, and local agencies, citizen groups, developers, and

universities. The involvement of these agencies is based on their designation as cooperating agencies and on cooperative agreements, regulatory authority, and technical assistance, as required by federal legislation and regulation. These agencies and their roles and responsibilities are described below.

#### **4.4.1 Fish and Wildlife Inter-Agency Coordination**

Cooperative efforts with USFWS involve identifying potential T&E species on Detachment Norco. USFWS is a cooperating and signatory agency for implementation of this Plan in accordance with the Sikes Act. Detachment Norco will consult informally and/or formally with the USFWS prior to implementation of any action included in this INRMP that may affect listed or proposed species. CDFW is the primary state agency responsible for managing fish and wildlife in California. CDFW is a designated cooperative agency for developing this INRMP. NAVWPNSTA Seal Beach coordinates with CDFW to manage fish and wildlife at Lake Norconian.

NAVWPNSTA Seal Beach works with USFWS and CDFW to manage fish and wildlife at Lake Norconian. Cooperative management of the Detachment's fish and wildlife is required under the Sikes Act and the FWCA. The Sikes Act provides a mechanism whereby DoD, the DoI, and host states cooperate to plan, maintain, and manage fish and wildlife on military installations. Sikes Act provisions and cooperative agreements for outdoor recreation, such as for hunting and fishing, are implemented nationally by a MOU between DoD and DoI.

#### **4.4.2 City of Norco**

The City of Norco (City), similar to the rest of Riverside County, has experienced growth in the recent decades which has diminished the amount of open space in the area. Detachment Norco has been a buffer against urban sprawl. The preservation of open space has become increasingly important; therefore, Detachment Norco's future management plans are of interest to the City of Norco, particularly the management of the Lake Norconian Resort site for its local historical relevance and heritage.

An MOA between the City of Norco, Detachment Norco, and the CRC concerning water treatment and distribution services as well as sewage collection and treatment services provided by the City was signed in 2009 (Appendix J). Per the MOA, "the Navy shall provide Lake Norconian to the City for use as a water storage facility. In return the City will assume the obligation for filling and maintaining the water levels at Lake Norconian, to include the reflecting ponds at the specified level marked with a metal plate at the boat dock. The City will ensure that the water quality delivered to the lake meets or exceeds all regional water quality discharge permit standards, and obtain any required permits." The MOA is presented in Appendix J.



## **4.5 Public Access and Outreach**

### **4.5.1 Public Access and Outdoor Recreation**

Generally, public access is restricted by Navy Security requirements. However, DoD installations are encouraged to provide for sustained public access and use of natural resources for educational or recreational purposes when such access is compatible with mission activities, and with other considerations such as security, safety, or resource sensitivity (DoD 2011).

Some funding for recreation programs is available via the Sikes Act. Under the Sikes Act, fees may be charged for wildlife or recreation opportunities with the money being used to enhance the resource (e.g. restocking of fish with income from user fees). A draft Tripartite Agreement between Detachment Norco, the USNPS, and the California Department of Parks and Recreation (CDPR) to cooperate in recreation planning has not yet been signed. A copy of the draft Agreement can be found in the Cooperative Agreements (Appendix J).

The USNPS developed a draft Outdoor Recreation Plan for Detachment which recommends strategies for the use and protection of its outdoor recreation resources (USNPS 1995). This plan recommended chief strategies for the use and protection of Detachment Norco's outdoor recreation resources:

- Prepare a management plan for Lake Norconian and secure funding through EPR system or other funding sources.
- Install a natural resource interpretive display, along the southeast, north, and northwest shores of the lake.
- Encourage use of Detachment Norco grounds by organized groups such as Audubon Society and the Sierra Club for wildlife observation. Evaluate Lake Norconian for use as a possible federal Watchable Wildlife Program site. This program is a cooperative, nationwide effort to build on the interest in wildlife. On December 3, 1990, representatives of 13 organizations, including the DoN, gathered to sign a MOU pledging to cooperate in carrying out a Watchable Wildlife Program. However, access to Detachment Norco by public organizations is extremely limited due to heightened military security. Public organized groups are required to obtain a license from the DoN before being allowed access to the Detachment.
- Maintain the existing cooperative relationship with scouting groups to provide them with facilities to conduct their activities, and to provide the Navy with additional assistance in maintaining the facilities including vegetation management and invasive species removal.

- Continue to provide fishing opportunities to Detachment Norco personnel and retirees.

#### **4.5.2 Public Outreach**

It is the DoD's policy to encourage a conservation ethic by providing an understanding of the need to protect and conserve natural resources through good stewardship. Lake Norconian and associated wildlife are an excellent focus for natural resources education while the property's unique historical setting provides an exceptional perspective of the region's history.

The Navy seeks to earn public confidence in its stewardship of the nation's natural heritage (DoN 1994). An important objective of such programs is to gain proper public recognition of excellent stewardship. Detachment Norco's policy strategy for public outreach and education are as follows:

- Identify and evaluate settings and forums suitable for enhancing community involvement, compatible with the military mission and security.
- Apply specific conditions to ensure compatibility with the military mission and security.
- Encourage partnerships and volunteers to enhance conservation programs wherever practicable, for example: weed eradication and landscape planting.

#### **4.6 Encroachment Partnering**

Non-military encroachment pressures are a result of the increasing urbanization of lands surrounding Detachment Norco. Neighbors view the Detachment's unique historic and natural resources setting as a valuable community asset. The City has expressed an interest in assisting Detachment Norco to resolve Navy water quality and usage issues as well as sewage disposal. Detachment Norco's policy strategy for encroachment partnering is as follows:

- Incorporate Detachment Norco's Encroachment Action Plan into natural resource planning.
- Maintain good relations with neighbors by interacting with them regularly to ensure good cooperation.

#### **4.7 State Comprehensive Wildlife Action Plan**

In 2000, Congress enacted the State Wildlife Grants Program to support state programs that broadly benefit wildlife and habitats but particularly “species of greatest conservation need.” As a result the CDFW, working in partnership with the Wildlife Health Center, University of Davis, directed the development of the state’s Wildlife Action Plan, *California Wildlife: Conservation Challenges* (CDFG 2000).

The state has been divided into nine wildlife regions: Mojave Desert, Colorado Desert, South Coast, Central Coast, Marine Region, North Coast-Klamath, Modoc Plateau, Sierra Nevada and Cascades, Central Valley and Bay-Delta. In each region of the state, there are multiple stressors to wildlife and habitats, operating alone and in combination. A number of these stressors are common to the entire state or to several different regions. Detachment Norco is located in the South Coast Region. Major wildlife stressors that have been identified through the SCWP are growth and development, water management conflicts and degradation of aquatic resources, invasive species, altered fire regimes, and recreational pressures (CDFG 2000).

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## **SECTION 5 PROGRAM ELEMENTS**

Resource-specific management objectives and tasks are provided in this section for obtaining the desired outcomes. The tasks have been further divided into compliance-based tasks and stewardship-based tasks, defined as follows:

- Compliance-based tasks - those that are required to meet the legal regulations governing the management of Navy lands and the needs of the military mission.
- Stewardship-based tasks - those that are designed to meet ecosystem-based conservation practices but that are not legally required.

Detachment Norco is a federal facility and, as such, is required to comply with applicable federal law and regulation. In general, tasks designed to comply only with state and local law and regulation do not qualify as compliance-based tasks. In some instances, federal law may require compliance with state law. In these instances, the tasks are compliance-based. However, the ecosystem management approach of this INRMP recognizes the value of including stewardship-based management tasks designed to meet the objectives of state and local natural resource law and regulation.

The resource-specific objectives and tasks, presented below are expected to be implemented during the tenure of the INRMP (unless otherwise noted). Because the INRMP has been developed as an adaptive management program, modifications to the resource-specific management elements are anticipated and encouraged, as additional information becomes available. Any requirement for the obligation of funds for projects in this INRMP will be subject to the availability of funds appropriated by Congress, and none of the proposed projects will be interpreted to require obligation or payment of funds in violation of any applicable federal law, including the Anti-Deficiency Act, 31 USC Section 1341, *et seq.*

### **5.1 Land Use Management**

Land management operations will be consistent with the latest conservation and land management principles. Implementation of land use and conservation policies is required on all federal lands to the extent practicable and in concert with the assigned mission. Detachment Norco will actively cooperate with local, state, and federal organizations to apply land use and conservation policies consistent with accepted scientific and professional standards and practices.

A description of Detachment Norco's land use is presented in Section 2.3 and illustrated on Figure 3. Detachment Norco will plan land utilization with an awareness of the potential environmental effects of proposed actions. Mission requirements for the land will avoid or minimize adverse effects and restore or enhance environmental quality. Detachment Norco natural resources managers will participate in all planning and decision-making activities of land use to ensure that current and planned activities are compatible with natural resource policies and other environmental requirements.

**Objective: Implement land use and conservation policies to the extent practicable and in concert with the mission of the installation.**

***Compliance and Stewardship Tasks:***

- Perform a formal facility water conservation audit that would evaluate water conservation options for landscaped facilities.
- Implement water conservation measures based on the results of a facility water conservation audit.
- In consultation with NSWC, identify the design objectives for the developed landscapes of the installation. Incorporate these objectives into a Landscape Management Plan that would present management directives for both Precventnatural and developed landscapes of Detachment Norco. Implement the Landscape Management Plan per the Vegetation Management Program detailed below.

## **5.2 Soil Management**

A description of Detachment Norco's soil resources is presented in Section 3.1.3 and illustrated on Figure 5. The primary objectives of soil resources management on Detachment Norco are to protect soil resources, to identify areas prone to soil erosion, and to prevent soil erosion and its subsequent impact on military facilities, water, and wildlife habitat quality. Because of the topography of Detachment Norco, soil resources are susceptible to erosion from hydraulic forces, particularly during the winter rainy season.

**Objective: Prevent and control soil erosion and reduce likelihood of sedimentation of Lake Norconian and associated wetlands from erosion.**

***Compliance and Stewardship Tasks:***

- Develop new or use proven BMPs to prevent and control erosion and protect sensitive resources and habitats.
- Ensure incorporation of BMPs in the preliminary engineering, design, and construction of facilities involving ground disturbance (OPNAVINST 5090.1C CH-1, Ch. 9).



## **5.3 Vegetation Management**

### **5.3.1 Natural Communities**

A description of Detachment Norco's vegetation resources is presented in Section 3.2.2.1 and illustrated on Figure 7. These communities provide wildlife habitat, support and contribute to biodiversity, and can serve as indicators of ecosystem health. Natural plant communities within the site include non-native grasslands, disturbed coastal sage scrub, and riparian/wetland habitats (Figure 7).

DoD policy calls for restoring and rehabilitating adversely altered or degraded habitats. Native plant species and communities shall also be maintained, enhanced, and restored to conserve their biodiversity and health (DoD 2011). The following management measures are intended to conserve and maintain natural plant communities and habitats within Detachment Norco.

**Objective: Manage natural habitats (i.e. non-landscaped and undeveloped areas) for the benefit of native plant and wildlife species.**

#### ***Compliance and Stewardship Tasks:***

- Conduct an initial vegetation inventory within the installation. In addition to this inventory, an evaluation of insects or birds that are dependent on specific plant species will be conducted to determine if management of these species is necessary.
- Conserve, protect, maintain, and manage undeveloped areas of high biological value (i.e. coastal sage scrub, non-native grassland, and riparian/wetland habitats) on the installation.
- In consultation with NSWC, prepare and implement a Landscape Management Plan which would include the management of vegetation within developed and undeveloped areas of the installation. The Landscape Management Plan would include objectives and tasks for the management of wildland fire vegetation, invasive and noxious weed species, consideration of wildlife habitat needs, and landscaped areas that are part of the Lake Norconian Historic District.
- Conduct habitat restoration activities: 1) Restore and revegetate upland areas that have been significantly disturbed by noxious weed control activities with appropriate native species that are known from the local region; 2) enhance existing coastal sage scrub (CSS) and grassland habitats by removing nonnative grasses and forbs and replanting with appropriate native species that are known from the local region.
- Through processes such as NEPA review, EMS implementation, etc., continue to provide information to grounds maintenance personnel about sensitive habitat areas to be excluded from landscape maintenance activities.

- Monitor the condition and trend of vegetation communities. Update the installation's vegetation mapping every five years, or as-needed, Manage and maintain HRHP-1 and maintain a GIS geodatabase for these data per the Geographical Information System Management Program detailed below in Section 5.14.

## **5.3.2 Anthropogenic Communities**

### **5.3.2.1 Historic Developed Landscaping**

The historic landscape is entirely within the bounds of the Lake Norconian Historic District. Other portions of the original resort landscape, such as the golf course, are outside of the Lake Norconian Historic District. Much of the landscape design and plant selections, such as the date palms, eucalyptus, pines and other large trees, are a remnant of the original 1929 resort. While some of the trees and shrubs are flourishing, others are overgrown and in need of pruning. Former landscapes such as the former golf course and the reconstructed west dam site have been disturbed, are not irrigated, and appear to have been succeeded by non-native grasses and forbs. All of the landscaped areas within the Lake Norconian Historic District considered part of the NRHP (refer to Section 2.23) and accordingly must be maintained. Areas outside the district are not subject to the same requirements as areas within the district.

**Objective: Manage and maintain NRHP-listed historic landscaped areas within Detachment Norco.**

#### ***Compliance and Stewardship Tasks:***

- In consultation with NSWC, identify goals and management strategies for historic landscapes that are part of the NRHP-listed Historic District located within installation.
- Prior to development of a Landscape Management Plan, Seal Beach will meet as needed, but at least annually, with NSWC to identify and prioritize any immediate landscape management needs.

#### **5.3.2.1.1 Landscaping and Ground Maintenance Measures**

The Navy issued water conservation guidelines in 2011 to comply with EO 13123, which requires that "water conservation measures with suitable payback be implemented at all federal facilities" (DoD 2011). Irrigation of the Detachment's landscaping begins about April and continues through October or until sufficient rainfall. To manage water demand, the Navy and the CRC presently alternate days when they irrigate; about 70 percent of the sprinklers are on automatic timers (G. Blanton, CRC, pers. comm.).

**Objective: Manage new landscaping to promote water conservation.**

- Implement low maintenance plant requirements as a criterion for selection of any new plantings.
- Replace lawn areas, where they are not needed for recreation, with drought tolerant plantings that are "water-wise" and suitable for the local climate.
- Minimize fertilizer runoff to the lake by efficiently conserving water and by limiting the use of fertilizer.
- Evaluate timing of watering needs, adjust irrigation systems and use automatic timers as practicable, and use mulches to reduce irrigation and conserve water.

## **5.4 Invasive Species Management**

### **5.4.1 Invasive Plants and Noxious Weeds**

Invasive plants as defined in EO 13112 are, “an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health”. Small infestations of the invasive wetland plant, giant reed and tamarisk, can be found on the margins of Lake Norconian, below the west dam, and around the ponds. Both species are considered to be high priority for removal per the California Invasive Plant Council (Cal-IPC). A major, coordinated effort, “Team Arundo”, is ongoing in the Santa Ana River to control giant reed, such as on the Hidden Valley Wildlife Reserve upstream of Norco. Blue gum eucalyptus (*Eucalyptus globulus*), also found on the property, is considered an *escaped exotic* in Riverside County by the CNPS and is of moderate concern according to the Cal-IPC); however, it does not appear to be spreading or causing a nuisance at Detachment Norco (USSCS 1990).

Control of the invasive plants, such as giant reed and tamarisk, on the Detachment is very important in order to protect the riparian plant community and its wildlife. The Federal Noxious Weed Act requires Federal land managers to cooperate with State and Federal agencies to manage undesirable plants. It defines noxious weed as, “any living stage (including seeds and reproductive parts) of a parasitic or other plant of a kind which is of foreign origin, is new to or not widely prevalent in the U.S., and can directly or indirectly injure crops, other useful plants, livestock, poultry or other interests of agriculture, including irrigation, navigation, fish and wildlife resources, or the public health”. It also mandates a program and a person be assigned to deal with unwanted plants, funding needs, cooperative agreements, and the use of integrated pest management systems. A Navy Instruction (OPNAVINST 6250.4A) requires a comprehensive Integrated Pest Management Plan (IPMP) and discusses the need to control pest outbreaks which affect the military mission, damage property, or impact the welfare of people. All pesticide use must comply with applicable regulations to prevent pollution. In addition, DoD policy states that “noxious weeds and other objectionable plant growth shall be controlled by mowing, use of US Environmental Protection Agency (EPA) registered or approved herbicides,

cultivation, or other appropriate means. Pesticide use should be minimized and used in accordance with DoD policy” (DoD 2011).

#### **5.4.1.1 Invasive Species Management Measures**

**Objective: Control high priority noxious and invasive plant species that have the potential to alter native upland plant communities.**

***Compliance and Stewardship Tasks:***

- Conduct an inventory of noxious weeds; identify and prioritize areas that are dominated by invasive species that are considered high priority by the Cal-IPC. Maintain a comprehensive noxious and invasive plant species list and GIS database.
- Based on the results of the noxious weed inventory, identify management goals and strategies for the control of high priority noxious and invasive plant species. These goals and management strategies would be incorporated into and implemented per the Landscape Management Plan discussed above (refer to Section 5.3.1).
- Annually, or as-needed, eradicate or control the spread and introduction of nonnative and invasive upland plant species such as salt cedar, pampas grass, mustards, etc., with an emphasis on those with the greatest potential for negative impacts. Management of fan palms in developed areas will be done in consultation with NSWC.
- Coordinate invasive species removal with Detachment Norco’s current IPMP to control upland noxious plants in conjunction with the lake’s aquatic plant pests, as required by OPNAVINST 6250.4A.
- Replace invasive plant species with native vegetation that occurs in the local area. Upland vegetation may include coastal sage scrub species and native bunchgrass.

**Objective: Control invasive wildlife species that have potential to alter wildlife communities.**

- Identify threats that invasive terrestrial and aquatic wildlife species (i.e. European starling, brown-headed cowbird, bullfrog, and African clawed frog) may pose to native songbird and aquatic species.
- Prepare and implement an Invasive Species Control Plan as necessary.

### **5.5 Wetlands Management**

A wetland delineation was prepared in 1998 for Detachment Norco, however, this delineation is out of date. Since 1998, substantive new wetland regulations have been

issued by the USACE. An updated wetland delineation is recommended to incorporate the new wetland regulations. A description of Detachment Norco's wetland resources from the 1998 wetland delineation is presented in Section 3.2.3 and illustrated on Figures 6 and 7. Wetlands on the Detachment are primarily associated with Lake Norconian and below the west dam (Figure 7).

Wetlands provide essential breeding, spawning, nesting, and wintering ground for numerous wildlife species. Wetlands also enhance the quality of surface waters by impeding erosive forces moving water and trapping waterborne sediment and associated pollutants. Per EO 11990, Protection of Wetlands, federal agencies are required to, "take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands". It is also Navy policy to avoid adverse impacts to existing aquatic resources and offset those adverse impacts that are unavoidable (OPNAVINST 5090.1C CH-1). Management measures and associated tasks to protect and enhance the wetland resources at Detachment Norco are provided below.

**Objective: Manage and enhance wetland resources on Detachment Norco.**

***Compliance and Stewardship Tasks:***

- As-needed, update the existing wetland delineation. As part of any update, develop and maintain a comprehensive GIS database for these resources.
- Enhance wetland habitat by annually, or as-needed, controlling and removing nonnative and invasive wetland plant species with a focus on the riparian area below the dam. Target species should include species of concern according to the Cal-IPC.
- Identify management strategies for the control of high priority noxious and invasive wetland plant species. These management strategies would be incorporated into and implemented per the Landscape Management Plan discussed above.
- Restore native wetland/riparian plant habitats that have been significantly disturbed by weed control activities. Revegetate these areas with appropriate native species that are known from the local region.
- Monitor wetland community plant species composition and relative cover paying particular attention to invasion by noxious weeds and cover aquatic vegetation.

## **5.6 Water Resources Management**

### **5.6.1 Lake Management Measures**

Lake Norconian is partially fed by non-potable well water via a direct line near the west dam. In addition, the CRC provides 80,000 gallons of potable water per day through the 5 ponds. Under the MOA, the City of Norco is responsible for filling Lake Norconian (Appendix J). The lake also receives water from runoff, precipitation, groundwater

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seepage, and the seepage recharge system. The lake's own community of aquatic and emergent vegetation is a major nutrient source, especially in the fall and winter when a season's growth dies back and begins to decompose. As noted previously, the nitrogen and phosphorus levels in the inflow are very low while their levels in the sediment are very high. These nutrients are released when vegetation decays and become deposited in the lake sediments. Stirring up this sediment during dredging or other activities could release more nutrients into the water column and stimulate additional aquatic vegetation growth.

**Objective: Protect the values of Lake Norconian and the ponds through appropriate resource management and enhancement, with an emphasis on maintaining a regional haven for migratory waterfowl.**

***Compliance and Stewardship Tasks:***

- Prepare a Lake Management Plan that will identify lake/pond management strategies and objectives that would provide an emphasis on management of the lake for wildlife species.
- As part of the Lake Management Plan, develop water quality management goals and objectives, including standards for maintaining sufficient lake levels. Currently water samples are to be taken monthly by a landscape contractor, however, if more extensive water sampling is instituted pursuant to the Lake Management Plan, this will be a separate, Navy-funded contract.
- Monitor lake levels and flows annually to develop information for making decisions to maintain reasonable lake and pond levels and flows. Improve circulation as necessary.
- Reduce the amount of vegetative debris in the lake and ponds that could impede water flows.
- Enhance lake and pond margins to provide cover and reduce sediment input while, where feasible, maintaining the historic landscape that is part of the NRHP-listed Historic District.

**Objective: Implement improvements to water quality systems of Lake Norconian and its related ponds.**

***Compliance and Stewardship Tasks:***

- Based on water quality monitoring, install an aerator in Lake Norconian to improve water quality and increase circulation to help with vector control.
- Minimize fertilizer runoff to the lake by efficiently conserving water.
- Remove debris and dead vegetation within and surrounding the lake/ponds in order to reduce the amount of nutrient loading.



- Continue operation of a pond recirculation system that pumps water from Lake Norconian to the uppermost pond in order to maintain water flow and habitat quality.

## **5.7 Fish and Wildlife Management**

Sections 3.2.4 and 3.2.5 present wildlife species that are known to or have potential to occur within the Detachment. The primary goal of wildlife management within Detachment Norco is to preserve and protect wildlife while supporting multiple uses of the military installation. The wildlife management program provides for the management of wildlife populations and their habitats consistent with acceptable scientific principles, in compliance with the ESA and other applicable laws and regulations, and in harmony with the total natural resources program. CDFW and USFWS provide assistance to Detachment Norco in management of wildlife. Wildlife management includes habitat protection, special status species surveys, research on effects of human disturbance on special status species, population trends, and habitat improvement projects. DoD has endorsed ecosystem management. Its goal with regard to ecosystem management is:

*“...to ensure that military lands support present and future training and testing requirements while preserving, improving, and enhancing ecosystem integrity. Over the long term, that approach shall maintain and improve the sustainability and biological diversity of terrestrial and aquatic (including marine) ecosystems while supporting sustainable economies, human use, and the environment required for realistic military training operations” (DoD 2011).*

Management measures have been identified in order to preserve and protect wildlife resources at Detachment Norco, these measures and associated objectives and tasks are provided below.

### **Objective: Promote a sustainable and diverse wildlife community through population protection, monitoring, and habitat stewardship compatible with the facility's mission and urban location.**

- Conduct a basewide wildlife inventory and maintain a comprehensive list of species that have been identified within the installation. Update basewide wildlife surveys every three to five years, or as-needed. Conduct focused surveys for specific species and monitor (i.e. bats, small mammals, herpetofauna etc.) as necessary.
- Promote and integrate surveys conducted by local birders and groups such as the Audubon Society.
- Maintain a bird checklist for migratory and resident species that use the Detachment.
- Maintain a fish inventory, from the results of fishing license holder requirements.

- Ensure protection of roosting sites and snags as necessary.
- Evaluate the potential for nest enhancement activities such as the installation of nest boxes in the habitats around the lake.
- Implement predator control programs, as necessary, in order to benefit native wildlife populations.
- Maintain records of injured wildlife cases to monitor extent of problem.
- Conduct an annual evaluation of the effectiveness of fish and wildlife management activities through the Navy Conservation Website INRMP Metrics Builder.

### **5.7.1 Wildlife Habitat Management**

The DoD has an ecosystem management policy that shifts the focus "from protection of individual species to management of ecosystems" (DoD 1994). Detachment Norco neither has significant acreage to manage intensely for wildlife nor has any resident endangered species. The following management measures are intended to protect and conserve wildlife habitats within Detachment Norco.

#### **5.7.1.1 Wildlife Habitat Management Measures**

**Objective: Protect and conserve wildlife habitat areas, particularly Lake Norconian and associated ponds.**

***Compliance and Stewardship Tasks:***

- Ensure that wildlife habitat is protected or enhanced in the Landscape Management Plan and in its implementation.
- Ensure protection of roosting sites and snags needed by birds for nests.
- Improve lake-margin habitats by removing invasive species to support more native species and improve vector control.
- Consider installation of nesting boxes within and adjacent to wetland areas around the lake in order to encourage bird breeding habitat.
- Protect the great blue heron rookery through educating those who utilize the lake for recreation.
- Consider controlling nesting of European starlings, if feasible.
- Monitor bird populations every three to five years, or as-needed, to ensure that management practices are effective.

- Prohibit persons utilizing the lake for recreation from disturbing natural habitats utilized by wildlife.
- Evaluate the need for natural habitat exclusion areas and provide signage with these areas as needed.

### **5.7.2 Wildlife Problems, Animal Damage Control, and Feral Animals**

The following goals and strategies for pest control management have been developed in accordance with the installation's IPMP (2001) and DoD and DoN guidances:

**Objective: Use Integrated Pest Management (IPM) methods to control pest species and minimize incidental take of non-target wildlife.**

***Compliance and Stewardship Tasks:***

- Control identified pest species that pose a nuisance, significant property damage, or potential health hazard, while minimizing any incidental take of non-target wildlife.
- California ground squirrel colonies on the installation should be controlled only in areas where their burrows cause problems with base operations and maintenance, or safety.

**Objective: Monitor pesticide/herbicide applications within Detachment Norco.**

***Compliance and Stewardship Tasks:***

- Ensure pesticide/herbicide applications will not negatively affect terrestrial or aquatic wildlife species by complying with all federal, military, state, and local environment standards and obtain necessary permits (contractors) for pesticide/herbicide application.

## **5.8 Special-status Species: Threatened and Endangered (T&E) Species and Species of Special Concern Management**

DoD policy states that T&E species and their habitats shall be protected and managed according to the ESA and implementing USFWS regulations and agreements. Descriptions of federal and state protection categories are provided in Section 3.2.5. DoD components with land management responsibilities shall maintain records of funds expended for T&E species management. When compatible with military mission and USFWS requirements and recommendations, DoD components shall cooperate in studies, programs, plans, and experiments designed to enhance populations of T&E species.

No T&E or FSC were observed within Detachment Norco during recent surveys; however, species that have historically or have the potential to utilize habitats present within the

installation include the southwestern willow flycatcher and least Bell's vireo, coastal California gnatcatcher and burrowing owl. The following general compliance and protection objectives will assist in implementing and achieving the management goals for these species.

### **5.8.1 T&E Species and Federal Species of Special Concern Management Measures – Southwestern willow flycatcher, least Bell's vireo, coastal California gnatcatcher and burrowing owls.**

Marginal nesting habitat for the southern willow flycatcher and least Bell's vireo occurs at two locations on the installation: the riparian woodland and scrub near the northwest corner of the installation, and willow woodland mixed with nonnative trees along the lake margin north of the Lake Norconian Club. Both of these areas contain native and nonnative trees and shrubs, but are suitable in vegetation structure and density. Least bell's vireo breeds commonly along the nearby Santa Ana River (approximately 1 mile from site).

Although small patches of remnant coastal sage occur on the installation (Figure 7), there are no documented occurrences of the coastal California gnatcatcher. The nearest sightings of the species are in Norco Hills, approximately 2.4 miles east of Lake Norconian (CNDDDB 2013). Considering the proximity of known occurrences, it is possible that dispersing juveniles could appear on the installation, but nesting is unlikely given the extremely small size of remnant habitat for this species on the installation.

The burrowing owl was confirmed as a nesting species in 1996 (Aigner and Koehler, 1996) but the area containing the active nest is now part of the restricted access area that was not surveyed in 2008-2009. Anecdotal reports from security personnel on the installation, confirmed by the installation biologist, indicate that there has been recent occupation by burrowing owls in the grassy areas behind Buildings 501, 502 and 503. At least two burrows in this area contain rodent bones, indicating somewhat recent occupation. An additional area, near the northwest corner of Lake Norconian, is occupied commonly by California ground squirrels and the open habitat at this location is suitable for burrowing owls.

**Objective: Conserve and maintain riparian habitat within the installation for use by migratory birds.**

#### ***Compliance and Stewardship Tasks:***

- Monitor riparian habitats within the installation every five years for suitability of southern willow flycatcher and least Bell's vireo breeding habitat to determine if protocol surveys are warranted. Perform USFWS protocol survey every 3 to 5 years accordingly.
- Conserve and maintain willow riparian habitat on the property by for migratory birds by removing exotic species and replanting with native species as needed.

**Objective: Conserve and monitor coastal sage scrub habitat within the installation for coastal California gnatcatcher suitability.**

***Compliance and Stewardship Tasks:***

- Monitor coastal sage scrub within the boundaries of the installation every five years in order to evaluate the presence of breeding habitat for migratory bird breeding habitat.
- Consider the feasibility of improving disturbed buckwheat habitat in order to promote CSS diversity. Conservation activities may include planting CSS species known to occur in the local region and removing non-native grasses and forbs.

**Objective: Enhance, conserve and monitor potential burrowing owl habitat within the installation.**

***Compliance and Stewardship Tasks:***

- Determine presence of burrowing owls and manage for this species accordingly.
- Perform annual protocol-level surveys for burrowing owls using accepted County of Riverside methods if basewide avian surveys determine that this species is present onsite. All occupied burrows will be monitored and mapped during protocol-level surveys.
- If burrowing owls are breeding onsite, management strategies will be implemented to protect them, such as visibly marking active burrows and implementing a mowing buffer of 500 feet during the breeding/nesting season (i.e., February – August).

### **5.8.2 Benefits to Federally listed or Candidate Species**

The implementation of the INRMP would likely benefit any federally-listed or candidate species that have potential to occur within the installation. The compliance and stewardship tasks, as presented above for the southwestern willow flycatcher, coastal California gnatcatcher and burrowing owl are designed to enhance, conserve and maintain suitable habitat for these species within the installation.

## **5.9 Migratory Birds Management**

All neotropical migratory birds, which include many of the species found at the facility, are generally protected from "take" under the MBTA (50 CFR 10).

**Objective: Enhance, conserve, and monitor MBTA species and populations and associated habitat within Detachment Norco lands.**

***Compliance and Stewardship Tasks:***

- Monitor the suitable habitat within the installation every five years for the presence of MBTA species in accordance with Partners in Flight (PIF) guidelines.
- Develop and maintain a bird checklist for migratory and resident species that use the Detachment.
- Evaluate proposed activities and construction projects for their likelihood to kill, injure, or significantly disturb migratory birds and mitigate potential impacts.
- Conduct annual secretive bird surveys utilizing national protocols.
- Provide notice to USFWS in advance of conducting any action that is intended to take migratory birds and ensure that the environmental analysis of actions required by NEPA, or other established environmental review processes; evaluate effects of actions and plans on migratory birds.
- Participate in DoD's PIF program to conserve and manage neotropical birds and their habitat.

**5.10 Other Species of Regional Special Concern Management**

Several state “sensitive” species are known utilize the lake and upland habitats within the installation for roosting or breeding habitat such as the Cooper's hawk, great blue heron, redhead, horned lark, loggerhead shrike, American white pelican, double-crested cormorant, white-faced ibis, and black crowned Night-heron.

**Objective: Protect and conserve sensitive species and the habitat areas they utilize, particularly Lake Norconian and associated ponds.**

***Compliance and Stewardship Tasks:***

- Ensure that species of regional special concern are protected in the Landscape Management Plan and in its implementation.
- Update sensitive plant species surveys within the installation.
- Maintain an inventory and GIS database of species of regional special concern that have been identified through focused surveys.

**5.11 Pollinator Management**

Plant pollination by insects is essential to human health, global food webs, and protection of biodiversity. Pollination is a globally important ecosystem service. Detachment Norco is not currently managing for pollinator species; therefore, an assessment of current management cannot be made at this time.



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

***Compliance and Stewardship Tasks:***

- To the extent needed and feasible, collaborate with partners in conducting inventories and monitoring of populations of pollinators.
- As needed, develop BMPs to ensure that pollinator species are not adversely impacted by Detachment Norco activities.
- Revegetate with native species contained on the recommended plant list.
- Control the spread of invasive species.
- If needed, develop and implement a management program that supports bee relocation as opposed to bee eradication.

## **5.12 Climate Change and Regional Growth**

Scientific research indicates that global warming will have long-term, irreversible, adverse consequences on natural resources, including terrestrial and aquatic habitats. The California Wildlife Action Plan (CDFW) identifies climate change as one of four primary stressors affecting wildlife, along with growth and development, water management conflicts, and invasive species, and makes recommendations to include climate change science in restoration work. Models are the only way to project future changes for the Detachment Norco and the surrounding region, and to evaluate needed research, data collection, and potential management strategies. However the use of models to explore the potential implications of climate change is rife with uncertainty. A range of scenarios is possible using accepted models, and local data sets need to be developed and integrated through collaboration and consensus.

The recently updated guidance for Navy INRMPs (OPNAVINST 5090.1C CH-1) added 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, and this is incorporated in the strategy outline below.

**Objective: Adapt and mitigate the adverse impacts of climate change through annual goal setting based on science-based scenarios, targets, collaborative planning, and adaptive management.**

***Compliance and Stewardship Tasks:***

- Identify species and communities resilient/vulnerable to climate change impacts by collaborating, as feasible, with partners in conducting climate change vulnerability assessments.
- 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 resource management planning.
- To the extent necessary, improve the graphical depiction of the potential impacts of climate change scenarios for Detachment Norco to address anticipated shifts in species ranges and population abundances in climate change vulnerability assessments.
- Provide for the management of threatened, endangered, and other special status species such that changes in distribution and abundance may be understood in the context of climate change.
- Establish partnerships for collaboratively addressing climate change issues, as needed and feasible.

### **5.13 Agricultural Outleasing**

No agricultural outleasing occurs on Detachment Norco.

### **5.14 Geographic Information System (GIS) Management**

Detachment Norco uses GIS to manage information about the installation's environment and resources. GIS allows users to store and manipulate temporal and spatial data (e.g., maps, aerial photos, satellite images). It deals with data in vector (lines, points, and polygons) and raster (imagery) formats. Data can be displayed and manipulated to create maps. More importantly, GIS data are used to process and analyze information used in natural resources management. Primary GIS software consists of ArcGIS.

**Objective: Ensure the technically sound, practical and appropriate use of library and computer technology to manage, analyze, and communicate natural resource information in support of management decisions.**

#### ***Compliance and Stewardship Tasks:***

- As needed, develop a current military use map that shows environmental considerations as well as military facilities
- Store, analyze, and maintain data for research and survey projects involving natural resources on Detachment Norco, making the information accessible and readily available to multiple users.

## **5.15 Outdoor Recreation**

Outdoor recreation opportunities on Detachment Norco are centered on the 47-acre lake area (Figure 6). Current recreation activities include picnicking, walking, fishing, jogging, wildlife watching around the lake. Boating is to be provided in the near future.

The Detachment is not large enough to support all of the outdoor recreational demands that could be placed upon it by both military personnel and public organizations. Because of its limited capacity of its resources, and the restricted nature of military activities, the Detachment is limited in its ability to supply outdoor recreation opportunities to fulfill the desires of all non-military users. According to the Sikes Act (as amended), the Navy is required to provide outdoor recreation and interpretive opportunities to the public but only when it is compatible with military needs and security. Outdoor recreation activities are intended to support the wise stewardship of DoD's natural resources. In the event of potential conflicts of use, sound biological management practices shall take precedence.

Generally public access is restricted by Navy Security requirements. However, public access to DoD properties for outdoor recreation may be allowed whenever compatible with mission activities and other considerations such as security, safety, or resource sensitivity.

### **5.15.1 Birding**

An opportunity exists for Detachment Norco personnel to observe wildlife during breaks and lunch hours. Although the lake is used by other wildlife, birds are the most numerous and are often easier to view by casual observers. Birds use the open lake and lake-margin for feeding, nesting, resting during migration, and refuge during the hunting season (USNPS 1995). Watchable Wildlife programs and similar programs that facilitate the public's ability to view wildlife in a natural setting are encouraged on Navy lands. However, military security is top priority on Detachment Norco.

### **5.15.2 Fishing**

Lake Norconian is an inland warm water lake with stocked largemouth bass, bluegill, sunfish, catfish, mosquito fish, and threadfin shad. Fishing is permitted anywhere along the shore of the lake. It is a very popular activity with retirees and other Detachment Norco personnel. The areas along the shore that are clear of vegetation receive heavier use than the vegetated areas. As a result some of these areas may become worn and eroded (USNPS 1995).

### **5.15.3 Outdoor Recreation Management Measures**

**Objective: Promote compatible, sustainable outdoor recreation opportunities while ensuring a healthy lake ecosystem.**

***Compliance and Stewardship Tasks:***

- Encourage wildlife watching by participating in public outreach programs and maintaining partnerships with organization such as the Audubon Society.
- Provide accessible recreation opportunities for disabled veterans and their families.
- Continue to provide existing fishing policy which includes:
  - Fishing permits and fishing licenses shall be renewed annually.
  - Each license holder will be required to provide counts of fish caught.
  - Monitor fishing through new licenses and fish caught counts.
  - Document all applicable fishing rules.
  - All persons 16 years of age and older shall have in their immediate possession a valid California license and follow current CDFW regulations.
  - The allowed method of take is hook and line only.
  - Catch restrictions – catch and release permitted only.
- Develop new fishing policy that will evaluate whether catch and release only is a reasonable fisheries management requirement.

**5.16 Cultural Resources Management**

NAVFAC Southwest has prepared an ICRMP for Detachment Norco. The ICRMP presents cultural resources management goals and tasks for the DoN to implement at Detachment Norco in order to comply with requirements set forth in Sections 106 and 110 of the NHPA, DoDI 4715.03: *Environmental Conservation Program*, and OPNAVINST 5090.1C CH-1 CH-27: *Cultural Resources Management*. In 2010, research and evaluations were completed for all buildings and structures at Detachment Norco. The Navy has determined that, other than the existing Lake Norconian Club Historic District and one WWII era gate, the remaining buildings and structures are not eligible for the NRHP.

Natural resources management activities that may require consultation under Section 106 of the NHPA include, but are not limited to, those activities that are ground disturbing or may have an adverse affect on the Lake Norconian Club Historic District. Natural resource management activities that may result in an adverse affect to these resources include: all ground disturbing activities associated with land and facility management (landscaping and planting), habitat management, pond and wetland construction, and maintenance (terrain modification for erosion control and restoration). Because the historic landscape within the Lake Norconian Club Historic District is a contributing element, landscape improvements should be consistent with the historic character of the landscape.

Activities in this INRMP that have the potential to affect cultural resources will comply with all applicable federal and state cultural resources requirements. Management

measures intended to maintain and preserve the cultural resources at Detachment Norco are presented below.

### **5.16.1.1 Cultural Resources Management Measures**

**Objective 1: Preserve the physical and ecological integrity of known Lake Norconian Club Historic District resources.**

*Compliance and Stewardship Tasks:*

- Continue to manage cultural resources in accordance with the priorities set forth by the ICRMP.
- Monitor for the presence of historic sites whenever projects involving ground disturbance are proposed in areas likely to contain cultural resources.

### **5.17 Bird-Animal Aircraft Strike Hazard**

Military activities on Detachment Norco do not contribute to bird-aircraft strike hazards.

### **5.18 Wildland Fire Management**

Detachment Norco does not currently have an adopted Wildland Fire Management Plan.

### **5.19 Conservation Law Enforcement**

Detachment Norco does not have any conservation law enforcement; there are no law enforcement personnel dedicated to conservation law enforcement on the installation.

### **5.20 Training of Natural Resources Personnel**

**Objective 1: Provide sufficient technical support to staff as well as training and networking opportunities to achieve INRMP goals and objectives.**

In order to support compliance with environmental laws, ensure environmental staff receive ongoing training and professional development through attendance at workshops, classes, training, and conferences.

### **5.21 Coastal/Marine Environment**

Detachment Norco is not located within coastal or marine environments.

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## **SECTION 6 IMPLEMENTATION**

### **6.1 Introduction**

Implementation of this revised INRMP will be realized through the accomplishment of specific goals and objectives as measured by the completion of projects described herein. A summary list of objectives and associated projects to be implemented under this INRMP is provided in Appendix L and includes an implementation schedule, legal drivers, and funding classifications. An INRMP is considered implemented when the installation performs the following:

- Actively requests, receives, and uses funds for “must fund” projects and activities (See Section 6.2 below for a description of “must fund”);
- Ensures that sufficient numbers of professionally trained natural resources management staff are available to perform the tasks required by the INRMP;
- Coordinates annually with cooperating agencies;
- Documents specific INRMP action accomplishments undertaken each year.

The Navy intends to implement this INRMP within the framework of regulatory compliance, mission obligations, anti-terrorism and force protection limitations and funding constraints. Any requirement for the obligation of funds for projects in this INRMP shall be subject to availability of funds appropriated by Congress, and none of the proposed projects shall be interpreted to require obligation or payment of funds in violation of any applicable law, most notably the Anti-Deficiency Act (31 USC 1324, *et seq.*).

Successful implementation of this INRMP will depend upon not only the guidelines set up and projects described, but how well these are translated into performance work statements (who will do what and with what money), project lists and scopes of work, and a workload plan. It must fit into the formal EMS established at Detachment Norco for integrating environmental considerations into day-to-day activities across all levels and functions of Navy enterprise. Detachment Norco depends on natural resources for the sustainability of many mission-related programs (i.e. aesthetics and recreation for military personnel, stormwater collection and transport, etc.) and will manage natural resources to ensure sustainable use. This INRMP is not intended to impair the ability of Detachment Norco to perform its mission. However, the INRMP does identify usage restrictions on sensitive attributes such as environmentally sensitive habitat areas. Appendix A provides a natural resources constraints map for the installation.

### **6.1.1 Responsibility**

The responsibility for development, revision, and implementation of INRMPs is shared at every level among many different command elements. The SECNAV Instruction 6240.6E assigns responsibility for establishing, implementing, and maintaining the natural resources programs under the jurisdiction of SECNAV to the CNO/CNIC. Regional command and coordination is provided by the major claimant, Navy Region Southwest, and the Regional Environmental Coordinator. These entities ensure the programming of resources necessary to establish and support an integrated natural resources program consistent with legislative requirements, DoD policy, and stewardship. As the Navy shore infrastructure continues to change through reorganization and regionalization, many natural resources functions that formerly were the responsibility of installation commanders have passed to these regional commanders and area coordinators as part of their responsibilities.

NAVFAC Southwest is responsible for providing technical assistance for both compliance and stewardship obligations, and to evaluate and validate requests for funds for natural resources projects. This engineering activity administers the Navy forestry and agricultural outlease budgets, fish and wildlife/hunting and fishing fee and permit projects, contracts, and cooperative agreements. Upon request from CNO/CNIC, NAVFAC Southwest coordinates natural resources requirements with other federal, state, or local agencies, including the acquisition of INRMP mutual agreements between the Navy, USFWS, and state fish and wildlife agencies. Natural resources program information needed to satisfy reporting requirements, legislative information requests, and to support project requests is also maintained by NAVFAC Southwest. This information is collected in the NAVFAC Natural Resources Data Call Station and applicable GIS programs.

The installation Commanding Officer is responsible is to act as the natural resource steward of lands under their jurisdiction and integrate natural resources requirements into the day-to-day decision-making process. To accomplish this, they involve appropriate tenant, operational, training, or research and development commands in the INRMP review process to ensure no net loss of the military mission. At their discretion they may bring in 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 (5090.1C CH-1).

Formal adoption of an INRMP by the Commanding Officer constitutes a commitment to seek funding and execute, subject to the availability of funding, all must fund projects and activities in accordance with specific time frames identified in the INRMP. Under the Sikes Act (as amended), any natural resources management activity that is specifically addressed in the INRMP must be implemented (subject to availability of funds). Failure to implement the INRMP is a violation of the Act and may be a source of litigation. Since the Sikes Act (as amended) requires implementation of the INRMP, there is a clear fiscal connection between INRMP preparation,

revision, implementation, and funding. Funding to implement natural resources management will largely come from program sources (through CNRSW).

Further, a SECNAV memorandum (12 August 1998) stated:

*"All projects essential to fulfill the selected alternative (mix of management objectives) must be implemented within a timeframe indicated in the INRMP. Any deviation or change from achieving the selected alternative may require supplementation to the EA or EIS and an opportunity for public comment."*

Adequate training of natural resource personnel is important to the success of military sustainability and land management. The 5090.1C CH-1 requires that Navy commands develop, implement, and enforce the management plan through personnel with professional training in natural resources.

*"Natural resources programs shall support military readiness and sustainability and commands shall assign specific responsibility, provide centralized supervision and assign professionally trained personnel to the program. Natural resources personnel shall be provided an opportunity to participate in natural resource management job training activities and professional meetings."*

The Sikes Act (as amended) (Section 670g) also addresses this need, as well as DoDI 4715.03 (18 March 2011).

### **6.1.2 Federal Anti-Deficiency Act**

Detachment Norco intends to implement recommendations in this INRMP within the framework of regulatory compliance, national Navy mission obligations, anti-terrorism and force protection limitations, and funding constraints. 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 USC 1341 *et seq.*).

### **6.1.3 Staffing**

The Sikes Act (as amended) 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.

NAVWPNSTA Seal Beach is responsible for identifying personnel requirements to accomplish INRMP goals and objectives. The Commanding Officer, via his Environmental staff and

Conservation Manager, is responsible for providing input into budgeting and staffing processes CNRSW and higher authority endorse these requests and allocate budgetary and personnel resources. Personnel assigned to natural resources management, such as the installation Environmental Director and the installation Conservation Manager, are the core staff responsible for overseeing implementation of 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.

#### **6.1.4 Annual Update, Review and Metrics**

DoD policy requires installations to review INRMPs annually in cooperation with the two primary parties to the INRMP (USFWS and the state fish and wildlife agency). Annual reviews facilitate “adaptive management” by providing an opportunity for the parties to review the goals and objectives of the plan, as well as establish a realistic schedule for undertaking proposed actions. The Navy Natural Resources Metrics is a guide for addressing annual INRMP review. These Natural Resources Metrics can be used to gather and report essential information required by Congress, EOs, existing U.S. laws, and the DoD. There are seven focus areas that comprise the Natural Resources Metrics to be evaluated during the annual review of the Natural Resources Program/INRMP.

1. Ecosystem Integrity
2. Listed Species and Critical Habitat
3. Fish and Wildlife Management for Public Use
4. Partnership Effectiveness
5. Team Adequacy
6. INRMP Project Implementation
7. INRMP Impact on the Installation Mission

A full copy of the most recent Natural Resources Metrics evaluation is presented in Appendix E.

Section 101(b)(2) of the Sikes Act (as amended) [16 USC 670a(b)(2)] specifically directs that the INRMPs be reviewed "as to operation and effect" by the primary parties "on a regular basis, but not less often than every five years," emphasizing that the review is intended to determine whether existing INRMPs are being implemented to meet the requirements of the Sikes Act (as amended) and contribute to the conservation and rehabilitation of natural resources on military installations. The OUSD guidance (17 May 2005) states that joint review should be reflected in a memo or letters.

Recent guidance on INRMP implementation interpreted that the five-year review would not necessarily constitute a revision; that this would occur only if deemed necessary. The Annual Review process is broadly guided by the Natural Resources Conservation Program (DoDINST 4715.03 [DoD 2011]) and by OPNAVINST 5090.1C CH-1, Environmental and Natural Resources Program Manual (11 July 2011). Policy memoranda in 2002, supplemented in 2004, clarified procedures for INRMP reviews and revisions:

- DUSD [I&E] Policy Memorandum 10 October 2002, which replaced a 1998 policy memorandum.
- Assistant Deputy Under Secretary of Defense for Environment, Safety and Occupational Health Policy Memorandum (01 November 2004).
- Assistant Deputy Under Secretary of Defense Environment, Safety and Occupational Health Policy (September 2005 Memorandum).

The INRMP Implementation Guidance (10 October 2002 Memorandum) improved coordination external to DoD (USFWS, state agencies, and the public) and internal to DoD (military operators and trainers, cultural resources managers, pest managers). It also added new tracking procedures, called metrics, to ensure proper INRMP coordination occurred and that projects were implemented. These natural resources metrics have been updated, and are available on the Navy Conservation website.

The 2002 guidance also required that each installation provide a notice of intent (NOI) to prepare or revise the INRMP. Each military installation now must request that USFWS and the state fish and wildlife agency participate in both the development and review of the INRMPs. Current coordination guidelines are that the USFWS field office is the appropriate entry point for military installations, and the USFWS Regional Sikes Act Coordinator is the liaison to facilitate INRMP review.

The Supplemental DoD INRMP Guidance (01 November 2004 Memorandum) further defined the scope of the annual and five-year review, public comment on INRMP reviews, and ESA consultation. A formal review must be performed by the parties at least every five years. Informal annual reviews are mandatory to facilitate adaptive management, during which INRMP goals, objectives, and “must fund” projects are reviewed, and a realistic schedule established to undertake proposed actions. The outcome of this joint review should be documented in a memorandum or letter summarizing the rationale for the conclusions the parties have reached. This written documentation should be jointly executed or in some other way reflect the parties’ mutual agreement.

The Supplemental DoD INRMP Guidance (September 2005) stated that all INRMPs must address resource management on all of the lands for which the subject installation has real property accountability, including lands occupied by tenants or lessees or being used by others pursuant to a permit, license, right of way, or any other form of permission. Per this memo, installation commanders may require tenants, lessees, permittees, and other parties that request permission to occupy or use installation property to accept responsibility, as a condition of their occupancy or use, for performing appropriate natural resource management actions. This does not, however, obviate the need to address natural resource management on any such lands in the INRMP.

There is no legal obligation to invite the public either to review or to comment upon the parties' mutually agreed upon decision to continue implementation of an existing INRMP without revision. If the parties determine that substantial revisions to an INRMP are necessary, public comment shall be invited in conjunction with any required NEPA analysis.

In most cases INRMPs will incorporate by reference the results of an installation's previous species-by-species ESA consultations, including any reasonable and prudent measures identified in an incidental take statement. Neither a separate biological assessment nor a separate formal consultation should be necessary. Nonetheless, because the INRMP may include management strategies designed to balance the potentially competing needs of multiple species, it may be prudent to engage in informal consultation.

## **6.2 Funding and INRMP Implementation**

The Navy and Detachment Norco intend to implement recommendations in this INRMP within the framework of regulatory compliance, national Navy mission obligations, anti-terrorism and force protection limitations, and funding constraints. Any requirement for the obligation of funds for projects in this INRMP shall be subject to the availability of funds appropriated by Congress, and none of the proposed projects shall be interpreted to require obligation or payment of funds in violation of any applicable federal law, including the Anti-Deficiency Act, 31 USC § 1341, et seq.

For the purposes of this INRMP, the terms stewardship and compliance 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 under the ESA, CWA, or MBTA. Alternatively, a project may be considered good land stewardship but is not considered an obligation for Detachment Norco 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 are competed among multiple installations. Current policy is, however, that they will eventually be funded.



The funding strategies described here are implemented when projects are defined and prioritized, as for this INRMP in Appendix L. The budgeting plan for the INRMP is based on programming and budgeting priorities for conservation programs described in 5090.1C CH-1.

### **6.2.1 Environmental Readiness Program Assessment Database**

Environmental Portal and EPR-Web is an optimized online database used to define all programming for the Navy's environmental requirements. EPR-Web records data on project expenditures, and provides immediate, web-based access to requirements entered by the multiple Navy environmental programs, including environmental compliance, pollution prevention, conservation, radiological controls, and range sustainment as related to environmental costs on military ranges. It is the Navy's policy to fully fund compliance with all applicable federal, state and local laws; EOs; and associated implementing rules, regulations, DoDIs and DoDDs, and applicable international and overseas requirements (OPNAVINST 5090.1C as amended). All natural resources requirements are entered into the EPR-Web and that they are available for review/approval by the chain of command by the dates specified in the Guidance letter that is provided annually by CNO (N45). This database is the source document for determining all programming and budgeting requirements of the Environmental Quality Program. EPR-Web is also the tool for providing the four ERL capabilities used in producing programming and budgeting requirements for the various processes within the budget planning system.

### **6.2.2 Navy Assessment Levels for Budget Prioritization**

The budget programming hierarchy for this INRMP is based on both DoD and Navy funding level classifications. The four programming and budgeting priority levels detailed in DoDI 4715.03 (18 March 2011) Natural Resources Conservation Program, implement policy, assign responsibilities, and prescribe procedures for the integrated management of natural and cultural resources on property under DoD control. Budget priorities are also described in 5090.1C CH-1, Environmental and Natural Resources Program Manual.

#### ***Navy Assessment Levels for Assigning Budget Priorities***

Four Navy ERLs have been established to enable capability-based programming and budgeting of environmental funding, and to facilitate capability versus cost trade-off decisions. ERL 4 is considered the absolute minimum level of environmental readiness capability required to maintain compliance with applicable legal requirements. Navy policy requires funding of all "must fund" projects, which the Navy INRMP guidance identifies as ERL 3 and ERL 4 projects. The Navy funding programming hierarchy of recurring and non-recurring projects consists of four ERLs. The definitions of ERL 1 through ERL 4 follow:

#### **1. Environmental Readiness Level 4 ("must fund")**

- Supports all actions specifically required by law, regulation, or EO.
- 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.
- Supports recurring administrative, personnel and other costs associated with managing environmental programs that are necessary to meet applicable compliance requirements.
- Supports minimum feasible Navy executive agent responsibilities, participation in OSD sponsored inter-department and interagency efforts, and OSD mandated regional coordination efforts.

## **2. Environmental Readiness Level 3 (“must fund”)**

- Supports all capabilities provided by ERL 4.
- Supports existing level of Navy executive agent responsibilities, participation in OSD sponsored inter-department and interagency efforts, and OSD mandated regional coordination efforts.
- 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.
- Supports proactive initiatives critical to the protection of Navy operational readiness.

## **3. Environmental Readiness Level 2**

- Supports all capabilities provided under ERL 3.
- Supports enhanced proactive initiatives critical to the protection of Navy operational readiness.
- Supports all Navy and DoD policy requirements.
- Supports investments in pollution reduction, compliance enhancement, energy conservation and cost reduction.

## **4. Environmental Readiness Level 1**

- Supports all capabilities provided under ERL 2.
- 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.
- Supports investments that demonstrate Navy environmental leadership and proactive environmental stewardship.

Budget priorities for threatened and endangered species management, especially compliance with a BO, receive the highest possible budgeting priority, and supports the Detachment Norco's need to avoid Critical Habitat designations under Section 4(b)(2) of the ESA, or Section 4(a)3 of the ESA (exemption from Critical Habitat designations for national security reasons). Currently no threatened or endangered species occur at Det. Norco.

### **6.2.3 DoD Funding Classifications**

Funds will be requested for tasks within this INRMP. The guidance on DoD funding classifications has been updated and Enclosure 4 of DoDI 4715.03 defines the four classes of conservation programs. The projects recommended in this INRMP have also been prioritized based on compliance and stewardship criteria provided in the hierarchy below. The first three listed below are considered "must fund" under Navy funding criteria as they are needed to maintain compliance with applicable laws and regulations.

#### ***Recurring Natural Resources Conservation Management Requirements***

These activities are needed to cover the 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, EOs, and DoD policies, or in direct support of the military mission. 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 record keeping, maintenance of natural resources conservation equipment, and compliance self-assessments.

#### ***Non-Recurring Current Compliance***

These projects and activities are needed to support: an installation currently out of compliance; signed compliance agreements or consent order; meeting requirements with applicable federal or state laws, regulations, standards, EOs, or policies; immediate and essential maintenance of operational integrity or military mission sustainment; and projects or activities that will be out of compliance if not implemented in the current program year.

#### ***Non-recurring Maintenance Requirements***

These projects and activities are needed to meet an established deadline beyond the current program year and maintain compliance. Examples include: compliance with future deadlines; conservation, GIS mapping, and data management to comply with federal, state, and local regulations, EOs, and DoD policy; efforts undertaken in accordance with non-deadline specific

compliance requirements of leadership initiatives; wetlands enhancement to minimize wetlands loss and enhance existing degraded wetlands; and conservation recommendations in BOs.

### ***Non-recurring Enhancement Actions Beyond Compliance***

These projects and activities 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: community outreach activities; educational and public awareness projects; restoration or enhancement of natural resources when no specific compliance requirement dictates a course or timing of action; and management and execution of volunteer and partnership programs.

## **6.2.4 Implementation Schedule**

This INRMP will become effective upon the acceptance and signatory release described in Section 6.1.1: Responsibility. Current projects, activities, and plans have been incorporated into the INRMP, as the plan serves as a formal structuring and integration of the existing natural resources management program.

Future work identified herein will be implemented as funding becomes available. Priorities identified in this INRMP will generally determine the order of implementation. The EPSO will determine what projects and activities are appropriate to initiate, given funding, at any particular time. The INRMP is meant to be flexible, dynamic, and adaptable to the immediate concerns and needs of natural resources management and the Navy mission.

### ***Program Monitoring***

The EPSO will be responsible for oversight and monitoring of the overall program identified within this INRMP. Cooperative projects among different Navy organizations will be monitored by the originating or controlling office as specified prior to project implementation.

## **6.2.5 External Assistance**

Opportunities for external assistance with natural resource programs at Detachment Norco are identified below.

### ***Other Agencies***

Detachment Norco recognizes the importance of cooperating with federal and state agencies in addition to private organizations. These organizations, in particular the INRMP signatory partners (USFWS, NOAA and CDFW) will continue to assist with implementation of various aspects of this INRMP.

### ***University Assistance***

Universities are an excellent source of assistance for research and provide resource specific expertise, as well as assistance with implementation of restoration activities. Collaborative investigations performed in conjunction with EPSO biologist provide the most likely and cost effective sources of assistance with implementation of this INRMP.

### ***Contractors***

Most projects can be carried out with Navy staff. Some projects, such as targeted surveys, may require contractor services or other federal agency services, because of a need for expertise or for necessary personnel. In accordance with Circular No. A-76, the federal government is mandated to use commercial sources to supply the products and services the Government needs. Contractors are able to provide a wide variety of specialties to aid Detachment Norco with implementation of this INRMP. Specialties range from NEPA documentation, vegetation surveys, vertebrate and invertebrate surveys, water quality surveys, production of management plans, and similar activities. Contractor supported projects require preparation of a request for proposal to acquire services, which should be considered during project planning, to ensure appropriate funding can be obtained.

## **6.3 Funding Sources**

In order to implement the various research, surveys, and programs necessary to fulfill the mission of Detachment Norco, funding must be identified and acquired. There are several avenues of funding available to the installation command to plan and implement projects and activities listed in Appendix L. These funding sources are discussed below in general terms, as this process is dynamic and is dependent annual budget fluctuations and the INRMP's continuously developing program.

These programs will be implemented using Navy personnel and program resources as much as possible; however, it is likely that contractors will accomplish many projects. The EPSO will identify projects that would be accomplished using contract vehicles, with existing contracts being used where possible and appropriate.

For large projects that involve different Navy organizations, representatives of these organizations would coordinate budgeting and scheduling to ensure that the project can be accomplished in the planned timeframe. Large-budget projects may not be completely funded in a fiscal year, requiring incremental funding over the term of the project.

In some cases, smaller, lower-priority projects may be conducted using unspent funds from other tasks or year-end fallout funding. Some projects may be accomplished with little or no funding required, such as those requiring only a change of policy or coordination and effort from volunteer labor. These tasks can be implemented virtually as soon as planning is performed.

### ***Fish and Wildlife Fees***

Fish and wildlife fees can be collected via sales of licenses to hunt or fish (Navy 2005a). They are authorized by the Sikes Act (as amended) and may be used only for fish and wildlife management on the installation where they are collected. Detachment Norco generates no fish and wildlife fees, and none are anticipated as hunting is prohibited and access for fishing is limited to authorized personnel only.

### ***Legacy Funds***

The Legacy Resource Management Program was enacted in 1990 to provide financial assistance to military natural and cultural resources management. The program assists with protection and enhancement of natural resources while supporting military readiness. Legacy projects may involve regional ecosystem management initiatives, habitat preservation efforts, archaeological investigations, invasive species control, and/or monitoring, and predicting migratory patterns of birds and other animals.

The Legacy Resource Management Program has three main components: stewardship, leadership, and partnership. Stewardship projects assist the military in sustaining its natural resources. Leadership initiatives provide programs that serve to guide and often become flagship programs for other military, scientific, and public organizations. Partnerships provide for cooperative efforts in planning, management, and research.

The Legacy Resource Management Program emphasizes five areas:

- Ecosystem approaches to natural resources management to maintain biological diversity and the sustainable use of land and water resources for the military mission and other uses.
- Interdisciplinary approaches that incorporate the often-overlapping goals of natural and cultural resources management. Legacy strives to take advantage of this by sharing management methodologies and techniques across natural and cultural resource initiatives.
- Promoting natural and cultural resources by public and military education and involvement.
- Application of resource management initiatives regionally. The Legacy Resource Management Program supports regional efforts between the military and other governmental and non-governmental organizations.
- Finally, development of innovative new technologies to provide more efficient and effective natural resources management.



### ***Operations and Maintenance Funds***

Funding sources for the natural resources program are derived from General and Administrative, Operations and Maintenance Navy (O&MN), and input into the Navy Environmental Program Requirements (EPR) system for funding. This primary budgetary source is the basis for maintaining the personnel and core programs inherent to the natural resources program. These appropriated funds are the primary source of resources to support must-fund, just-in-time environmental compliance (i.e. Navy Level ERL 4 projects). It is the responsibility of EPSO to manage the natural resources program budget and funding. Once O&MN funds are appropriated for core personnel and the program, funding can be justified for other project requirements.

### ***Forestry Revenues and Agricultural Outleasing***

Revenues from the sale of forest products and rents on agricultural outleases on Navy lands are a source of funding for natural resource management programs. Funds accumulated through the outleasing of agricultural lands on many installations are directed back into the natural resource program and reallocated throughout the Navy by NAVFAC Headquarters. It should be noted that, Detachment Norco has no forestry program or agricultural outleasing.

### ***Recycling Funds***

Installations with a Qualified Recycling Program may use proceeds for some types of natural resource projects.

### ***Special Initiatives***

The DoD or Navy may establish special initiatives to fund natural resource projects. Funding is generally available only for a limited number of projects. There are currently two such DoD initiatives:

- Streamside Forests: Lifelines to Clean Water is a DoD streamside restoration small grants program. Funds are available to military installations working in partnership with a local school and/or civic organization to purchase locally native plant material for small streamside restoration projects. Funds are distributed as reimbursements. Up to \$5,000 may be awarded per project. This is an ongoing program (no deadline), so proposals can be submitted at any time. Applications and additional information are available on the DENIX website.
- Sustaining Our Forests, Preserving Our Future is funding to ensure that the integrity of DoD forested lands remains intact.

### **6.3.1 Use of Cooperative Agreements and Partnerships**

Cooperative agreements are legal relationships between the Navy and states, local governments, institutions of higher education, hospitals, non-profit organizations or individuals. The principal purpose of the relationship is to transfer a thing of value to the state, local government, or other recipient to carry out a public purpose of support or stimulation authorized by a law of the U.S. instead of acquiring (by purchase, lease, or barter) property or services for the direct benefit or use of the U.S. Government. Cooperative agreements may be entered into for inventories, monitoring, research, minor construction and maintenance, and public awareness, to provide for the maintenance and improvement of natural resources or conservation research on DoD installations (DoDINST 4715.03). To use a cooperative agreement, substantial involvement is expected between the Navy and the state, local government, or other recipient when carrying out the activity contemplated in the agreement. Cooperative agreements provide a mutually beneficial means of acquiring, analyzing, and interpreting natural resources data, which can then be used to inform natural resources management decisions. Cooperative agreements are funded by the Navy and produce information that can be used to help resource managers achieve project-specific compliance with environmental laws. Authorization for cooperative agreements is arranged through NAVFAC.

Detachment Norco recognizes the importance of cooperating with federal and state agencies, in addition to private organizations. A current cooperative agreement and memorandum of understanding is listed below.

#### ***Cooperative Agreements (CAs)***

- CA between NAVWPNSTA Seal Beach Detachment Norco and City of Norco (Appendix J)

#### ***Memorandums of Agreement (MOAs)***

- MOA between Detachment Norco, City of Norco and CRC (Appendix J)

#### ***Cooperative Ecosystem Studies Units***

The Cooperative Ecosystem Studies Units (CESU) program is a working collaboration among federal agencies, universities, state agencies, non-governmental organizations, and other nonfederal institutional partners. The CESU National Network provides multidisciplinary research, technical assistance, and education to resource and environmental managers. Although the overall program is overseen by USDI, one of the participating agencies is DoD.

### **6.3.2 Research Funding Requirements**

Environmental program funding in the Navy is primarily based upon federally mandated requirements. Program managers are encouraged to seek outside funding for projects consistent with the INRMP, such as research, that will benefit natural resources on installations, but that are not directly related to federal mandates. New funding sources should be sought from federal, state, local, and nonprofit organizations with an interest in achieving the goals and objectives of this INRMP in partnership with Detachment Norco. Any such funding would need to be consistent with authorization to receive and use such funds. These will often require cost-sharing. This funding opportunity should be sought for projects that are not “must fund” items, tied directly to immediate regulatory compliance. Examples are watershed management, habitat enhancement, or wetland restoration.

### **6.3.3 Non-DOD Funding Sources**

There are a number of grant programs available for natural resource 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 be able to partner with other groups to propose eligible projects. One example grant program is listed below, but many more are available.

The National Association of Counties, National Association of Service and Conservation Corps, National Fish and Wildlife Foundation, and Wildlife Habitat Council sponsor the Five Star Restoration Challenge Grants program, in cooperation with EPA, NMFS and other sponsors. This program provides modest financial assistance (\$5,000 to \$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/>.

## **6.4 INRMP IMPLEMENTATION SUMMARY AND SCHEDULE**

The objectives and strategies that support INRMP implementation are identified in detail in Section 5 and a list of projects is provided in Appendix L. The implementation schedule identified in Appendix L is suggested for long-term planning purposes and is reviewed annually. The schedule may be modified based on need, available funding, resources, seasonal requirements, and the results of the annual metrics evaluation.

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**APPENDIX A**  
**CONSTRAINTS MAP**

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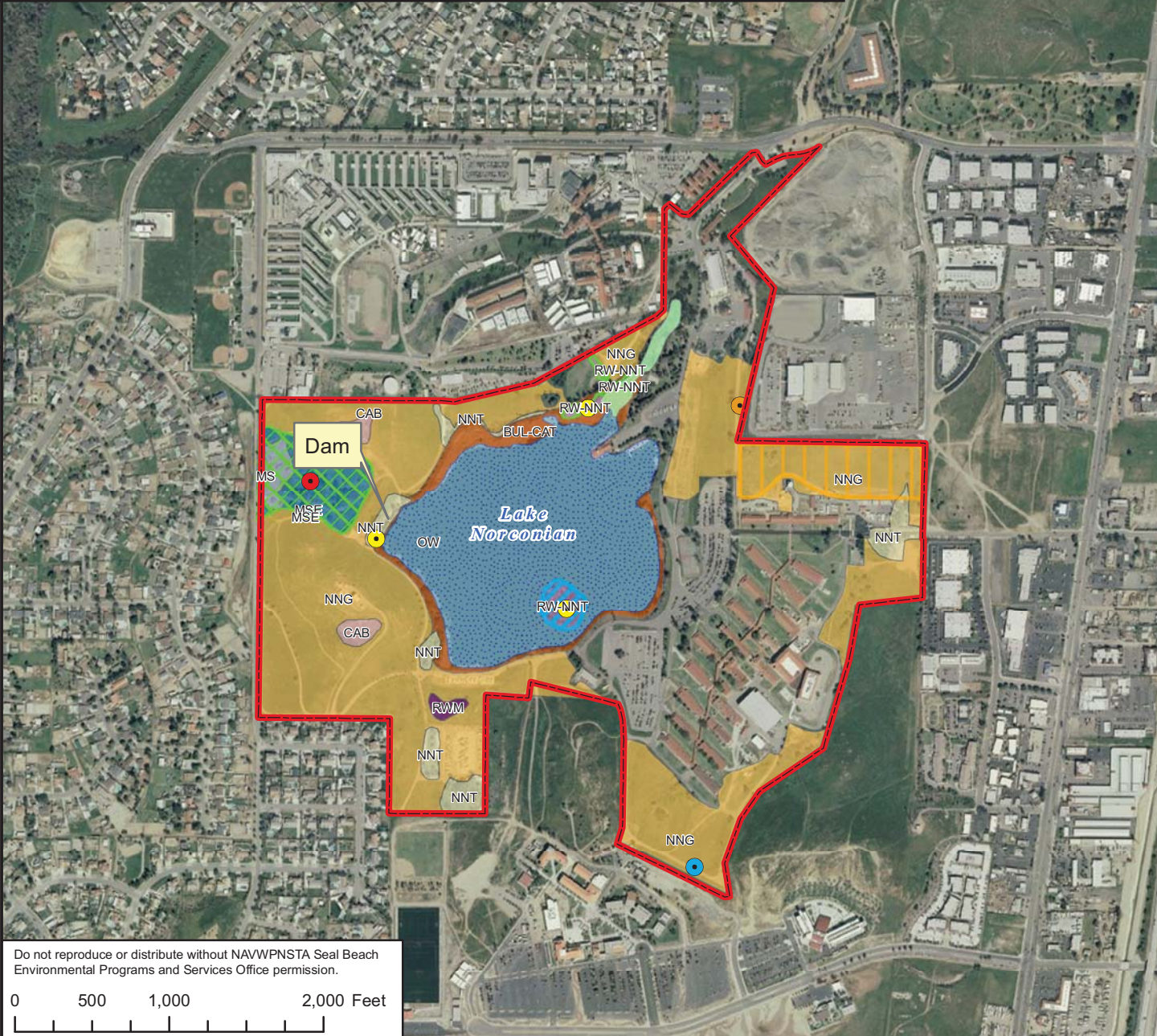
**Legend**

**Bird Sightings**

- 1996 Sighting Burrowing Owl
- Cooper's Hawk Nest
- Rufous-crowned Sparrow
- Yellow-breasted Warbler
- Detachment Norco Boundary
- Approximate Location of the 4 Ponds
- Potential Burrowing Owl Burrows
- Great Blue Heron Rookery Site
- Suitable Least Bell's Vireo and Southwestern Willow Flycatcher Habitat

**Vegetation Communities**

- BUL-CAT** - Bullrush-Cattail Series
- CAB** - California Buckwheat Series (Disturbed)
- MS** - Mulefat Series
- MSE** - Mulefat Series (with exotic components)
- NNG** - California Annual Grassland Series
- NNT** - Nonnative Trees
- OW** - Open Water (Lake Norconian)
- RW-NNT** - Red Willow Series (with Nonnative Trees)
- RWM** - Red Willow Series (with Mulefat)



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**Constraints Map**  
**Naval Weapons Station Seal Beach Detachment Norco**  
**Norco, California**

APPENDIX  
A



## **APPENDIX B**

### **GLOSSARY**

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# Glossary

<b>Annual Increment</b>	A management section addendum prepared annually, to facilitate implementation of a NRM plan section. The annual increment concisely provides detail and cost estimates of proposed work or projects to be accomplished during a fiscal year.
<b>Bathymetry</b>	Science of mapping the contours of a body of water.
<b>Best Management Practices (BMP)</b>	Within the scope of this chapter, BMP's are practical, economical and effective management or control practices that will reduce or prevent water pollution. Usually BMPs are applied as a system of practices based on site-specific conditions rather than a single practice. BMPs are usually prepared by State agencies for land disturbing activities related to agriculture, forestry, and construction.
<b>Biodiversity</b>	The diversity of life and its processes: living organisms, the genetic differences among them and the communities and ecosystems in which they occur.
<b>Biological Assessment</b>	A biological evaluation conducted as part of the interagency regulations under the Federal Endangered Species Act (FESA). The purpose of the assessment is to allow the regulatory agency to determine whether or not the proposed action is likely to adversely affect the continued existence of a species listed as endangered or threatened, or proposed for listing.
<b>Biome</b>	A life zone on earth, such as grassland, or tropical rain forest.
<b>Bioregion</b>	A large collection of natural communities with a common weather regime, for instance Mediterranean climate.
<b>Botanical Areas</b>	Sites with individual specimens (e.g. a state or national champion tree) or communities (e.g. spruce-fir forests on southern mountain tops) of plants that are important because of their form, color, location, life history, arrangement, rarity, cultivation, or other features.
<b>Candidate Species</b>	Any species being considered by the Secretary of Interior or Commerce for listing under the Endangered Species Act as an endangered or a threatened species, but not yet the subject of a proposed listing.
<b>Carrying Capacity (Operational)</b>	The maximum amount of military operations a given area can support without causing permanent environmental damage.
<b>Carrying Capacity (Outdoor Recreation)</b>	The maximum sustainable amount of recreation activity and number of participants a land or water area can support in a manner compatible with the objectives of the NRM plan and without impairing or degrading existing natural resources.
<b>Carrying Capacity (Wildlife)</b>	The maximum density of wildlife that a particular area or habitat will support on a sustained basis without deterioration of the habitat.
<b>CESA</b>	California Endangered Species Act, as amended. The CESA grandfathered all rare animal species into threatened animal species under the act, but did not do the same for plant species. Thus there are three categories for plants in California: endangered, threatened, and rare. Official list is in California Code of Regulations, Title 14, Section 670.5.



<b>Conservation</b>	The prudent care, protection, and management of natural resources that best reflect sound resources stewardship for present and future generations.
<b>Critical Habitat</b>	The geographic area on which are found those physical or biological features essential to the conservation of a species listed and published by the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS) under the authority of the FESA.
<b>Damages</b>	The amount of money calculated to compensate for injury to, destruction of, loss of, or loss of use of natural resources, including the reasonable costs of assessing or determining the damage, which will be recoverable by a trustee.
<b>Disclosure</b>	As used here, disclosure refers to California laws that require that the potential environmental effects of a project be disclosed to the public and the governing body that would approve the project. disclosure in California is provided mainly through the California Environmental Quality Act (CEQA). It is also provided through Section 7 of the Federal Endangered Species Act.
<b>Dissolved Oxygen</b>	The concentration of oxygen in water at a specified temperature; used to measure water's ability to support aquatic life.
<b>Ecological Reserve Areas</b>	A physical or biological unit in which current natural conditions are maintained insofar as possible by allowing natural, physical and biological processes to prevail without human intervention, except under unusual circumstances when deliberate manipulation may be utilized to maintain the unique feature(s) that the ecological reserve area was established to protect.
<b>Ecological Risk Assessment</b>	A quantitative and/or qualitative appraisal of the actual or potential effects of a hazardous waste (HW) site on plants and animals other than people or domesticated species.
<b>Ecosystem</b>	A system formed by the interaction of a community of organisms with each other and the environment.
<b>Ecosystem Management</b>	Ecosystem management in DoD draws on a long-term vision of desired future ecological conditions, integrating ecological, economic and social factors. The goal of ecosystem management is to maintain and improve the sustainability and native biological diversity of ecosystems while supporting human needs, including the military mission.
<b>Endangered or Threatened Species</b>	A species of fauna or flora that has been listed by the USFWS or the NMFS for special protection and management under the ESA.
<b>ESA</b>	See FESA.
<b>Eutrophic</b>	Waters that are in a very nutrient-rich state, resulting in high organic production rates.
<b>Exotic Species</b>	Species that occur in a given place, area, or region as the result of direct or indirect, deliberate or accidental introduction of the species by human activity, and for which introduction has permitted the species to cross a natural barrier to dispersal.
<b>FESA</b>	Federal Endangered Species Act, as amended. Official federal listing of endangered and threatened animals published in the Federal Register.



<b>Fish and Wildlife Cooperative Plan</b>	A plan for the cooperative management of fish and wildlife on a military installation by the host military activity, and the appropriate Federal and State fish and wildlife agencies as required by the Sikes Act.
<b>Fish and Wildlife Management</b>	A coordinated program of actions designed to preserve, enhance and regulate indigenous wildlife and its habitats, including conservation of protected species and non-game species, management and harvest of game species, bird aircraft strike hazard (BASH) reduction, and animal damage control.
<b>Game Species</b>	Fish and wildlife that may be harvested per applicable Federal and State hunting and fishing laws.
<b>Grounds</b>	All land areas not occupied by buildings, structures, pavements, and other facilities. Depending on the intensity of management, grounds may be classed as improved, as those near buildings, semi-improved, or unimproved.
<b>Habitat</b>	An area where a plant or animal species lives, grows, and reproduces, and the environment that satisfies their life requirements.
<b>Injury</b>	Any adverse change in a natural resource or impairment of a service provided by a resource relative to baseline, reference, or control conditions. Injury incorporates the concepts of “destruction,” “loss”, and “loss of use.”
<b>Integrated Natural Resources Management Plan (INRMP)</b>	An integrated plan based on ecosystem management that show the interrelationships of individual components of natural resources management (e.g. fish and wildlife, forestry, land management, public access) to mission requirements and other land use activities affecting an installation’s natural resources as per OPNAVINST 5090.1B.
<b>Land Management</b>	Programs and techniques to manage lands, wetlands, and water quality, including soil conservation, erosion control and nonpoint source pollution, surface and sub-surface waters, habitat restoration, control of noxious weed and poisonous plants, agricultural outleasing, range management, identification and protection of wetlands, watersheds, floodplains management, landscaping, and grounds maintenance.
<b>Landscape</b>	This term is gaining increasing importance in conservation planning. The landscape contains more than one natural community or habitat and allows attention to be paid to both biodiversity and the need to link natural communities and habitats to support biodiversity. The term linkage is sometimes used to mean to link.
<b>Listed</b>	A plant or animal species that had been determined by the state or federal government to be threatened with extinction.
<b>Memorandum of Agreement (MOA)</b>	The written result of Section 106 consultation, signed by the Navy, the SHPO, and the Advisory Council, which resolves conflicts between a Navy undertaking and preservation requirements by stipulating measures to reduce adverse effects or accepts adverse effects as being in the public interest.
<b>Mitigation</b>	A lessening, or alleviation, of adverse effects from Navy undertakings on National Register resources, carried out as part of a mitigation plan. Mitigation is required under Section 106 of the NHPA, when adverse effects on National Register resources are unavoidable.
<b>Multiple Use</b>	The sustainable use of natural resources for the best combination of purposes to meet the long-term needs of the DoD and the public.

<b>Natural Areas</b>	Managed areas suitable for demonstrations, education, and research. Sites should demonstrate the computability of different resource uses and sustained yield production.
<b>Natural Community</b>	This term generally refers to a vegetation community, such as southern coastal sage scrub, but it is used to encompass all of the habitat, ecosystems, and plant and animal species found within the community.
<b>Natural Resources</b>	Landforms, soils, waters, and their associated flora and fauna.
<b>Natural Resources Damage Assessment</b>	The process of collected and analyzing information to determine injury to, or destruction of, or loss of, natural resources, and the assessment of damages for that injury, including the costs of assessing the injury, loss of destruction resulting form a past or present HW release or oil spill.
<b>Natural Resources Management (NRM) Plan</b>	A 5-year planning document that guides legally and ecologically sound, cost effective management of natural resources to maximize benefits for the installation and neighboring community. The NRM Plan addresses all land, agriculture, for est, fish, and wildlife and outdoor recreation resources of the installation. (Superceded by INRMP.)
<b>Natural Resources Management Procedural Manuel (NRMPM)</b>	Reference which provides comprehensive guidance for implementing requirements of pertinent laws, EOs, and Federal regulations, DoD directives, SECNAV and OPNAV instructions. (OPNAVINST 5090.1B)
<b>Natural Resources Management Professional</b>	Individual with and undergraduate or graduate degree from and accredited U.S. college or university in a natural resources related science and who has the responsibility for managing natural resources on a regular basis.
<b>Natural Resources Trustee</b>	Federal trustees are those agencies who have statutory responsibilities with regard to protection or management of natural resources or stewardship responsibilities as an manager of Federally owned land. Sate agencies and Indian tribes may also be trustees.
<b>Non-Game Species</b>	Fish and wildlife species not classified as game species and that are not harvested for recreation or subsistence purposes.
<b>Nonpoint Source (NPS) Pollution/Polluted Runoff</b>	Pollution caused by diffuse sources that are not regulated as point sources and normally associated with runoff from construction activities, urban, agricultural and silvicultural runoff, and other land disturbing activities such as military training and operations that disturb lands, soils, and waters. NPS pollution can result form land runoff, precipitation, atmospheric deposition, or percolation. This definition is necessarily general; legal and regulatory decisions have sometimes resulted in certain sources being assigned to either the point or NPS categories because of considerations other that their manner of discharge. For example, irrigation return flows are designated ad “non-point source” by Section 402(1) of the CWA, even though the discharge is through a discrete conveyance.
<b>Noxious Weeds</b>	Plant Species identified by Federal or State agencies as requiring control or eradication.

<b>Outdoor Recreation</b>	Program, activity, or opportunity dependent on the natural environment. Examples are picnicking, bird-watching, off-road vehicle use, hiking, wild and scenic river use, and primitive camping. Developed or consorted facilities such as golf courses, tennis courts, riding stables, lodging facilities, boat launching ramps and marinas are not included.
<b>Outdoor Recreation Management</b>	Management of natural resources to provide recreation opportunities that are sustainable, within the military mission, within established carrying capacities, and consistent with the natural resources upon which they are based. Outdoor recreation shall be predominantly muscle powered activities that will not impair or degrade natural resources.
<b>Planning Level Survey/Inventory of Biological, Cultural, or Earth Resources</b>	An inventory of sensitive and significant resources which must be identified in order to prevent impairment of the military mission or meet regulatory requirements.
<b>Programmatic Agreement (PA)</b>	A written agreement among the Navy, SHPO, and Advisory Council on Historic Preservation (ACHP) that streamlines Section 106 review consultations. A PA stipulates how an entire program or class of undertakings repetitive in nature or similar in effect will be carried out so as to avoid or mitigate adverse effects on National Register resources. When the PA is drafted in conjunction with an Historic and Archeological resources Protection (HARP) Plan, the HARP Plan lists the type(s) of undertakings that may be pursued without additional review and indicates management policies for each type of undertaking that will minimize adverse effects.
<b>Prohibition</b>	As used here prohibition refers to laws in California that restrict activities directly affecting rare plants. This includes the Federal Endangered Species Act, the California Endangered Species Act, and the California Native Plant Protection Act.
<b>Projects</b>	Includes studies, plans, surveys, inventories, and land/water treatments as well as physical improvements.
<b>Proposed</b>	The final administrative stage before a plant or animal species is included on a threatened, rare, or endangered species list. Government receives public comment during this period regarding the proposed listing.
<b>Proposed Species</b>	Any species of fish, wildlife or plant that is proposed in the Federal Register to be listed under Section 4 of the ESA.
<b>Renewable Natural Resources</b>	Natural resources such as forests and wildlife that replace themselves in a relatively short time and are capable of providing sustained yields.
<b>Riparian Areas</b>	Areas closely related to or bordering rivers, streams, lakes, arroyos, playas, riparian bottoms, etc.
<b>Salvage</b>	The act of transplanting or collecting seed for replanting in a protected place sensitive plants that would otherwise be destroyed.
<b>Scenic Areas</b>	Areas of superior natural beauty or scenic splendor that merit special management to preserve their qualities.
<b>Section 7</b>	Section 7 of the Federal Endangered Species Act specifies that federal agencies must consult with the U.S. Fish and Wildlife Service regarding activities that could affect listed species.

<b>Section 9</b>	Section 9 of the Federal Endangered Species Act prohibits violations of the act, including take of listed fish and wildlife species. It prohibits the destruction of listed plant species on federal land or on private land when done in knowing violation of a state law.
<b>Section 10(a)</b>	Section 10(a) of the Federal Endangered Species Act. this section provides for permits to take listed species under certain conditions.
<b>Section 106</b>	Section 106 of the National Historic Preservation Act requires Federal agencies to take into account the effects of their actions on historic properties and seek comments from an independent reviewing agency, the Advisory Council on Historic Preservation.
<b>Sensitive</b>	Highly responsive or susceptible to modification by external agents or influences.
<b>Sensitive Habitat</b>	Land, water and vegetation needed to maintain one or more sensitive species.
<b>Sensitive Species</b>	Those species Federally listed as endangered or threatened under the Endangered Species Act, proposed for listing, or candidate status.
<b>Significant</b>	Resources identified as having special importance, or as having or likely to have more influence on a particular aspect of the environment than other components.
<b>Species of Special Concern</b>	Designation by California Department of Fish & Game for taxa of concern to the state's Natural Diversity Data Base (NDDDB). Not a legal or protection status, though these less common species may be listed in the future.
<b>State Listed Species</b>	Any species of fish, wildlife or plant that is protected by an appropriate State agency as issued in a State's endangered species law and other pertinent regulations. In California, species are listed under the California Endangered Species Act (CESA) by the California Department of Fish & Game Committee.
<b>Stewardship</b>	The responsibility to inventory, manage, conserve, protect, and enhance the natural resources entrusted to one's care in a way that respects the intrinsic value of those resources, and the needs of present and future generations.
<b>Sustainable Yield</b>	Production of renewable natural resources at a level such that harvest or consumptive use does not exceed net growth.
<b>Take</b>	The Federal Endangered Species Act defines take as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."
<b>"Watchable Wildlife"</b>	Recreational viewing of wildlife under a cooperative, nation-wide program.
<b>Water Birds</b>	Those families of birds of which most of all members are associated with fresh- or-salt-water habitats
<b>Waterfowl</b>	Any of the larger swimming birds frequenting the margin of lakes, especially ducks, geese and swans.
<b>Watershed</b>	The ridge or crestline dividing two drainage areas: the area drainage by a river or stream.
<b>Wetlands</b>	Areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and, that under normal circumstances support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Section 328 of Reference (ad) and (i) of DoDI 4715.03.

<b>Wildlife Management</b>	The practical application of scientific and technical principles to wildlife populations and habitats so as to manage such populations essentially for ecological, recreational, and/or scientific purposes.
<b>Zoological Areas</b>	Sites with animals that are significant because of their visibility, rarity, uniqueness, ecologically significant impact on land character, or other features. Examples are prairie dog towns, beaver ponds, raptor or other large bird nest sites, prairies chicken booming grounds, etc.

Glossary Sources:

Department of Defense (DoD). 2011. Draft Department of Defense Manual (DoDM) 4715.03 Integrated Resources Management Plan (INRMP) Implementation. 14 January.

U.S. Dept. of the Navy (DoN). 2011. Chief of Naval Operations Instruction (OPNAVINST) 5090.1C Change Transmittal 1. Environmental Readiness Program Manual. 18 July.





**APPENDIX C**

**LEGISLATION, EXECUTIVE ORDERS, REGULATIONS, AND  
INSTRUCTIONS**

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## Legislation, Executive Orders, Regulations, and Instructions

### Legislation Related To Natural Resources

<b>Antiquities Act of 1906</b>	The Antiquities Act of 1906 (PL 59-209; 16 USC §§ 431 et seq., 1982) authorizes the President to designate as National Monuments historic and natural resources of national significance located on Federally owned or controlled lands. The act further provides for the protection of all historic and prehistoric ruins and objects of antiquity located on Federal lands by providing criminal sanctions against excavation, injury, or destruction of such antiquities without the permission of the Department having jurisdiction over such resources. The Secretaries of the Interior, Agriculture, and Defense are further authorized to issue permits for archaeological investigations on lands under their control to recognized educational and scientific institutions for the purposes of systematically and professionally gathering data of scientific value.
<b>Archaeological and Historic Preservation Act of 1974</b>	The Archaeological and Historic Preservation Act of 1974 (Moss-Bennett Act; 16 USC §§ 469 et seq.) provides for the protection of historic and archaeological sites threatened by Federal or Federally funded or assisted construction projects.
<b>Archaeological Resources Protection Act of 1979</b>	The Archaeological Resources Protection Act of 1979 (16 USC §§ 470 et seq., 1982) sets up penalties for destruction or removal of archaeological materials from Federal land without the proper permits. Requirements for obtaining these permits are also established by this regulation.
<b>Bald Eagle Protection Act</b>	The Bald Eagle Protection Act (Bald and Golden Eagles Act; PL 95-616; 16 USC §§ 668 et seq.) provides for protection of the bald eagle and the golden eagle by prohibiting taking, possession, and commerce in the birds.
<b>California Water Code</b>	The California Water Code Section 1243 declares the reservation of water for the enhancement and protection of fish and wildlife to be a beneficial use.
<b>Clean Air Act</b>	The Clean Air Act (CAA; 42 USC §§ 7401 et seq.) mandates the prevention and control of air pollution from stationary and mobile sources. Requires the establishment of: National Ambient Air Quality Standards (NAAQS) to regulate primary and secondary concentrations for six priority air pollutants; New Source Performance Standards (NSPS) to provide ceiling emission standards for certain new industrial sources; and National Emission Standards for Hazardous Air Pollutants (NESHAP) to control pollutants, not covered under NAAQS, which may increase mortality rates or cause serious irreversible illness.

## Clean Water Act

The Clean Water Act (PL 92-500, as amended; 33 USC §§ 1251 et seq.). “The objective of the Clean Water Act is to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters” (Section 101a). The Clean Water Act has three major approaches to water pollution control:

1. Construction grants for reducing municipal discharges;
2. National Pollution Discharge Elimination System (NPDES) permits for control of point source (storm water and waste water) discharges; and
3. Water quality management planning for nonpoint source (NPS) control from diffuse natural origins such as sediment.

In 1972 Congress adopted a “zero-discharge” goal, and a focus on “preventable causes of pollution,” to emphasize the source of contamination rather than controls at the outfall or water body itself. Water quality “standards” include a legal designation of the desired use for a given body of water and the water quality criteria appropriate for that use. The “criteria” are specific levels of water quality which are expected to make a water body suitable for its desired use. “Effluent limitations” are restrictions on quantities, rates, and concentrations in wastewater discharges measured at the discharger’s outfall pipe. (Goldfarb 1984)

Administration of the Act is delegated to the State Water Resources Control Board (SWRCB) in California and, locally, to the San Diego Regional Water Quality Control Board (RWQCB). The Regional Board is responsible for setting water quality standards and criteria for water bodies in its regional plan, and for issuing and enforcing NPDES permits.

*Section 404* deals with discharge of dredge or fill material into waters of the U.S. Regulatory authority has been delegated by the Environmental Protection Agency to the U.S. Army Corps of Engineers for Sec. 404. Discharges are any material that results in a change in the bottom elevation of a water body or wet- land, including grading, road fills, stream crossings, building pads, and flood and erosion control on streambanks. Vernal pools are considered non-tidal waters that are isolated wetlands under Sec. 404. There are 26 more or less generic nation- wide permits that preauthorize certain minor discharges as long as they meet certain conditions--e.g. construction of outfall structures, backfill or bedding for utility lines, fill for bank stabilization, and minor road crossings. The nationwide permit system is currently being modified. If a discharge would cause the loss of or substantially modify one to 10 acres of water, including adjacent wetlands, then the nationwide permit may not apply. Work cannot begin until the Army Corps notifies the U.S. Navy that the nationwide permit applies.

The individual permit process is much more complex and time-consuming. It requires consultation, an Environmental Assessment prepared by the Army Corps, Public Interest Review and a 404(b)(1) Evaluation. If significant impacts are found, then an EIS must be prepared. These regulations apply to vernal pools. Customarily, the L.A. District Engineer requires Individual Permit and an EA for fills in any vernal pool regardless of the presence or absence of endangered spe- cies. The Army Corps is attempting to formalize requirements particular to vernal pools. A Memorandum of Agreement between the Army Corps and EPA dated February 7, 1990 states that all potential impacts must first be shown to have been avoided, minimized and then compensated for. Compensation is considered a last

resort only, which involves the creation of a habitat to replace a similar habitat unavoidably eliminated at a project site. The concerned agencies must be completely convinced that the proposed compensation will completely mitigate the lost habitat. Any activity in a wetland will require at least an EA.

Penalties: A Class I or civil penalty may not exceed \$10,000 per violation, with the maximum amount of \$25,000. Class II civil penalty may not exceed \$10,000 per day as each violation continues, with the maximum amount not to exceed \$125,000.

**Comprehensive Environmental Response, Compensation, and Liability Act of 1980**

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA; 42 USC §§ 9601 et seq.) establishes programs for the cleanup of hazardous waste disposal and spill sites to ensure protection of human health and the environment. Designates the President as trustee for Federally protected or managed natural resources.

**Conservation and Rehabilitation Program on Military and Public Lands**

The Conservation and Rehabilitation Program on Military and Public Lands (PL 93-452; 16 USC §§ 670 et seq.) amends PL 86-797 by providing for fish and wildlife habitat improvements, range rehabilitation, and control of off-road vehicles on Federal lands.

**Conservation Programs on Military Reservations**

The Conservation Programs on Military Reservations (PL 90-465; 16 USC §§ 670 et seq.) amend PL 86-797 to include outdoor recreation programs on military lands.

**Critical Habitat**

Critical habitat is a habitat area essential to the conservation of a listed species, though the area need not actually be occupied by the species at the time it is designated. This is a specific term and designation within the U.S. Endangered Species Act.

**Defense Environmental Restoration Program**

The Defense Appropriations Act of 1991 Legacy Program (10 USC § 2701) provides for the stewardship of biological, geophysical, cultural and historic resources on DoD lands.

**Endangered Species Act**

The Endangered Species Act (PL 93-205; 16 USC §§ 1531 et seq.), ESA, of 1973 requires that all Federal agencies undertake programs for the conservation of endangered and threatened species. These agencies are prohibited from authorizing, funding, or carrying out any action that would jeopardize a listed species or destroy or modify its “critical habitat” (Section 7). Critical habitat is usually designated concurrently with a listing. Section 9 prohibits the “taking” of endangered fish or wildlife, including direct killing, harming, harassing, or destruction of habitat that may be important to the species’ survival or recovery. Prohibitions against *threatened* species are discretionary on the part of the Secretary of the Interior, but can be as restrictive as those protecting endangered species. Lists are maintained by the Secretary of the Interior. Monitoring of candidate species (Category 1 and Category 2) is required, with adoption of emergency listing when there is significant risk (Section 4).

For plants, collection or removal of seed material or whole plants of a threatened or endangered species, even for revegetation or monitoring purposes, requires a USFWS collection permit. There is no general taking prohibition for plants that compares to that which applies to animals (Bean et al. 1991).

If an area is designated “critical habitat,” physical and biological features of the environment must be protected for the purposes of conserving the listed species. “Incidental takes” are permissible only if an “incidental take statement” is issued by the Secretary of the Interior / USFWS with a biological opinion after agency consultation. Management options will likely be limited as a requirement for minimizing the taking.

Coordination regarding threatened and endangered species is addressed in Section 7 of this Act. In particular, Section 7(a) requires a Federal agency to consult with USFWS on any proposed action if the agency has reason to believe that an endangered or threatened species could be directly or indirectly affected by the action. Species under review and those of “special concern” are also included. A Biological Assessment (B.A.) by the lead agency is required under Section 7(c) if listed species or critical habitat may be affected by a major construction activity. The purpose of a B.A. is to evaluate potential effects of the action on listed species and/or critical habitat, and to assist USFWS in rendering a Biological Opinion.

A consultation consists of one or more of these steps: 1) Informal; 2) Formal; or 3) Further Discussion. An informal consultation is an optional process that includes all discussions and correspondence between the USFWS and the Federal agency to determine whether a formal consultation or conference is required. A formal consultation is a process between the USFWS and the Federal agency that commences with Federal agency’s written request for consultation and concludes with the USFWS’s issuance of a Biological Opinion.

A Biological Opinion must include: 1) a summary of the information on which the opinion was based (the information is to be provided by the Federal agency), 2) a detailed discussion of the effects of the action on listed species or critical habitat, and 3) the USFWS opinion on whether the action is likely to jeopardize the continued existence of a listed species or adversely modify critical habitat. The biological opinion may include an incidental take statement that specifies: 1) the amount of “take” that is allowed, 2) reasonable and prudent measures that the USFWS considers necessary or appropriate to minimize such a “take”, and 3) the terms and conditions that must be complied with to implement the reasonable and prudent measures.

The Navy must take measures to assure that no irreversible or irretrievable commitment of resources is authorized, funded or carried out by them that will likely jeopardize the continued existence of any threatened or endangered species or destroy or adversely modify designated critical habitat, until the Consultation process is complete. The Navy is to provide leadership in identifying and protecting habitat that is critical for any threatened or endangered species.

Navy installations are required to carry out the following:



1. Maintain liaison with local governmental agencies and organizations having an interest in endangered and threatened species protection;
2. Delineate boundaries of the habitat areas of endangered and threatened species on maps;
3. Initiate consultation with the USFWS or NMFS per cooperative agreement procedures when a proposed action or program has been identified that may affect listed species or their habitat;
4. Perform a B.A. for any action that may adversely affect the continued existence of endangered and threatened species or result in the destruction or adverse modification of habitat of such species (The EA should contain the final biological opinion of the USFWS or NMFS following the consultation process);
5. Cooperate with the USFWS or NMFS during development and implementation of a recovery plan for listed species occurring on the installation.

The California State Legislature has expressed its intent to protect, preserve and enhance endangered or rare species as issued in the Fish and Game Code (Div. 2, Chpt. 10 Native Plant Protection and Div. 3, Chpt. 1.5 Endangered Species). California Endangered Species Act (CESA) violations can result in a fine of up to \$5,000 and / or one year in prison. While this law does not apply to Federal actions, it does apply to State agencies and private landowners. In the spirit of the law and as a service to State agencies and private landowners, Federal agencies operate under these guidelines.

Penalties: Civil penalty of up to \$25,000 per violation or criminal penalty of up to \$50,000 and / or one year in prison, knowing violation for a take or damage / destruction of critical habitat of an endangered animal.

**Endangered Species Act 1973 Amendments**

The Endangered Species Act of 1973 (1978 Amendments), (PL 95-632; 16 USC §§ 1531 et seq.) provides for the conservation and protection of endangered and threatened species of fish, wildlife, and plants and expands the consultation process.

**Federal Insecticide and Rodenticide Act**

The Federal Insecticide and Rodenticide Act (FIFRA) (7 U.S.C. §136 et seq.) The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) provides for federal regulation of pesticide distribution, sale, and use. All pesticides distributed or sold in the United States must be registered (licensed) by EPA. Before EPA may register a pesticide under FIFRA, the applicant must show, among other things, that using the pesticide according to specifications "will not generally cause unreasonable adverse effects on the environment." FIFRA defines the term "unreasonable adverse effects on the environment" to mean: "(1) any unreasonable risk to man or the environment, taking into account the economic, social, and environmental costs and benefits of the use of any pesticide, or (2) a human dietary risk from residues that result from a use of a pesticide in or on any food inconsistent with the standard under section 408 of the Federal Food, Drug, and Cosmetic Act.

**Federal Flood Disaster Prevention Act**

The Federal Flood Disaster Prevention Act (PL 93-234; 42 USC §§ 4001 et seq.) established the Federal Flood Insurance Program, which has provided some incentives for construction outside flood-prone areas. To a limited degree, this has reduced destruction of riparian vegetation by developments. President Carter issued two executive orders in a related effort: E011988 (Floodplain Protection) directed Federal agencies to avoid construction in flood-hazard areas and to seek restoration and preservation of the natural and beneficial values of floodplains; E011990 (Protection of Wetlands) directed Federal agencies to minimize the destruction, loss, or degradation of wetlands.

**Federal Noxious Weed Act of 1974**

The Federal Noxious Weed Act of 1974 (PL 93-629; 7 USC § 2801) provides for the control and eradication of noxious weeds and their regulation in interstate and foreign commerce.

**Federal Water Pollution Control Act Amendments of 1972**

The Federal Water Pollution Control Act Amendments of 1972 (see Clean Water Act; PL 92-500; 33 USC §§ 1251 et seq.) sets up a Federal permit and license system to carry out certain pollution discharge activities in navigable waters. Section 314 of this Act established the Clean Lakes Program (CLP). The purpose of the CLP is to develop a national program to clean up publicly owned freshwater lakes. In order to receive a grant for in-lake restoration under this Program, all point sources of pollution must be treated or have treatment planned under Section 201 and 402 of the Clean Water Act.

**Fish and Wildlife Conservation Act of 1980**

The Fish and Wildlife Conservation Act of 1980 (PL 96-366; 16 USC §§ 2901 et seq.) provides for conservation, protection, restoration and propagation of certain species, including migratory birds threatened with extinction.

**Fish and Wildlife Conservation and Military Reservations Act**

The Fish and Wildlife Conservation and Military Reservations Act (Sikes Act; 16 USC § 670) applies to any installation in the U.S. with land or water suitable for conservation of fish and wildlife. It requires that fish and wildlife be part of and integrated into a multiple-use program for managing natural resources. This includes a requirement to develop a cooperative management plan with State and Federal fish and wildlife conservation agencies. The law sets the guidelines for charging user fees and retaining the funds to benefit the activity, such as improving habitat or restocking a fish pond. The Fish and Wildlife Conservation and Natural Resources Management Programs on Military Reservations amends the Sikes Act to require that trained professionals be used to integrate fish and wildlife into a balanced natural resource program.

**Fish and Wildlife Conservation and Natural Resource Management Programs on Military Reservations**

The Fish and Wildlife Conservation and Natural Resource Management Programs on Military Reservations (PL 96-561) amend the Sikes Act above to require that trained professionals be used to integrate fish and wildlife into each base's resource program. This amendment allows net receipts from timber sales to be used for fish and wildlife management instead of going into the general treasury.

**Fish and Wildlife Coordination Act**

The Fish and Wildlife Coordination Act (PL 85-624; 16 USC §§ 661 et seq.) is a law which mandates that wildlife conservation receive equal consideration and be coordinated with other features of water resource development. The intent is to prevent loss or damage of wildlife and provide for development and improvement of wildlife in conjunction with water development projects. Federal agencies proposing to impound, divert or control surface waters are required to consult with the USFWS and CDFG, to include and give full consideration to the recommendations of these agencies, and to provide justifiable means and measures for benefiting wildlife in project plans. ACOE must coordinate permit applications with USFWS and CDFG. Like NEPA, implementation of this Act is essentially procedural in that no particular outcome is mandated. The Act authorizes project modification, land acquisition, and other measures necessary to protect wildlife.

**Historic Sites Act of 1935**

The Historic Sites Act of 1935 (PL 74-292; 16 USC §§ 461 et seq., 1982) establishes as national policy the preservation for public use of historic resources by giving the Secretary of the Interior the power to make historic surveys and to document, evaluate, acquire, and preserve archaeological and historic sites across the country. The act led to the eventual establishment within the National Park Service of the Historic Sites Survey, the Historic Buildings Survey, and the Historic Sites Engineering Record.

**Migratory Bird Treaty Act**

The Migratory Bird Treaty Act (PL 65-186, as amended; 16 USC §§ 703 et seq.) protects most birds, whether or not they migrate. Birds, their nests, eggs, parts or products may not be killed or possessed. Game birds are listed and protected except where specific seasons, bag limits, and other features govern their hunting. Exceptions are also made for some agricultural pests, which require a USFWS permit (yellow-headed, red-winged, bi-colored red-winged, tri-colored red-winged, Rusty and Brewer's blackbirds, cowbirds, all grackles, crows and magpies). Some other birds that injure crops in California may be taken under the authority of the County Agricultural Commissioner (meadowlarks, horned larks, golden-crowned sparrows, white- and other crowned sparrows, goldfinches, house finches, acorn woodpeckers, Lewis woodpeckers, and flickers). Permits may be granted for various non-commercial activities involving migratory birds and some commercial activities involving captive-bred migratory birds.

Controlled burns during the avian breeding season (approximately February through October) would violate this Act, according to the USFWS Carlsbad Office.

Penalties: Violations of this act can cost an individual or organization up to \$5,000 and \$10,000, respectively, and up to six months imprisonment for a misdemeanor. Felony violations may result in fines of up to \$250,000 for individuals, \$500,000 for organizations, and up to two years' imprisonment.

**Military Construction Authorization Act- Leases; Non-excess property**

The Military Construction Authorization Act- Leases; Non-excess property (10 USC § 2667) provides for the outleasing of public lands.

**Military Construction Authorization Act - Military Reservation and Facilities-Hunting, Fishing and Trapping**

The Military Construction Authorization Act - Military Reservation and Facilities-Hunting, Fishing and Trapping (10 USC § 2671) requires that all hunting, fishing, and trapping on military installations follow Fish and Game laws of the state in which it is located, and be issued appropriate state licenses for these activities.

**National Environmental Policy Act of 1969**

The National Environmental Policy Act of 1969 (42 USC §§ 4321 et seq.), NEPA, evolved over 10 years from the desire of Congress to have a cohesive statement of the national environmental policy. Agencies must assess, in detail, the potential environmental impact of any proposal for legislation or other major Federal action that has the potential for significantly affecting the quality of the human environment. The Act is intended to help public officials and citizens make decisions that are based on understanding of environmental consequences and take action that protects, restores and enhances the environment.

**National Defense  
Authorization Act  
for Fiscal Year 2004**

The National Defense Authorization Act for Fiscal Year 2004 (Public Law No. 108-136) amended the ESA to address designation of military lands as critical habitat. Specifically, section 4(a)(3)(B)(i) of the ESA (16 U.S.C. 1533(a)(3)(B)(i)) now provides: *“The Secretary 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.”*

**National Heritage  
Policy Act of 1979**

The National Heritage Policy Act of 1979 (HR 6502) authorizes location and establishment of a register of natural land and cultural areas and requires consideration of alternatives prior to taking actions that would adversely affect them.

**National Historic  
Preservation Act of  
1966**

The National Historic Preservation Act of 1966 (PL 89-665; 16 USC §§ 470 et seq.) expands the National Register of Historic Places, provides a list of significant historic and prehistoric sites and districts, and gives them formal protection. Section 106 requires that Federal agencies with direct or indirect jurisdiction over such properties identify them for the Federal Register. It further directs agencies to consider historic and archaeological resources during planning, and allows the Advisory Council on Historic Preservation, established by this Act, an opportunity to comment when a Federal undertaking could affect historic properties.

**National Trails Systems  
Act of 1968**

The National Trail Systems Act of 1968 (16 USC § 1271) promotes development of recreational, scenic, and historic trails for persons of diverse interest and abilities.

**Native American Graves  
Protection and  
Repatriation Act of  
1990**

The Native American Graves Protection and Repatriation Act of 1990 (PL101-601; 25 USC §§ 3001 et seq.) provides requirements for treatment, determination of ownership, control of, and repatriation of human remains and cultural items on Federal or Tribal lands. The term “Indian Tribe” refers to any Tribe, band, nation, or other organized Indian group or community that is on the current list of recognized Indian Tribes published by the Bureau of Indian Affairs. “Human remains” refers to all Native American human remains.

**Noxious Plant Control  
Act**

The Noxious Plant Control Act (PL 90-583; 43 USC § 1241) provides for the control of noxious plants on lands under control or jurisdiction of the Federal government.

**Oil Pollution Act of  
1990**

The Oil Pollution Act of 1990 (OPA; 33 USC §§ 2701 et seq.) provides that the National Contingency Plan (NCP) include planning, rescue, and minimization of damage to fish and wildlife in responding to oil pollution.

**Outdoor Recreation-  
Federal/State Program  
Act**

The Outdoor Recreation-Federal/State Program Act (PL 88-29; 16 USC §§ 460(L) et seq.) provides for the management of lands used for outdoor recreation. Requires consultations with U.S. National Park Service regarding management.

**Resource Conservation and Recovery Act**

The Resource Conservation and Recovery Act (RCRA; 42 USC §§ 6901 et seq.) establishes a comprehensive program which manages solid and hazardous waste. Subtitle C, Hazardous Waste Management, sets up a framework for managing hazardous waste from its initial generation to its final disposal. Waste pesticides and equipment/containers contaminated by pesticides are included under hazardous waste management requirements.

**Safe Drinking Water Act**

The Safe Drinking Water Act (SDWA; 42 USC §§ 300(f) et seq.), SDWA, prescribes treatment and distribution control strategies for abating contamination of drinking water and also requires the establishment of a permit program to regulate injection of liquids into underground strata.

The SDWA provides for direct control of underground injection of fluids that may affect groundwater supplies. States may assume the predominant role in executing groundwater protection programs. The EPA has direct responsibility only if a State chooses not to participate in an underground injection control (UIC) program.

**Sikes Act**

Sikes Act (16 USC 670a-670o, 74 Stat. 1052) was enacted into United States law on September 15, 1960. It provides for cooperation by the Department of the Interior and Department of Defense with State agencies in planning, development and maintenance of fish and wildlife resources on military reservations throughout the United States.

**Soil Conservation Act**

The Soil Conservation Act (PL 74-46; 16 USC § 590A) provides for application of soil conservation practices on Federal lands. Requires Federal agencies to control and prevent soil erosion and preserve natural resources in managing Federal lands.

**Stream Alteration Controls**

The Department of Fish and Game's authority over the use of suction dredges (Fish and Game Code, § 5653), alterations of fish spawning areas (Fish and Game Code, § 1505), and alterations of stream beds in general (Fish and Game Code, §§ 1601 et seq.) are all useful tools for the protection of instream resources (but generally not for riparian vegetation outside of the stream or overflow areas). The §§1601-1603 agreements (§1601 covers public projects, while §1603 addresses private work) do not have the status of State approvals under law, instead providing for a negotiation and agreement process.

**Wild and Scenic River Act**

The Wild and Scenic River Act (PL 90-542; 16 USC § 1274) requires identification and protection of any river or stream that qualifies under the act.

**Youth Conservation Corps Act of 1972**

The Youth Conservation Corps Act of 1972, amended (PL 93-408, as amended; 16 USC § 1701) expands and make a permanent the Youth Conservation Corps (YCC) program and establishes objectives for youth employment and conservation work on public lands.



## **Executive Orders Relevant To Natural Resources**

<b>Exotic Organisms</b>	The Exotic Organisms Executive Order (EO 11987) restricts Federal Agencies in the use of exotic plant species in any landscape and erosion control measures.
<b>Floodplain Management</b>	The Floodplain Management Executive Order (EO 11988) specifies that “Agencies shall encourage and provide appropriate guidance to applicants to evaluate the effects of their proposals in floodplains prior to submitting applications”. This order includes wetlands that are within the 100-year floodplain and especially discourages filling.
<b>Invasive Species</b>	The Invasive Species Executive Order (EO 13112) was issued on February 3, 1999 to enhance federal coordination and response to the complex and accelerating problem of invasive species. The EO directs Federal agencies to work together [as stated in the Preamble] to “... <i>prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause.</i> ” EO 13112 defines invasive species as “... <i>an alien (or non-native) species whose introduction does, or is likely to cause economic or environmental harm or harm to human health</i> ”. <i>Only a small proportion of non-native species are invasive ..</i>
<b>Off-Road Vehicles on Public Lands</b>	The Off-Road Vehicles on Public Lands Executive Order (EO 11989) provides for closing areas to use where soil, wildlife, or other resources are adversely affected.
<b>Responsibility of Federal Entities to Protect Migratory Birds</b>	EO 13186 directs federal agencies taking actions with a measurable negative effect on migratory bird populations to develop and implement a Memorandum of Understanding with the U.S. Fish and Wildlife Service that promotes the conservation of migratory bird populations.
<b>Protection and Enhancement of the Cultural Environment</b>	Protection and Enhancement of the Cultural Environment (EO 11503) directs Federal agencies to take a leadership role in preserving, restoring, and maintaining the historic and cultural environment of the Nation. Federal agencies must locate, inventory, and nominate to the National Register all historic resources under their jurisdiction or control. Until these processes are completed, agency heads must exercise caution to ensure that potentially qualified Federal property is not inadvertently transferred, sold, demolished, or substantially altered. When planning projects, agencies are urged to request the opinion of the Secretary of the Interior as to the eligibility for National Register listing of properties whose resource value is questionable or has not been inventoried. Agencies are directed to institute procedures, in consultation with the President’s Advisory Council on Historic Preservation, to ensure that Federal plans and programs contribute to the preservation and enhancement of non-Federally owned historic resources. Protection of National Register historic and Archaeological sources is achieved by the Marine Corps through implementation of the Historic and Archeological Resources Protection (HARP) Plan. The plan facilitates compliance by providing management goals, priorities, and standard operating procedures for site protection.
<b>Protection and Enhancement of Environmental Quality</b>	Protection and Enhancement of Environmental Quality (EO 11514) directs issuance of instructions and guidelines relative to preparation of environmental impacts. This order created the Council on Environmental Quality to oversee the implementation of NEPA, mediate disputes and develop environmental policy.
<b>Protection and Enhancement of Environmental Quality</b>	Protection and Enhancement of Environmental Quality (EO 11991) amends EO 11514 to require Council on Environmental Quality to issue regulations to make environmental impact statements more effective. The CEQ was recently abolished by Vice-President Gore, and to date there is no replacement of the body.



**Protection of Wetlands**

The Protection of Wetlands Executive Order (EO 11990) directs all federal agencies to “take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands”. This applies to the acquisition, management, and disposal of federal lands and facilities; to construction of improvements undertaken, financed, or assisted by the federal government; and to the conduct of federal activities and programs which affect land use. Section 4 of the EO requires that when federally owned lands are leased and easement is assigned, or when disposed of to a non-federal party, a reference be included in the conveyance to identify any wetlands and indicate those uses which are restricted in such areas.

**Federal Regulations, Directives, And Instructions**

**Federal Regulations**

**32 CFR 188.** Environmental Effects in the United States of DoD Actions.

**32 CFR 190.** Natural Resources Management Program. Provides goal, policy, and procedural information for managing natural resources on all DoD lands, including those of the DoN. It requires the preparation of integrated natural resources management plans for DoD installations.

**32 CFR 775.** Procedures for Implementing the National Environmental Policy Act. Dept. of Navy policy to supplement DoD regulations (32 CFR 214) by providing policy and assigning responsibilities to the Navy and Marine Corps for implementing CEQ regulations and implementing NEPA.

**33 CFR 330.** Dredge & Fill Nationwide Permit Program.

**36 CFR 60.** National Register of Historic Places.

**36 CFR 65.** National Historic Landmarks Program.

**40 CFR 141-143.** EPA National Drinking Water Regulations.

**40 CFR 150-186.** EPA Regulations for Pesticide Programs.

**40 CFR 162.** EPA Regulations on Insecticide, Fungicide, and rodenticide Use.

**40 CFR 230.** EPA Interim Regulations on Discharge of Dredged or Fill Material into Navigable Waters.

**40 CFR 1500.** Council on Environmental Quality Regulations. Defines the methods of implementing the National Environmental Policy Act (NEPA).

**40 CFR 1500.** Council on Environmental Quality Regulations. Defines the methods of implementing the National Environmental Policy Act (NEPA).

**43 CFR 7.** Archaeological Resources Protection Act of 1979; Uniform Regulations.

**50 CFR 10.13.** List of Migratory Birds.

**50 CFR 17.11 and 17.12.** Fish and Wildlife Service List of Endangered and Threatened Wildlife.

**50 CFR 402.** Interagency Cooperation - Endangered Species Act of 1973.

**Federal Register 58(188):51144-51190** (1990; also 50 CFR 17). Plant taxa for listing as endangered or threatened species; Notice of review.

**Federal Register 70(199): 800** (15 October 1985). Protection of historic and cultural properties.

**Department of Defense  
Directives and  
Instructions**

**DoD Directive 4150.7 of 24 October 1983.** DoD Pest Management Program (NOTAL).

**DoD Directive 4700.1 of 6 November 1978.** Natural Resources Conservation and Management (NOTAL). Provides for management of renewable natural resources on military lands.

**DoD Directive 4700.2 of 15 July 1988.** Secretary of Defense Award for Natural Resources and Environmental Management (NOTAL).

**DoD Directive 4710.1 of 21 June 1984.** Archeological and Historic Resources Management. Establishes policies, procedures, and assigns responsibilities for the management of archeological and historic resources located in and on waters and lands under DoD control. This Directive implements these guidelines consistent with Federal law, Executive orders, and other DoD directives that deal with archeological and historic preservation issues.

**DoD Directive 4715.DD-R. Draft April 1996.** Draft integrated natural resources management in the Department of Defense. Prescribes procedures for preparing integrated natural resources management plans for DoD lands.

**DoD Directive 6050.1** (1979). Environmental Effects in the U.S. of DoD Actions.

**DoD Instruction 4700.1.** Instructs the Department of the Navy to implement and maintain natural resource management programs.

**DoD Instruction 4715.1 of 24 February 1996.** Environmental Security.

**DoD Instruction 4715.03 of 18 March 2011.** Environmental Conservation Program. Implements policy, assigns responsibilities, and prescribes procedures under DoD Instruction 4715.1 for the integrated management of natural and cultural resources on property under DoD control.

**DoD Instruction 5000.13 of 13 December 1976.** Natural Resources- the Secretary of Defense Natural Resource Conservation Award (NOTAL). Delineates procedures for participating in completion for Secretary of Defense Conservation Award.

**Department of the Navy Manuals and Instructions**

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**NAVFACINST 6250.3H.** Applied Biology Program Services and Training. Requires the use of an integrated pest management approach to minimize the use of herbicides.

**NAVFAC P-73.** Real Estate Manual P-73. This manual sets forth the authority of the Commander, Naval Facilities Engineering Command (NAVFACENGCOM), for outgrant of Navy controlled real property. Responsibility for administration, management, and utilization of Navy real property lies with the Commanding Officer, and his superiors, of the installation to whose plant account the property belongs. NAVFACENGCOM does not have general responsibility for management of Navy real property, except for lands of installations under its command. However, NAVFACENGCOM has a technical responsibility for real estate action on lands which have been determined temporarily or partially excess.

**NAVFACINST MO-100.4.** Guidance on Special Interest Areas.

**NAVFACINST 11010.63B,** Planning Services for Navy and Marine Corps Shore Activities.

**OPNAVINST 5090.1C CH1.** Department of the Navy Environment and Natural Resources Procedural Manual. Chapter 22, Natural Resources Management, describes requirements, guidelines, and standards for conserving natural resources on Navy lands. Summarizes the natural resources management (NRM) program to include management of waters, forests, fish and wildlife, and outdoor recreation.

**OPNAVINST 6250.4A.** Pest Management Programs. Requires Navy and Marine Corps to have a comprehensive Pest Management Plan. Discusses the need to control pest outbreaks which affect the military mission, damage property, or impact the welfare of people.

**SECNAVINST 6240.6E.** Implementation of DoD directives under DoD Instruction 4700.4 Assigns the responsibility of developing and implementing natural resources programs to the Chief of Naval Operations and the Commandant of the Marine Corps.



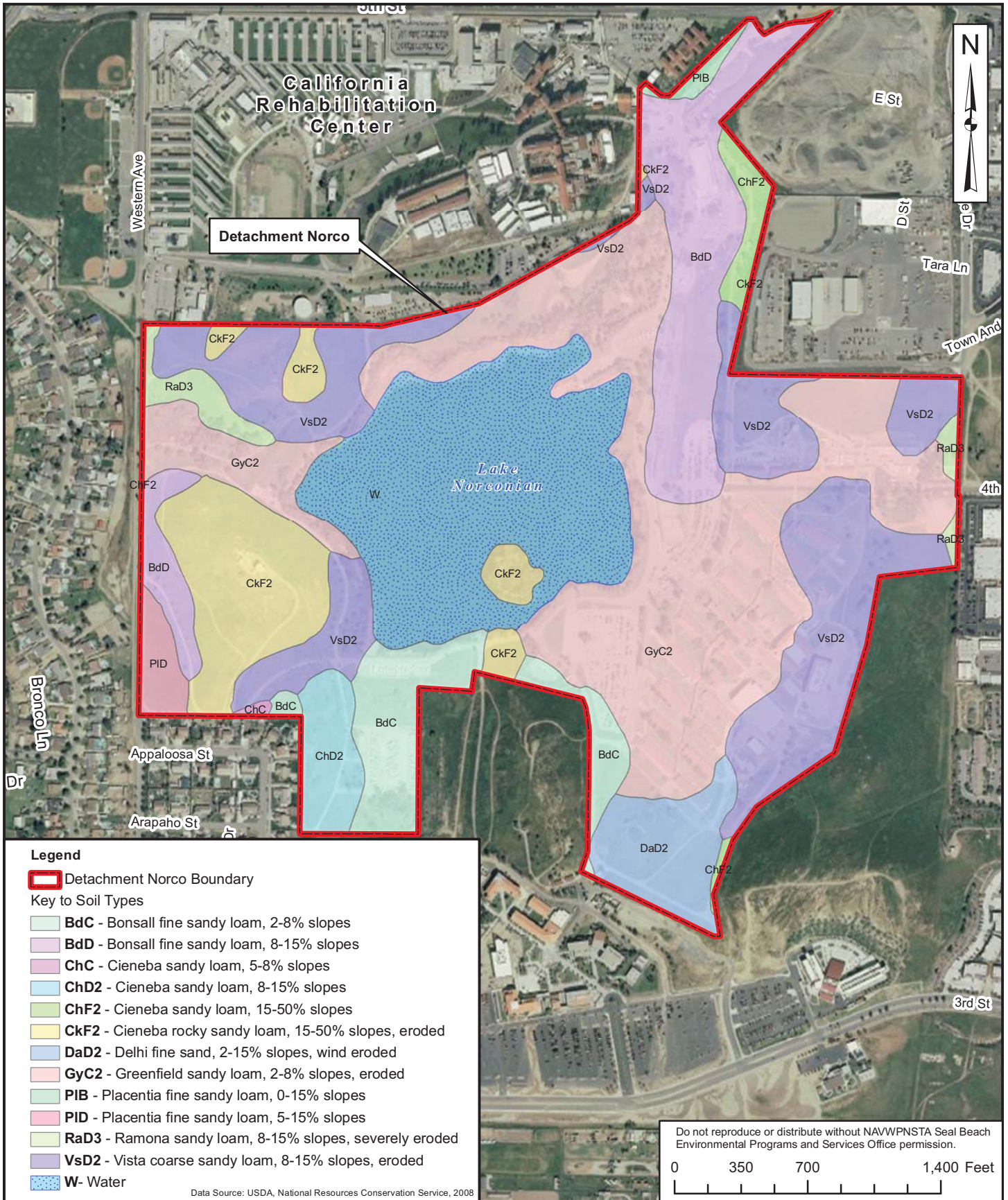
## **APPENDIX D**

### **SOIL RESOURCES**

- **SOIL TYPE MAP**
- **SOIL TYPE DESCRIPTIONS**

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**Soil Types**  
**Naval Weapons Station Seal Beach Detachment, Norco**  
**Norco, California**

**FIGURE**  
**5**



## **Detachment Corona Soil Descriptions**

### **Soil Survey -Western Riverside Area, California (USDA 1971)**

#### **Bonsall Series**

Soils of the Bonsall series have developed in material deeply weathered from granodiorite or tonalite. These moderately well drained soils occur on uplands and have slopes of 2 to 15 percent. Elevations range from 1,000 to 1,800 feet. The vegetation is chiefly annual grasses, forbs, and chamise. Typically the surface layer is brown fine sandy loam and loam about 9 inches thick. The subsoil is reddish-brown and dark reddish brown clay loam and clay and yellowish brown sandy clay. At depth of about 30 inches is decomposing tonalite. The Bonsall soils are used for dryland hay, grain, pasture, and range, for irrigated citrus, and for non-farm purposes (USDA 1971).

#### **Cieneba Series**

The Cieneba series consist of somewhat excessively drained soils on uplands. Slopes range from 5 to 50 percent. These soils formed in coarse-grained igneous rock. Elevations range from 900 to 3,400 feet. The vegetation is chiefly annual grasses, chamise, and flat-topped buckwheat. In a typical profile, the surface layer is brown sandy loam about 14 inches thick. Underlying this is light yellowish-brown gravelly coarse sand. At a depth of about 22 inches is slightly acid, weathered granodiorite. The Cieneba soils are used for dryland grain, pasture and range, for irrigated citrus and for homesites.

#### **Delhi Series**

The Delhi series are somewhat excessively drained soils on duens and alluvial fans. Slopes range from 0 to 15 percent. These soils developed in granitic material that was reworked by wind. Elevations range from 500 to 1,000 feet. The vegetation is chiefly annual grasses and flat-topped buckwheat. In a typical profile the surface layer is light brownish-gray fine sand about 10 inches thick. The underlying material is light brownish-gray and light olive brown stratified sand, loamy fine sand, and fine sandy loam.

#### **Greenfield Series**

Soils of Greenfield series are on alluvial fans and terraces. Slopes are 0 to 25 percent. These well-drained soils developed in alluvium consisting mainly of granitic material. Elevations range from 600 to 3,500 feet. The vegetation is chiefly annual grasses, forbs, sumac, and chamise but includes some scattered oak trees. In a typical profile, the surface layer is brown sandy loam about 26 inches thick. The subsoil is brown sandy loam and pale brown loam and extends to a depth of about 60 inches. Greenfield soils are used for dryland grain and pasture, for irrigated truck crops, alfalfa, potatoes, citrus, peaches, and development (USDA 1973).

**Placentia Series**

The Placentia series consists of moderately well drained soils on alluvial fans and terraces. Slopes range from 0 to 25 percent. These soils developed in alluvium consisting mainly of granite materials. Elevations range from 600 to 2,200 feet. The vegetation is mainly annual grasses, forbs, and chamise. In a typical profile the surface is brown and pale brown fine sandy loam and loam about 18 inches thick. The upper subsoil is brown heavy clay loam about 21 inches thick. The lower subsoil is brown sandy clay loam about 18 inches thick. The substratum is stratified sandy, gravelly, or cobbly alluvium of granitic origin. Placentia soils are used for dryland pasture and grain, for irrigated permanent pasture, and for non-farm purposes.

**Ramona Series**

The Ramona series consists of well-drained soils on alluvial fans and terraces. Slopes range from 0 to 25 percent. These soils developed in alluvium consisting mainly of granitic materials. Elevations range from 500 to 3,500 feet. Vegetation consists chiefly of annual grasses, forbs, chamise, salvia, and flat-topped buckwheat. In a typical profile, the surface layer is brown sandy loam and fine sandy loam about 23 inches thick. This layer is brown loam and reddish-brown loam and yellowing-red sandy clay loam. The substratum is strong-brown fine sandy loam. The Ramona soils are used for dryland grain, pasture and irrigated peaches, apricots, citrus, alfalfa, truck crops and grain. They are also used as sites for homes and schools and for other non-farm purposes.

**Vista Series**

The Vista series are well-drained soils of the uplands. Slopes range from 2 to 35 percent. These soils developed on weathered granite and granodiorite. Elevations range from 1,000 to 3,500 feet. Vegetation is chiefly annual grasses, forbs, and, chaparral. In a few areas the plant cover consists of grasses and oaks. Typically the surface layer is brown and grayish brown coarse sandy loam about 15 inches thick. The sub-soil is brown gravelly coarse sandy loam about 9 inches thick. Below this is weathered granodiorite containing yellow, white, and black feldspar. Vista soils are used for dryland pasture and grain and if irrigated for citrus, truck crops and grain. They are also used for homesites.

## **APPENDIX E**

### **NAVY NATURAL RESOURCES METRICS**



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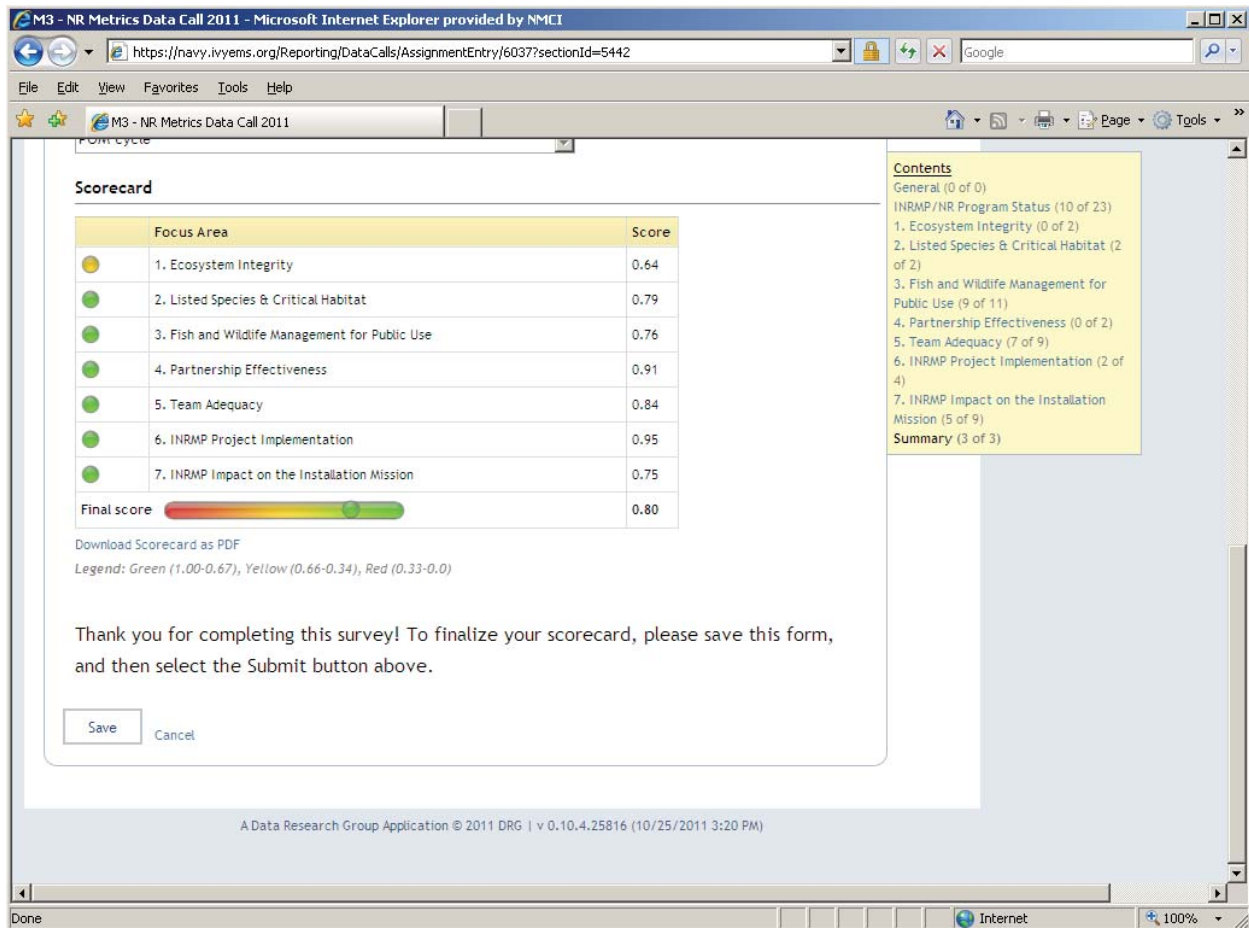
# FY11 Defense Environmental Programs Annual Report to Congress (DEPARC) – Natural Resources Data Summary

## Introduction

In accordance with DoDI 4715.03, *Natural Resources Conservation Program*, and the Sikes Act Improvement Act, the Deputy Under Secretary of Defense (Installations and Environment) requires environmental management information to support Congressional reporting and ensure DoD is on track to meet its environmental management goals. Consequently, the Navy Natural Resources (NR) Metrics were developed to support the annual Natural Resources Program reviews between the Navy and its Sikes Act partners, the USFWS and State Fish and Wildlife agencies. These NR Metrics can be used to gather and report essential information required by Congress, Executive Orders, existing U.S. laws, and the Department of Defense. There are seven Focus Areas that comprise the NR Metrics to be evaluated during the annual review of the Natural Resources Program/INRMP.

1. Ecosystem Integrity
2. Listed Species and Critical Habitat
3. Fish and Wildlife Management for Public Use
4. Partnership Effectiveness
5. Team Adequacy
6. INRMP Project Implementation
7. INRMP Impact on the Installation Mission

Each of the seven Focus Areas contains questions that can be evaluated. Questions are weighted, with responses to questions having different values, ranging from 0.0 to 1.0. Each Focus Area is scored, using a rating scheme of **Green (1.0-0.67)**, **Yellow (0.66-0.34)**, and **Red (0.33-0.0)**, resulting in a comprehensive scorecard for the entire NR Metrics for each Navy installation (Figure 1).



**Figure 1.** Example of NR Metrics Scorecard.

The questions asked in each Focus Area of the NR Metrics are intended to measure how well the Navy managed natural resources at each installation during any given year as well as the status of project implementation. In FY11, the Navy revised the questions to reflect the updated DoDI 4715.03 and draft OPNAVINST 5090, currently under revision. In addition, the field was asked to respond for all Navy-owned sites, which includes installations and special areas, in the Navy's real property database, iNFADS. Of the approximately 829 sites within iNFADS, 314 sites were found to have significant natural resources. These sites were then rolled up based on main installations, e.g. all special areas associated with an installation and covered under the same INRMP. Unique special areas having their own INRMP were counted separately. This list of sites was then correlated to the CNIC Base Command list.

**Summary of NR Metrics by Focus Area**

Per FY11 NR Metrics, many of the installations appear to have healthy NR programs (as indicated by the numerous green scores for the various Focus Areas), which reflects their ability to successfully implement projects identified in their existing INRMPS. Further, responses to questions in the Ecosystem Integrity and Listed Species & Critical Habitat Focus Areas indicate that existing INRMPS are sufficient in accomplishing ecosystem based management and protection of listed species. The questions *scored* in the NR Metrics that were used to evaluate

the health of the NR program and effectiveness of the INRMP at each installation are listed below by Focus Area.

### **Focus Area 1: Ecosystem Integrity –**

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. Over the long term, that approach shall maintain and improve the sustainability and biological diversity of terrestrial and aquatic (including marine) ecosystems while supporting sustainable economies, human use, and the environment required for realistic military training operations. This Focus Area is intended to define the ecosystems that occur on the installation and assess the integrity of these ecosystems. The term, integrity, refers to the quality of state of being complete, unbroken condition, wholeness, entirety, unimpaired, without significant damage, good condition, or general soundness. Terrestrial ecosystems, as defined by Nature Serve’s [“Ecological Systems of the United States: A Working Classification of US Terrestrial Systems”](#) and marine ecosystems, as defined by NOAA’s [“Coastal and Marine Ecological Classification Standard”](#) (including only the Benthic Biotic Component, Surface Geology Component, and Water Column Component of the classification scheme) were selected from a list and assigned to each installation. Locally-defined ecosystems were added, if necessary. Once the ecosystems were assigned to the installation, the following questions [4 out of 5 new in FY11] were asked for each of the ecosystems identified as being present on the installation.

1. To what extent is the ecological system on the installation fragmented due to land conversion? (0-5)

Answers:

- 0 = Ecosystem fragmentation is the result of five (5) of the phenomena (0)
- 1 = Ecosystem fragmentation is the result of four (4) of the phenomena (0.20)
- 2 = Ecosystem fragmentation is the result of three (3) of the phenomena (0.40)
- 3 = Ecosystem fragmentation is the result of two (2) of the phenomena (0.60)
- 4 = Ecosystem fragmentation is the result of one (1) of the phenomena (0.80)
- 5 = No fragmentation (1.00)

2. Is the ecosystem effectively managed to sustain viable populations of species? (0-3)

Answers:

- 0 = Not effectively managed (0)
- 1 = Minimally effective management (0.33)
- 2 = Moderately effective management (0.67)
- 3 = Effectively managed (1.00)

3. To what degree is the ecological system vulnerable to stressors? (0-5)

Answers:

- 0 = Completely Vulnerable (0)
- 1 = Severely Vulnerable to Stress (0.20)
- 2 = Highly Vulnerable to Stress (0.40)

- 3 = Moderately Vulnerable to Stress (0.60)
- 4 = Slightly Vulnerable to Stress (0.80)
- 5 = Not Vulnerable to Stress (1.00)

4. To what degree has the installation's INRMP/Natural Resources Program provided an overall benefit to ecological integrity? (0-3)

Answers:

- 0 = No Benefit (0)
- 1 = Minor Benefit (0.33)
- 2 = Moderate Benefit (0.67)
- 3 = Significant Benefit (1.00)

Each of these questions in the Ecosystem Integrity Focus Area is equally weighted by a value of 1. This means that no one question contributes more to the overall score of the Focus Area than any other question. However, question #4 is the most relevant in terms of assessing the importance of the INRMP on Ecosystem Integrity. The score of each question, as well as the overall score of the Focus Area, can't exceed 1.00. This means that the score calculated for each question is the product of the numerical value associated with the answer provided and the weight (=1). For example, if the answer provided for question #4 is "No Benefit", then the score for that question is  $[0 \times 1 = 0]$ . But, if the answer provided for question #4 is "Significant Benefit", then the score for that question is  $[1.00 \times 1 = 1.00]$ . Therefore, if the INRMP has a significant benefit to ecological integrity, then the response of "Significant Benefit" to this question increases the potential for a higher overall score for this Focus Area, which may contribute to the Focus Area being coded as green.

Note: The numerical value associated with each answer is the result of the total potential score for the question (1.00) divided by the number of possible answers, except for zero. If NA is chosen, the question drops out of the calculation. For example, for question #4, there are three possible answers (other than "No Benefit", which is zero) so  $[1.00/3 = 0.33]$ . The answers are ranked according to importance, e.g. an INRMP with a "Significant Benefit" has more importance on the overall benefit to ecological integrity than an INRMP with a "minor benefit". Therefore, an answer of "Significant Benefit" to question #4 is weighted by 3, resulting in a score of 1.00 for the question.

## **Focus Area 2: Listed Species & Critical Habitat -**

This Focus Area is intended to identify the federally listed species that occur on a Navy installation and/or special area, as well as determine if conservation efforts are effective and if the INRMP provides the conservation benefits necessary to preclude designation of critical habitat for particular species. Federally listed species were selected from the USFWS list of federally threatened and endangered species and assigned to each installation. Once the listed species were assigned to the installation, the following questions [1 out of 6 new in FY11] were asked for each of the federally listed species identified as being present on the installation.

1. To what extent do INRMP projects & programs provide a benefit to this species? (0-4, NA)

Answers:

- 0 = No benefit (0)
- 1 = Minor benefits (0.25)
- 2 = Moderate benefit (0.50)
- 3 = Major benefit (0.75)
- 4 = Significant benefit (1.00)
- NA

2. To what degree have projects been funded in support of this species? (0-4, NA)

Answers:

- 0 = No funding (0)
- 1 = 1% to 25% funded (0.25)
- 2 = 26% to 50% funded (0.50)
- 3 = 51% to 75% funded (0.75)
- 4 = 76% to 100% funded (1.00)
- NA

3. To what extent are quantifiable goals, parameters, and monitoring requirements in place to assess conservation effectiveness? (0-4, NA)

Answers:

- 0= None (0)
- 1= Minimal (0.25)
- 2= Moderate (0.50)
- 3= Good (0.75)
- 4= Excellent (1.00)
- NA

4. Do existing surveys provide adequate data on habitat conditions? (Y/N)

Answers:

- N (0)
- Y (1.00)

5. Do existing surveys provide adequate data on population presence and numbers? (Y/N)

Answers:

- N (0)
- Y (1.00)

The questions in the Listed Species & Critical Habitat Focus Area are not equally weighted. Questions #1 and #3 are weighted the most at 1.1; question #2 is weighted 1.0; and questions #4 and #5 are weighted the least at 0.9. In particular, question #1 speaks directly to the effect of the INRMP on listed species. Therefore, if the answer provided for question #1 is “Significant Benefit”, then the score for that question is  $[1.00 \times 1.1 = 1.1]$ . Therefore, if the INRMP has a

significant conservation benefit to a listed species, then the response to this question increases the potential for a higher overall score for this Focus Area, which may contribute to the Focus Area being coded as green.

### **Focus Area 3: Fish and Wildlife Management for Public Use –**

The purpose of this Focus Area is to evaluate the availability of public recreational opportunities, such as fishing and hunting, given the existing security requirements for the installation. While recreational opportunities may be available at an installation, they may be restricted for security reasons. The following questions [6 out of 9 new in FY11] were asked.

1. Are recreational opportunities available on the installation? (Y/N)

Answers:

N (0)

Y (1.00)

NA (landscape doesn't support recreational opportunities)

2. If recreational opportunities are available, are they limited/restricted for security reasons? (Y/N/NA)

Answers:

Y (0)

N (1.00)

NA (recreational opportunities are not available)

3. If recreational opportunities are available, are they offered to the public?

Answers:

N (0)

Y (1.00)

NA (recreational opportunities are not available)

4. If recreational opportunities are available, are they offered to DoD personnel?

Answers:

N (0)

Y (1.00)

NA (recreational opportunities are not available)

5. If recreational opportunities are available, are they accessible by disabled veterans/Americans?

Answers:

N (0)

Y (1.00)



NA (recreational opportunities are not available)

6. Are Sikes Act fees collected for outdoor recreational opportunities? (Y/N/NA)

Answers:

N (0)

Y (1.00)

NA (recreational opportunities do not include hunting and fishing)

7. Is there an active natural resources law enforcement program on the installation? (Y/N/NA)

Answers:

N (0)

Y (1.00)

NA (recreational opportunities do not include hunting and fishing)

8. Are sustainable harvest goals addressed in the INRMP and effective for the management of the species' population? (0-4, NA)

Answers:

0 = Not effective (0)

1 = Minimal effectiveness (0.25)

2 = Moderate effectiveness (0.50)

3 = Effective (0.75)

4 = Highly effective (1.00)

NA (recreational opportunities do not include hunting and fishing)

9. Is public outreach/educational awareness provided? (0-4, NA)

Answers:

0 = No public outreach provided (0)

1 = Low outreach (0.25)

2 = Moderate outreach (0.50)

3 = Good outreach (0.75)

4 = Excellent outreach (1.00)

NA

The questions in the Fish and Wildlife Management for Public Use Focus Area are not equally weighted. Question #1 is weighted the most at 1.2; questions #2-5, #8, and #9 are weighted 1.0; and questions #6 and #7 are weighted the least at 0.9. Overall the questions in this Focus Area are relatively evenly weighted due to the fact that there are many contributing factors to whether or not recreational opportunities are available at an installation. Specifically, security restrictions often limit access to recreational opportunities. However, question #1 speaks to whether recreational opportunities are available on the installation. Therefore, if the answer provided for question #1 is "Yes", then the score for that question is  $[1.00 \times 1.2 = 1.2]$ . Therefore, if the installation offers recreational opportunities, as prescribed by the Sikes Act, then the response to this question increases the potential for a higher overall score for this Focus Area, which may

contribute to the Focus Area being coded as green. Similarly, question #2 asks if available recreational opportunities are limited or restricted for security reasons. Therefore, if the answer provide for question #2 is “Yes”, then the score for that question is [0 x 1 = 0]. This will reduce the overall score for this Focus Area, which may contribute to the Focus Area being coded yellow or red.

#### **Focus Area 4: Partnership Effectiveness –**

The purpose of this Focus Area is to determine to what degree partnerships are cooperative and result in effective implementation of the INRMP. Partnerships and/or initiatives actively participated in by installation NR staff were identified. Once they were identified, the following questions [4 out of 10 new in FY11] were asked for each of the partnerships and/or initiatives identified as relevant to the installation.

1. Does your Natural Resources program support the regional conservation efforts of the USFWS? (Y/N)

Answers:

N (0)

Y (1.00)

2. Does your Natural Resources program support State conservation goals identified in State Wildlife Action Plans (SWAPs)? (Y/N)

Answers:

N (0)

Y (1.00)

3. Does your Natural Resources program support regional NOAA/NMFS conservation objectives/efforts? (Y/N/NA)

Answers:

N (0)

Y (1.00)

NA

4. Does your Natural Resources program support other Conservation Initiatives? (Y/N)

Answers:

N (0)

Y (1.00)

5. Is there adequate collaboration/cooperation between partners? (0-4)

Answers:

0 = None (0)

1 = Minimal cooperation (0.25)

2 = Satisfactory cooperation (0.50)

3 = Effective cooperation (0.75)

4 = Highly effective cooperative (1.00)

6. Are NR program executions meeting USFWS & State expectations? (0-4)

Answers:

0 = Dissatisfied (0)

1 = Minimally satisfied (0.25)

2 = Somewhat satisfied (0.50)

3 = Completely satisfied (0.75)

4 = More than satisfied (1.00)

7. Did the USFWS participate in the INRMP/Natural Resources Program annual review? (Y/N)

Answers:

N (0)

Y (1.00)

8. Did the State participate in the INRMP/Natural Resources Program annual review? (Y/N)

Answers:

N (0)

Y (1.00)

9. Did the NOAA/NMFS participate in the INRMP/Natural Resources Program annual review, if applicable? (Y/N/NA)

Answers:

N (0)

Y (1.00)

NA

10. 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.) (0-4)

Answers:

0 = Not supported (0)

1 = Minimally supported (0.25)

2 = Satisfactorily supported (0.50)

- 3 = Well supported (0.75)
- 4 = Very well supported (1.00)

The questions in the Partnership Effectiveness Focus Area are not equally weighted. Questions #5 and #7-9 are weighted the most at 1.1; questions #1-3 and #6 are weighted 1.0; and questions #4 and #10 are weighted the least at 0.8. In particular, questions #7-9 speak directly to stakeholder participation in the annual Sikes Act review of the INRMP and NR Program at each of the installations. Specifically, question #7 asks if the USFWS participated in the INRMP/Natural Resources Program annual review. Therefore, if the answer provided for question #7 is “Yes”, then the score for that question is [1.00 x 1.1 = 1.1]. Likewise, if the answers to question #8 (regarding State Fish and Wildlife agency participation in the review) is “Yes” and question #9 (regarding NOAA/NMFS participation in the review, when applicable) is “Yes”, then the score for each of these questions is [1.00 x 1.1 = 1.1]. Therefore, if our Sikes Act partners are actively engaged in the annual review of our INRMPs, then the response to these questions increases the potential for a higher overall score for this Focus Area, which may contribute to the Focus Area being coded as green.

**Focus Area 5: Team Adequacy –**

The purpose of this Focus Area is to assess the effectiveness and adequacy of the Navy natural resources team in accomplishing the goals and objectives of the INRMP and Natural Resources Program at each installation. Team refers to the Navy staff only. The following questions [1 out of 7 new in FY11] were asked.

1. Is there a Navy professional Natural Resources Manager assigned by the Installation Commanding Officer? (Y/N)

Answers:  
N (0)  
Y (1.00)

2. Is there an on-site Navy professional Natural Resources Manager? (Y/N)

Answers:  
N (0)  
Y (1.00)

3. Is HQ and Regional support adequate, e.g. reach back support for execution, policy support, etc.)? (0-4)

Answers:  
0 = No support (0)  
1 = Minimal support (0.25)  
2 = Satisfactory support (0.50)  
3 = Well supported (0.75)  
4 = Very well supported (1.00)

4. Is there adequate Natural Resources staff to properly implement the INRMP goals and objectives? (Y/N)

Answers:

N (0)

Y (1.00)

5. The team is enhanced by the use of contractors. (0-4)

Answers:

0 = Disagree (0)

1 = Somewhat agree (0.25)

2 = Neutral (0.50)

3 = Agree (0.75)

4 = Strongly Agree (1.00)

6. The team is enhanced by the use of volunteers. (0-4, NA)

Answers:

0 = Disagree (0)

1 = Somewhat agree (0.25)

2 = Neutral (0.50)

3 = Agree (0.75)

4 = Strongly Agree (1.00)

NA

7. The Natural Resources team is adequately trained to accomplish its duties to ensure compliance. (0-4)

Answers:

0 = Disagree (0)

1 = Somewhat agree (0.25)

2 = Neutral (0.50)

3 = Agree (0.75)

4 = Strongly Agree (1.00)

The questions in the Team Adequacy Focus Area are not equally weighted by a value of 1. Questions #4 and #7 are weighted the most at 1.1; questions #1-3 are weighted 1.0; and questions #5 and #6 are weighted the least at 0.9. In particular, questions #4 and #7 speak directly to having sufficient NR staff and adequately trained NR staff to properly implement the INRMP goals and objectives at each of the installations. Therefore, if the answers to question #4 (regarding sufficient NR staff) is “Yes” and question #7 (regarding adequately trained NR staff) is “Yes”, then the score for each of these questions is  $[1.00 \times 1.1 = 1.1]$ . Therefore, the likelihood of getting a higher overall score for this Focus Area increases if there is sufficient NR staff that is adequately trained at the installation, which may contribute to the Focus Area being coded as green.

## Focus Area 6: INRMP Project Implementation –

The purpose of this Focus Area is to assess how the goals and objectives of the INRMP have been met through the projects implemented during the previous fiscal year. Projects were selected from a list of EPRWeb projects and evaluated based on the type of funding received, the status of the project, and whether projects realized their intended goals. In addition, benefits to ecosystem integrity or a listed species, previously identified as a part of the installation, were noted for each project, if applicable. The following questions [9 out of 10 new in FY11] were asked for each project identified as being implemented during FY11 at each installation.

1. Is project accomplishment on schedule? (Y/N)

Answers:

N (0)

Y (1.00)

2. What is the Project Status? (0,1)

Answers:

0= On-Hold; Funds Not Yet Received (0)

1= In EPRWeb; In POM; Emergent; Funding Received; SOW Prepared; Awarded/Executed; Now In-Progress; Completed (1.00)

3. Which Natural Resources Program Area was most benefitted from the project? (0,1)

Answers:

0=None (0)

1= Flora; Fauna; Habitat; At Sea; INRMP; Listed Species; Wetlands; Invasives; Soil; Forestry; Outdoor Recreation; Training; Other NR Requirements (Misc) (1.00)

4. The project design met the goals and objectives of the INRMP. (0-4)

Answers:

0 = Disagree (0)

1 = Neither agree nor disagree (0.25)

2 = Somewhat Agree (0.50)

3 = Fully Agree (0.75)

4 = Strongly Agree (1.00)

The questions in the INRMP Project Implementation Focus Area are equally weighted by a value of 1. In general, these questions are intended to evaluate the status of INRMP project implementation. Because there are some many factors outside the control of the NR program manager, it is difficult to score this Focus Area. It wouldn't be fair to penalize the NR program manager because many times the implementation status is due to a lack of funding or delays in execution. As long as the NR program manager has done their part in getting projects POMed and designed to meet the goals and objectives of the INRMP, then this should be reflected in the



score for this Focus Area. For example, if the answer to question #2 (regarding status of the project) is “In EPRWeb; In POM; Emergent; Funding Received; SOW Prepared; Awarded/Executed; Now In-Progress; or Completed” and question #4 (regarding project design) is “Strongly Agree”, then the score for each of these questions is [1.00 x 1 = 1.00]. Therefore, the likelihood of getting a higher overall score for this Focus Area increases, which may contribute to the Focus Area being coded as green.

### **Focus Area 7: INRMP Impact on Installation Mission –**

This Focus Area is designed to measure the level to which existing natural resource compliance requirements and associated actions support the installation’s ability to sustain the current operational mission. Per the Sikes Act, the goals and objectives of an INRMP should achieve no net loss of the mission at an installation. The following questions [0 are new in FY11] were asked.

1. Has Coordination between natural resources staff and other installation departments and military staff been successful/effective? (0-4)

Answers:

- 0 = No coordination (0)
- 1 = Minimal coordination (0.25)
- 2 = Satisfactory coordination (0.50)
- 3 = Effective coordination (0.75)
- 4 = Highly effective coordination (1.00)

2. To what extent has the INRMP successfully supported other mission areas? (e.g. encroachment, BASH, range support, port operations, air operations, facilities management, etc.) (0-4)

Answers:

- 0 = Not supported (0)
- 1 = Minimally supported (0.25)
- 2 = Satisfactorily supported (0.50)
- 3 = Well supported (0.75)
- 4 = Very well supported (1.00)

3. To what extent has there been a net loss of training lands or mission-related operational/training activities? (0-4)

Answers:

- 0 = Mission is fully impeded; training activities cannot be conducted (0)
- 1 = Mission/Training activities are somewhat impeded with workarounds (0.25)
- 2 = Neutral (0.50)
- 3 = No loss occurred (0.75)
- 4 = Mission has seen benefits (1.00)

4. Does the Natural Resource program effectively consider current mission requirements? (0-4)

Answers:

0: Strongly disagree

1: Disagree

2: Neutral

3: Agree

4: Strongly Agree

The questions in the INRMP Impact on Installation Mission Focus Area are equally weighted by a value of 1. In general, these questions are intended to evaluate the effectiveness of the installation's NR program on mitigating and/or avoiding natural resource impacts on the installation's military mission. For example, if the answer to question #3 is "Mission has seen benefits, then the score for this question is  $[0.75 \times 1 = 0.75]$ . Therefore, the INRMP satisfies a fundamental requirement of the Sikes Act, no net loss of the mission, contributing to a higher overall score for this Focus Area, which may contribute to the Focus Area being coded as green.

### **Summary of INRMP and Sikes Act Questions**

In addition to the NR Metrics questions, some additional questions were asked to assess the status of INRMPs at installations. In general, if an installation is reported as having significant natural resources, then it was counted as an installation requiring an INRMP. Per the DoDI 4715.03, significant natural resources are defined as 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 require an INRMP. Installations that actively manage fish and wildlife, forestry, vegetation and erosion control, agricultural outleasing 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. There are 73 Navy installations requiring INRMPs, all of which currently have an INRMP.

However, not all Navy installations with an INRMP have a compliant INRMP. A compliant INRMP is defined as "a complete plan that meets the purposes of the Sikes Act (§101(a)(3)(A-C)), contains the required plan elements (§101(b)(1)(A-J)), and has been reviewed for operation and effect within the past 5 years (§101(2)(b)(2))." Therefore, a compliant INRMP must be Sikes Act compliant and less than 5 years old. If the INRMP is greater than 5 years old, then it must have undergone a review for operation and effect within the past 5 years. A review for operation and effect is defined as "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)." According to this

definition, there are 41 compliant INRMPs and 32 noncompliant INRMPs. But, if you qualify the annual review of the Natural Resource Program/INRMP with the USFWS and State Fish and Wildlife agencies as a sufficient review for operation and effect, then the total number of noncompliant INRMPs decreases to only 4. Therefore, the remaining 28 INRMPs could be considered partially compliant because they meet the condition of a noncompliant INRMP, but the USFWS participated in the annual NR Metrics review during the last reporting period (FY11).

INRMP implementation refers to projects that meet the goals and objectives of the INRMP. In FY11, total funds expended toward implementing all 73 INRMPs equal \$29,475,223. These funds include O&MN, MIS, Ag-Outlease, Forestry Reserve Account, Legacy, and Special Projects funds. Of this, \$4,502,462 was spent on federally listed species, which accounts for approximately 15% of the total INRMP implementation costs. There are 75 critical habitat designations across all Navy installations, with 37 of these granted critical habitat designation exclusion under the ESA (Sec. 4. (a)), per NDA 2004. Further, 31 of those critical habitat designation exclusions were granted due to an INRMP.

### **Further Consideration**

Given the results of the FY11 NR Metrics, it appears that there may be a discrepancy between the health of the NR programs across the Navy and the POM-14 budget request. It is important to consider that the NR Metrics were designed to be subjective. So, it is difficult to try and interpret the answers provided to the NR Metrics in a way that will help justify something objective, like the budget. The two are not directly correlated. The POM-14 budget request is forward looking, e.g. what is needed to execute projects associated with INRMPs in the out-years. On the other hand, the NR Metrics reflect the past execution and implementation of INRMPs.

However, the increased request for funds may reflect the fact that many of the INRMPs need to be revised. According to this year's DEPARC data, there are 28 partially compliant INRMPs and 4 noncompliant INRMPs. Many of these may require a revision. There are likely many new projects associated with these noncompliant and partially compliant INRMPs that need to be implemented; hence, the increased request for funds.

Therefore, INRMP project tables should really be compared to projects in POM-14. This will highlight if there are still projects in INRMPs that need to be implemented, hence the INRMPs are not being successfully implemented and the goals and objectives of the INRMP may not be met. In the future, consideration should be given to framing questions in the INRMP Project Implementation Focus Area in a manner that asks about INRMP Implementation tables, instead of EPR Execution Reports. If the objective is to evaluate how well the current INRMP is being implemented and meeting the goals of the NR Program, then this is what should be driving requests for funds. The annual funds expended will continue to be pulled from the EPR Execution Report.



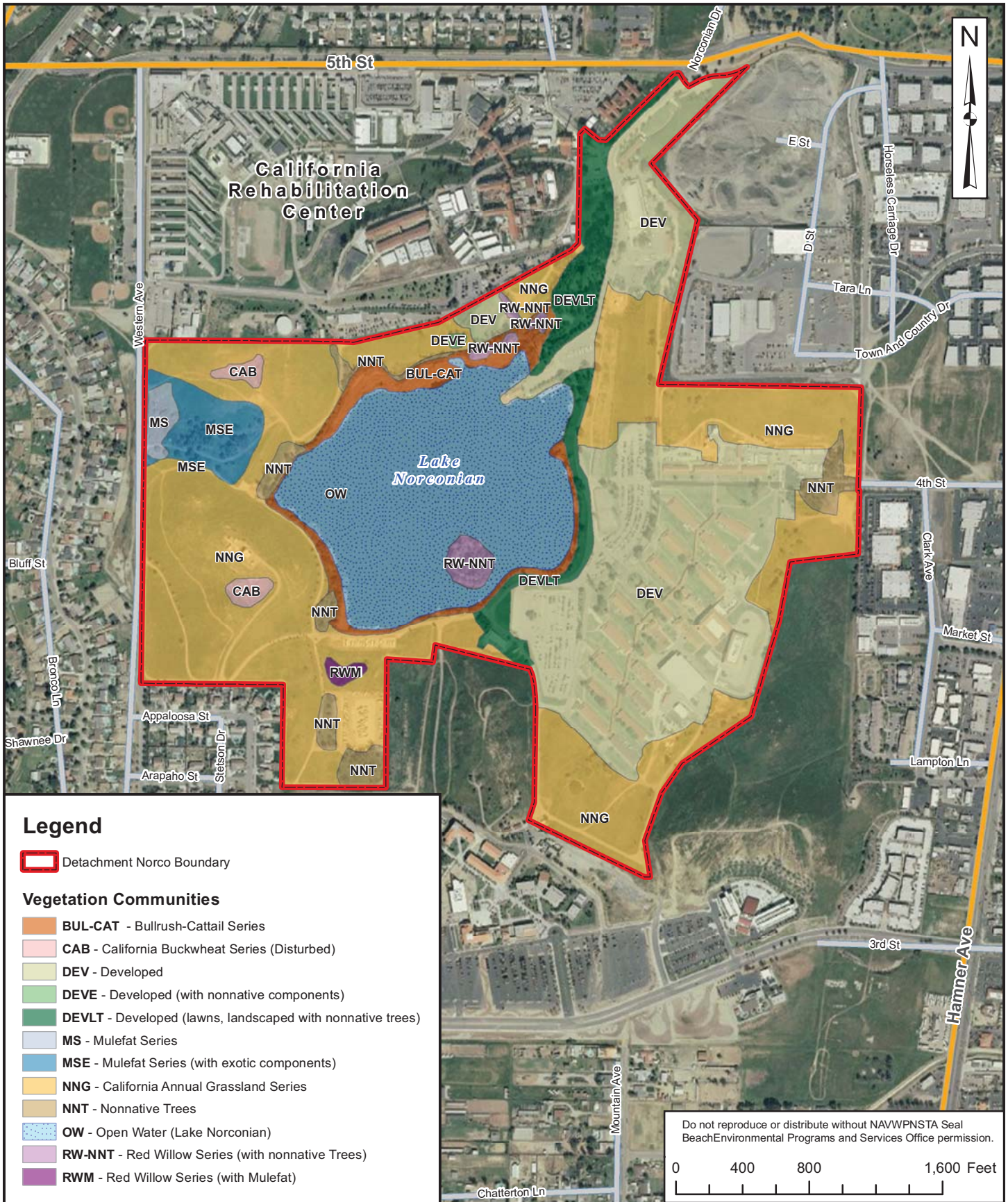
## **APPENDIX F**

### **VEGETATION RESOURCES**

- **VEGETATION MAP**
- **PLANT INVENTORY**

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**Vegetation Map**  
**Naval Weapons Station Seal Beach Detachment Norco**  
**Norco, California**

**FIGURE**  
**7**



# Plants Confirmed on Detachment Norco

Note: No special status species occur on this list.

Family - Genus - Species	Common Name	Status	Hamilton 1987	TDS 1996
<b>CUPRESSACEAE</b>				
G <i>Cupressus</i> sp.	cypress		X	X
G <i>Juniperus</i> sp.	juniper			X
<b>PINACEAE</b>				
G <i>Pinus</i> sp.	pine tree		X	X
<b>AIZOACEAE</b>				
D <i>Aptenia cordifolia</i>	baby sun rose			X
D <i>Carpobrotus chilensis</i>	sea fig			X
D <i>Carpobrotus edulis</i>				X
D <i>Lampranthus</i> sp.	hot-dog leaved ice plant			X
<b>AMARANTHACEAE</b>				
D <i>Amaranthus albus</i>			X	
D <i>Amaranthus blitoides</i>	pigweed			X
D <i>Amaranthus graecizans</i>			X	
<b>ANACARDIACEAE</b>				
D <i>Schinus molle</i>	California pepper tree or Peruvian pepper tree		X	X
<b>APOCYNACEAE</b>				
D <i>Nerium oleander</i>	oleander			X
<b>ASTERACEAE</b>				
D <i>Acourtia microcephala</i> [ <i>Perezia microcephala</i> ]			X	
D <i>Ambrosia psilostachya</i>	Western ragweed		X	X
D <i>Artemisia californica</i>	California sagebrush		X	
D <i>Baccharis pilularis</i>	chaparral broom, coyote brush			X
D <i>Baccharis salicifolia</i> [ <i>Baccharis viminea</i> ]	mule fat, seep-willow or water-wally		X	X
D <i>Centaurea melitensis</i>	toçalote			X
D <i>Chamomilla suaveolens</i>	pineapple-weed			X
D <i>Cichorium intybus</i>			X	
D <i>Cirsium vulgare</i>	bull thistle		X	X
D <i>Conyza bonariensis</i>	hairy fleabane		X	X
D <i>Conyza canadensis</i>	horseweed		X	
D <i>Encelia californica</i>			X	
D <i>Euthamia occidentalis</i> [ <i>Solidago occidentalis</i> ]	Western goldenrod		X	
D <i>Gnaphalium californicum</i>				X
D <i>Gnaphalium canescens</i> ssp. <i>beneolens</i>			X	
D <i>Gnaphalium palustre</i>			X	X
D <i>Hedypnois cretica</i>			X	
D <i>Helianthus</i> sp.				
D <i>Hemizonia fasciculata</i>				X
D <i>Heterotheca grandiflora</i>	telegraph plant		X	X
D <i>Hypochaeris glabra</i>	smooth cats-ear			X
D <i>Isocoma menziesii</i> [ <i>Isocoma veneta</i> ]	goldenbush			X
D <i>Lactuca serriola</i>	prickly lettuce		X	X
D <i>Lepidospartum squamatum</i>			X	
D <i>Lessingia filaginifolia</i> var. <i>filaginifolia</i> [ <i>Corethrogyne filaginifolia</i> ]	California-aster		X	
D <i>Microseris douglasii</i>			X	

The Hamilton survey covered an additional 221 acres south of the property boundaries. This area was excecised by NWAS in 1985.

Family - Genus - Species	Common Name	Hamilton1 1987	TDS 1996
D <i>Senecio vulgaris</i>		X	
D <i>Silybum marianum</i>	milk thistle	X	X
D <i>Sonchus oleraceus</i>	common sow thistle	X	X
D <i>Taraxacum officinale</i> [T. laevigatum]	dandelion	X	
D <i>Xanthium strumarium</i>	cocklebur	X	
<b>BORAGINACEAE</b>			
D <i>Amsinckia menziesii</i> var. <i>intermedia</i>	common fiddleneck	X	X
D <i>Cryptantha</i> sp.		X	
D <i>Heliotropium curassavicum</i> var. <i>oculatum</i>	alkali heliotrope		X
D <i>Plagiobothrys</i> sp.	popcorn flower	X	
<b>BRASSICACEAE</b>			
D <i>Brassica nigra</i>	black mustard	X	X
D <i>Brassica rapa</i> [B. campestris]	turnip, field mustard	X	
D <i>Capsella bursa-pastoris</i>		X	
D <i>Hirschfeldia incana</i> [Brassica geniculata]		X	
D <i>Lepidium lasiocarpum</i>			X
D <i>Raphanus sativus</i>	radish	X	
D <i>Sisymbrium altissimum</i>	tumble or Jim Hill mustard	X	
D <i>Sisymbrium officinale</i>	hedge mustard	X	
<b>CACTACEAE</b>			
D <i>Opuntia littoralis</i> [O. semispinosa]		X	
D <i>Opuntia parryi</i>	cane cholla, snake cholla	X	
<b>CAPRIFOLIACEAE</b>			
D <i>Sambucus mexicana</i> [S. caerulea]	blue elderberry	X	
D <i>Sambucus</i> sp.	elderberry		X
<b>CARYOPHYLLACEAE</b>			
D <i>Stellaria media</i>	common chickweed		X
<b>CHENOPODIACEAE</b>			
D <i>Atriplex semibaccata</i>	Australian saltbush		X
D <i>Chenopodium album</i>	pigweed, lamb's quarters	X	
D <i>Chenopodium ambrosioides</i>	Mexican tea	X	
D <i>Monolepis nuttallianna</i>	Nuttall's povertyweed		X
D <i>Salsola tragus</i> [S. kali]	Russian thistle	X	X
<b>CONVOLVULACEAE</b>			
D <i>Convolvulus arvensis</i>	bindweed, orchard morning-glory	X	
<b>EUPHORBIACEAE</b>			
D <i>Chamaesyce polycarpa</i> [Euphorbia p.]		X	
D <i>Eremocarpus setigerus</i>	Turkey mellein or dove weed	X	X
<b>FABACEAE</b>			
D <i>Albizia julibrissin</i>	silk tree		X
D <i>Ceratonia siliqua</i>	carob		X
D <i>Cercidium microphyllum</i>	littleleaf Palo Verde		X
D <i>Medicago sativa</i>	alfalfa, lucerne	X	X
D <i>Melilotus alba</i>	white sweetclover	X	X
D <i>Melilotus indica</i>	sourclover	X	X
D <i>Trifolium repens</i>	white clover	X	
D <i>Trifolium willdenovii</i>		X	
<b>FAGACEAE</b>			
D <i>Quercus agrifolia</i>	coast live oak		X

G = Gymnosperm, D = Dicot, M = Monocot

1/ The Hamilton survey covered an additional 221 acres south of current property boundaries. This area was excised by NWS in 1985.



Family - Genus - Species	Common Name	Hamilton1 1987	TDS 1996
<b>GERANIACEAE</b>			
D	<i>Erodium botrys</i>		X
D	<i>Erodium cicutarium</i>	X	X
D	<i>Erodium moschatum</i>	X	X
<b>LAMIACEAE</b>			
D	<i>Marrubium vulgare</i>	X	X
D	<i>Rosmarinus officinalis</i>		X
D	<i>Salvia apiana</i>	X	
<b>MALVACEAE</b>			
D	<i>Malva parviflora</i>		X
<b>MYRTACEAE</b>			
D	<i>Callistemon citrinus</i>		X
D	<i>Eucalyptus globulus</i>	X	X
D	<i>Eucalyptus</i> sp.		X
<b>NYCTAGINACEAE</b>			
D	<i>Mirabilis californica</i>	X	
<b>NYMPHAEACEAE</b>			
D	<i>Nymphaea mexicana</i>		X
<b>PITTOSPORACEAE</b>			
D	<i>Pittosporum</i> spp.		
<b>PLATANACEAE</b>			
D	<i>Platanus racemosa</i>		X
<b>PLUMBAGINACEAE</b>			
D	<i>Plumbago auriculata</i>		
<b>POLYGONACEAE</b>			
D	<i>Eriogonum fasciculatum</i>	X	X
D	<i>Polygonum punctatum</i>	X	
D	<i>Rumex crispus</i>	X	X
<b>PRIMULACEAE</b>			
D	<i>Anagallis arvensis</i>		X
<b>PROTEACEAE</b>			
D	<i>Grevillea</i> sp.		X
<b>PUNICACEAE</b>			
D	<i>Punica granatum</i>		X
<b>ROSACEAE</b>			
D	<i>Rhaphiolepis indica</i>		X
<b>SALICACEAE</b>			
D	<i>Salix gooddingii</i>	X	X
D	<i>Salix hindsiana</i>	X	
D	<i>Salix lasiolepis</i>	X	
<b>SOLANACEAE</b>			
D	<i>Datura</i> sp.?		X
D	<i>Nicotiana glauca</i>	X	X
<b>URTICACEAE</b>			
D	<i>Urtica dioica</i> ssp. <i>holosericea</i>	X	
<b>VIOLACEAE</b>			
D	<i>Viola</i> sp.		X
<b>VITACEAE</b>			
D	<i>Vitis californica</i>		X

G = Gymnosperm, D = Dicot, M = Monocot

1/ The Hamilton survey covered an additional 221 acres south of current property boundaries. This area was excised by NWS in 1985.

Family - Genus - Species	Common Name	Hamilton1 1987	TDS 1996
<b>ARECACEAE</b>			
M	<i>Washingtonia filifera</i>	X	X
M	<i>Phoenix dactylifera</i>	X	X
<b>CYPERACEAE</b>			
M	<i>Scirpus tabernaemontani</i> [=S. validus]	X	X
<b>IRIDACEAE</b>			
M	<i>Iris pseudacorus</i>		X
M	<i>Iris sp.</i>		X
<b>JUNCACEAE</b>			
M	<i>Juncus balticus</i>	X	X
<b>LILIACEAE</b>			
M	<i>Yucca sp.</i>		X
<b>POACEAE</b>			
M	<i>Agrostis sp.</i>		
M	<i>Arundo donax</i>		X
M	<i>Avena barbata</i>	X	X
M	<i>Avena fatua</i>	X	X
M	<i>Bromus carinatus</i>		X
M	<i>Bromus diandrus</i>	X	X
M	<i>Bromus hordeaceus</i>	X	
M	<i>Bromus madritensis</i> ssp. <i>rubens</i> [=B. <i>rubens</i> ]	X	X
M	<i>Bromus tectorum</i>	X	
M	<i>Cortadera sp.?</i>		X
M	<i>Cynodon dactylon</i>	X	X
M	<i>Cynosurus echinatus</i>	X	
M	<i>Distichlis spicata</i>		X
M	<i>Elymus elymoides</i> ssp. <i>elymoides</i>	X	
M	<i>Hordeum jubatum</i>	X	
M	<i>Hordeum marinum??</i>		X
M	<i>Hordeum marinum</i> ssp. <i>gussoneanum</i>		X
	<i>Hordeum sp.??</i> (4/29/96)		
M	<i>Lamarckia aurea</i>		X
M	<i>Paspalum distichum</i>		X
M	<i>Poa annua</i>	X	X
M	<i>Polypogon interruptus</i>	X	
M	<i>Polypogon monspeliensis</i>		X
M	<i>Vulpia sp.?</i>		
<b>SAURURACEAE</b>			
M	<i>Anemopsis californica</i>		X
<b>TYPHACEAE</b>			
M	<i>Typha latifolia</i>	X	X

G = Gymnosperm, D = Dicot, M = Monocot

1/ The Hamilton survey (1987) covered an additional 221 acres south of current property boundaries. This area was excluded by NWAS in 1985.

Sources: 1) Hamilton, Michael P. and Associates 1987;

2) Tierra Data Systems (TDS), Vegetation survey spring 1996.

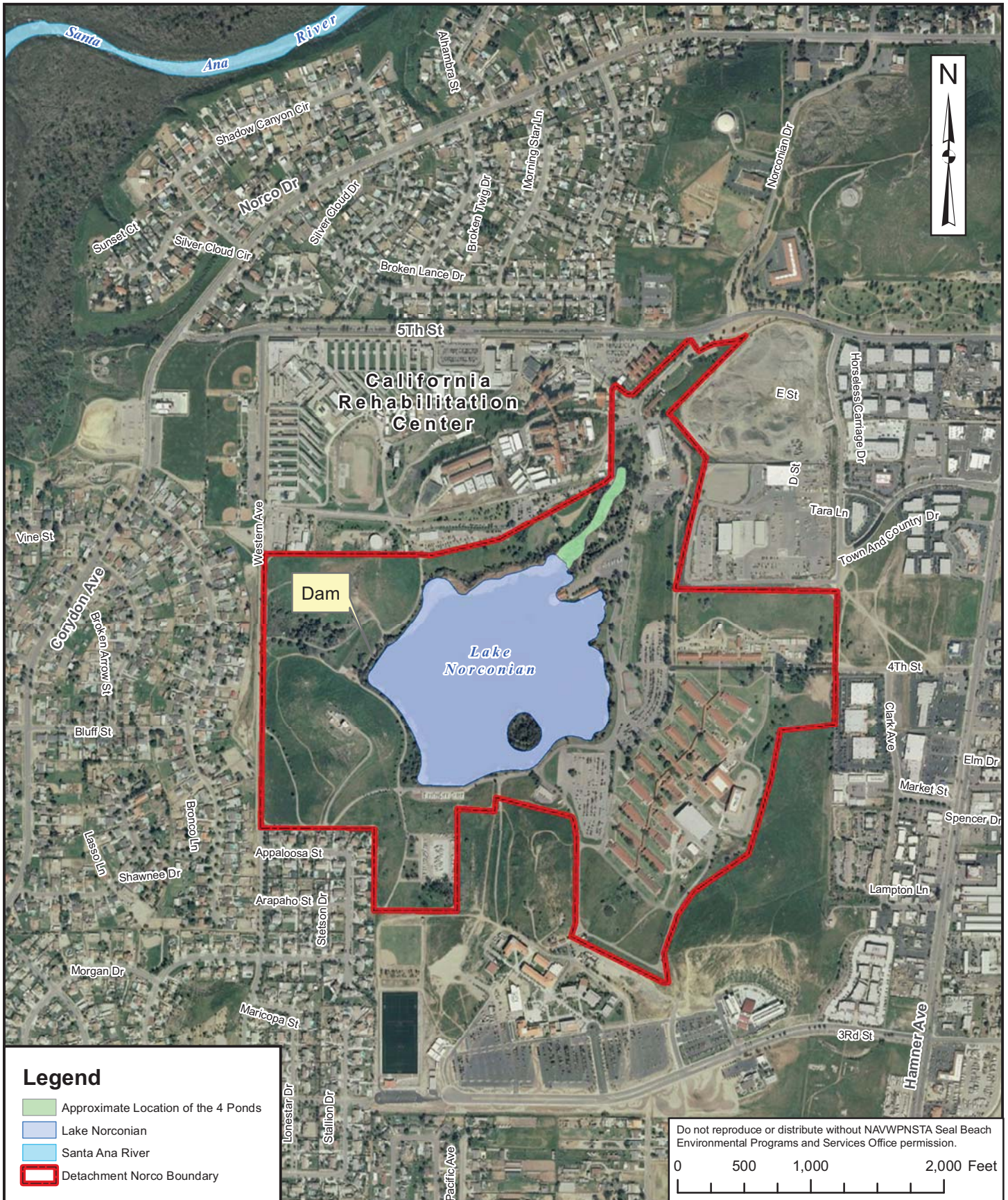


## **APPENDIX G**

### **WETLAND RESOURCES**

- **WATER RESOURCES MAP**
- **1998 WETLAND DELINEATION**

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**Water Resources**  
**Naval Weapons Station Seal Beach Detachment Norco**  
**Norco, California**

**FIGURE**  
**6**





## **Introduction**

Wetland delineation is necessary for land owners and managers to comply with the Clean Water Act and other laws, which require that these ecologically valuable areas be protected.

Ecosystem functions in Wetlands belie their small area. They can profoundly affect the natural vitality of an entire region. The reason there has been such a national focus on Wetlands is at least in part because so few remain from pre-settlement times. In California, 91 percent are estimated to be lost to conversion to farmland, flood control, water diversion and urban development (Dahl 1990). This has been detrimental to bird, mammal, and other wildlife populations. Also, Wetland degradation can be caused by seemingly unrelated or indirectly connected activities, such as changes in upstream drainage contours, increased runoff from upslope developments, pumping, or plowing too deeply in a claypan that supports vernal pools. Effects originating off-site have served to sore up the necessity for outside regulation.

Interpretation of the field data collected and conclusions about jurisdictional status in this report are subject to confirmation and review by the U.S. Army Corps of Engineers (USACOE). They make the final jurisdictional determination, and should be contacted in cases where site-specific projects are being considered.

This report is an Appendix to the 1998 Integrated Natural Resource Management Plan for NWS Corona.

## **Objective**

The objective of the wetlands inventory is to provide sufficiently detailed and accurate jurisdictional delineations to support the subsequent assessment of impact, permit processing and mitigation planning. The “integrated” inventory addresses all potential regulatory boundaries and identifies other regulated water bodies and wetland-associated habitats (Cylinder 1995). These include separately mapped:

- Jurisdictional wetlands (Section 404);
- Special aquatic sites (Section 404(b)(1) guidelines);
- Waters of the United States (Section 404)
- Navigable waters (Section 10)
- Historically navigable waters (Section 10)
- Riparian habitat (Sections 1600-1607 CDFG Code)

## **Federal and California Wetland Regulations**

Section 404 of the Clean Water Act (CWA) gave regulatory authority over Waters of the U.S., which include Wetlands, to the Environmental Protection Agency (EPA). The EPA delegated this authority to the USACOE, but retains veto power over permit decisions. The agencies and jurisdictions involved in California Wetland regulation are listed in Table 1.

“Waters of the U.S.” is the general category of regulated water bodies defined in the Clean Water Act (See Table 2). Discharges of dredge or fill into these water bodies, which include Wetlands, are regulated under Section 404 of the Act. The Corps also regulates the transport of dredged material for the purpose of disposing into the ocean (Section 403). “Navigable Waters,” under Section 10 of the Rivers and Harbors Act, are regulated by the Corps. These are “subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce” (33 CFR 329.4).

To summarize, in coastal areas USACOE’s jurisdiction extends from the High Tide Line (not including storm surges) to three nautical miles seaward. In fresh waters, it includes the channel itself (defined by the Ordinary High Water Mark), to the outer edge of adjacent wetlands. Wetlands isolated from surface water bodies, such as vernal pools, also fall under Corps regulation.

Table 2 lists the types of regulated water bodies, and some that are specifically excluded from exemption. Wetlands are more highly scrutinized than most other types of Waters of the U.S. with respect to their delineation, and mitigation measures and ratios applied to them. Some types of Waters of the U.S. are not intuitively obvious, but are in fact regulated. These include vernal pools, desert playas, ephemeral swales, desert arroyos, desert playas, seasonal ponds, reservoirs, farm or stock ponds fed by direct rainfall or impoundment (not by pumped water), artificial wetlands that receive water without artificial controls (such as pumps, valves, or gates), and farmed wetlands.



Table 0-1. Jurisdictional authorities over Wetlands and other regulated Waters in inland areas. (Adapted from Cylinder et al. 1995)

Table 1:

Agency	Regulation	Authority	Jurisdiction
U.S. Environmental Protection Agency	Clean Water Act NEPA, CEQA	Enforcement; veto power over a Corps-issued permit Comment only	Waters of the U.S, including wetlands
U.S. Army Corps of Engineers	Clean Water Act, Section 404 Rivers and Harbors Act, Section 10	Regulates dredge and fill Regulates construction of structures, dredge and fill.	Waters of the U.S, including wetlands. Navigable Waters (subject to ebb and flow of the tide and could be used for interstate or foreign commerce).
U.S. Fish and Wildlife Service	Fish and Wildlife Coordination Act Endangered Species Act CEQA, NEPA	Review and comment only USACOE must consult with USFWS on 404 permits if endangered species on site. Comment only	Waters of the U.S., including wetlands
Natural Resource Conservation Service	Food Security Act, 59 CFR 12, January 19, 1994	Regulates activities in agricultural areas	Farmed Wetlands associated with agricultural lands. (USACOE responsible in some counties where NRCS has not implements its authority, mostly in the San Francisco Bay Area)
California Department of Fish and Game	CDFG Code, Sec. 1600-1607 CEQA, NEPA	Regulates projects that alter stream or lake flow, bed, channel or banks. Comment only.	California streams and lakes, and riparian and lakeside vegetation.
State and Regional Water Quality Control Boards	Clean Water Act, Section 401 Clean Water Act, Section 402 CEQA, NEPA	Issues water quality certification, which is required for 404 permit Regulates discharge of waste. Comment only.	Waters of the U.S., including wetlands. Waters of the U.S., including wetlands.

Table 0-2. Regulatory terminology addressing Waters of the United States. (Adapted from Cylinder et al. 1995)

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### Terms and Definitions

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Waters of the U.S. (Clean Water Act, Section 404):

1. Special Aquatic Sites
    - a. Wetlands (seasonally or perennially waterlogged, and supporting specially adapted plants; usually in the transition zone between uplands and deep water habitats)
    - b. Sanctuaries and Refuges (federal, state, or locally designated)
    - c. Mudflats (periodically inundated, unvegetated tidal flats, or inland lake/pond/stream margins)
    - d. Vegetated Shallows (permanently inundated with rooted, submerged plants)
    - e. Coral Reefs (invertebrate deposits in warm oceans)
    - f. Riffle and Pool Complexes (alternating turbulent and calm portions of streams over coarse substrate that provide high quality fish and wildlife habitat)
  2. Territorial Seas - Zero Ordinary Low Tide and seaward three nautical miles
  3. Tidal Waters - High Tide Line (includes spring and other periodic high tides but not storm surges)
  4. Nontidal Waters - Ordinary High Water Mark
- 

Navigable Waters (Rivers and Harbors Act, Section 10): These waters are subject to tidal influence, or could be used for interstate or foreign commerce. Usually the same boundary as Waters of the U.S. Clean Water Act regulations normally supersede Rivers and Harbors Act regulations.

1. Tidal - Mean High Water Mark
  2. Nontidal - Ordinary High Water Mark
- 

Water bodies specifically excluded from Section 404 regulation:

1. Irrigation ditches
  2. Drainage ditches excavated in uplands
  3. Temporary sediment basins on construction sites
  4. Reflecting pools
  5. Wastewater systems, including treatment ponds and lagoons
  6. Ponds and wetlands that are part of an ongoing mining operation, unless created as mitigation for past impacts
-

## Methods

Potential wetland areas were visited in the field.

The methods used to delineate Wetlands are outlined below.

- A. Compile and review existing resources:
    - I. National Wetlands Inventory map from GIS, earlier surveys and plant lists for the Santa Margarita; SCS Soil Survey for identification of hydric soils; USGS 1:24,000 topographic maps for hydrologic “blue lines;” aerial photos [years];
    - II. Classify hydric vegetation based on USFWS classification of wetland and deepwater habitats (Reed 1988). A map with these determinations already made was provided and used to plan field time on the Detachment.
  - B. Determine areas supporting or with the potential to support hydrophytic vegetation, or sites adjacent to these (FICWD 1989).
- III. Record evidence supporting the three-parameter criteria for Section 404 wetlands on data forms from the 1987 Corps Wetlands Delineation Manual (USACOE 1987). In each location, a number of indicators are evaluated to determine if a site qualifies as a legal wetland. Each of three criteria must be satisfied:
- a. Predominance of vegetation adapted to an anaerobic soil environment. Transects will cross suspected wetland areas and points will be established in all vegetation communities and near the wetland boundary in sufficient quantity to determine the wetland boundary. Areas estimated visually to have 50 percent or more cover obligate, facultative-wetland, or facultative plants are considered to have met the hydrophytic vegetation criterion of the three-criterion method set forth in USACOE (1987).
  - b. Presence of hydric soils, that is, evidence of an anaerobic soil environment in the upper portion of the soil profile due to ponding, flooding, or saturation. Dig sample soil test pits to a depth of 30 cm (18”). Check Munsell color charts, vertical streaking, high organic matter, mottling, and for spodic and organic pans. Indicate whether soils are similar or dissimilar to soil mapping unit from the Soil Survey. Observe the hole for standing water or seepage from nearby areas. This criterion is fulfilled if there is evidence of long-term reducing conditions.
  - c. Presence of regular inundation or saturation for a sufficient duration to cause anaerobic conditions in the soil root zone, based on flow pattern, scouring, ponding and accumulation of debris and sediment.

- C. Map jurisdictional Wetlands, jurisdictional non-Wetland waters of the United States, CDFG riparian zones not already covered by federal regulations for compliance with Section 1600-1607, nearby non-Wetlands, and locations of test pits.
- D. Photograph representative areas.

## Site Description

### Location

In western Riverside County, southern California, NWAS Corona is located within the city of Norco off of I-15, three miles north of the city of Corona, and about eight miles west of the city of Riverside on Highway 91. To the south and west are the Chino Hills, and to the south the Santa Ana Mountains and Cleveland National Forest. The San Bernardino Mountains are visible on a clear day to the north with Mt. San Antonio (Old Baldy) visible prominently on a clear day.

### 0.0.1 Hydrology

The site lies on the southern California coastal plain within the Peninsular Ranges landform province. It ranges in elevation from 580 ft. to 755 ft., and includes some rounded hills with two drainages. The main lake drainage flows west, then south to enter the Prado Basin of the Santa Ana River. Part of the Santa Ana River watershed, the River itself lies approximately 1km north of NWAD, which even today with its highly altered flows is a substantial riverine ecosystem with diverse flora and fauna. It drains over 2,00 square miles.

### Climate, Precipitation and Runoff

The climate is semi-Mediterranean, with hot, dry summers and cool, mild winters averaging less than 12 inches in annual rainfall. Average annual temperatures are 59-65 degrees. The frost-free season 200 to 300 days. (USDA 1971)

### Soils

Soils of the area are of granitic origin with clayish silt along drainages, and sandier sediments on the hillslopes. Occasional granite outcrops are associated with the Southern California Batholith.

There are no soils mapped as hydric on the property. However two soil types currently support riparian plant communities and needed to be field-checked for their Wetland status.

*Greenfield sandy loam 2-8% slopes, eroded.* This soil series of alluvial fans and floodplains occurs under Lake Norconian and below the main dam. It is moderately permeable, and has an Available Water Holding Capacity of 7.5-10". It has a high natural fertility and in other locations supports farming or housing developments.

*Delhi fine sand 2-15% slopes, wind-eroded.* This sand dune series ranges from sand to loamy fine sand, and has occasional silt lenses. On the NWAD Corona property it occurs in the stormwater drainage leading from the secured building development to the Community College.

The level of soil resolution for Soil Survey maps is appropriate for planning purposes only. For activities where soil properties are important, such as construction projects, testing should be done to confirm the nature of the soil on site. For Wetland delineation, the soil on site does not always match the mapping unit for the type, and this is noted on the data sheet.

### **Vegetation**

The nature of NWAD Corona's mission has enabled the majority of its area to remain as open space, with plant communities and wildlife habitats that include a 55-acre lake, riparian drainages, some inland sage scrub on the hillsides, open annual grassland, mowed areas, and landscaped grounds. Development, tilling and grading of the property, both historical and associated with Navy ownership, have altered the natural resources of the site from what was thought to be a native grassland with coastal sage scrub on the hillsides. Because so much of the surrounding area continues to grow in population and support urban development, the NWAD Corona property has become an island of riparian and lake habitat without any effective linkage to other open space.

Several types of Wetland communities were classified by the USFWS National Wetlands Inventory and mapped on the property. The definition used to classify "wetlands" by the USFWS is much broader than that appropriate for mapping jurisdictional status under the Clean Water Act. The USFWS maps were delineated from aerial photos flown in 1990 at a scale of 1:40,000 with little field checking, so represent potential jurisdictional Wetlands, not actual. The vegetation classification includes:

*Palustrine Scrub-Shrub Wetland:* Seasonally or temporarily flooded riparian areas with woody shrubs or saplings less than 6 m (20 ft.) tall.

*Lacustrine Limnetic Unconsolidated Bottom:* Permanently flooded deepwater habitat with vegetative cover less than 30% and at least 25% cover of particles smaller than stones. Characterized by the lack of large, stable surfaces for plant and animal attachment.

*Lacustrine Littoral Aquatic Bed:* Permanently flooded, vegetated areas dominated by plants that grow on or below the water surface during the growing season in most years.

## **Results**

### **A. Progress of Field Work**

The field evaluation of Wetland communities occurred on May 22 totalling approximately 6 person-hours.

### **B. Sites Visited**

The Wetland Delineation Map shows the locations visited during field surveys, and Table 1 lists each location and the preliminary Wetland determination for that site..

Table 0-3. Field sites visited during Wetlands survey, site and drainage description, and preliminary jurisdictional determination

Site	Type	Drainage	Preliminary Wetland Determination
1	Seep willow	Low spot in riparian	Not a Wetland*
2	<i>Anemopsis</i>	low spot in upper riparian	Wetland
3	<i>Scirpus</i> marsh	lake margins	Wetland
4	Riparian	margins of draw	Not a Wetland

\*Contains riparian habitat which may, if modified, require a Streambed Alteration Agreement with the State of California under Section 1600-1607 of the CDFG Code.

### C. Preliminary Jurisdictional Determinations

Two types of jurisdictional Wetland communities were delineated on the property.

*Scirpus validus* - *Typha latifolia* Marsh Wetland: This jurisdictional Wetland occurs around the margins of Lake Norconian

*Salix lasiolepis* - *Anemopsis californica* Riparian Scrub-Shrub Wetland: This is a small area in a depression below the main dam that impounds Lake Norconian. It contains significant cover of two obligate hydrophytes (*Anemopsis californica* and *Juncus balticus*).

Lake Norconian does not fall under the definition of Waters of the U.S., and so does not fall under the jurisdiction of the Clean Water Act. This is because it is artificially created and fed by pumped groundwater in an upland situation. (Eric Stein, Los Angeles District Army Corps of Engineers, pers. comm. June 1996.)

The riparian draws and lake margins, the margins of the five small ponds that drain into the lake, and a small drainage leading from the secured building area to the Community College are lined with trees, and come under the jurisdiction of CDFG Code Sec. 1600-1607. The Navy has agreed to comply as far as is practicable with California law (OPNAVINST 5090.1B). If these areas are modified, it should be done under a Streambed Alteration Agreement with CDFG.

The results of this field survey are preliminary and will require verification by USACOE for questions on site-specific impacts.



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- (Bowers 1993) (USMCB Camp Pendleton 1995)



**APPENDIX H**

**1995-1996 ARTHOPOD SURVEY  
(PROVIDED ON CD)**

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## **Arthropod survey of the U. S. Naval Weapons Station (NWAS), Corona, California, July 1995 to November 1996**

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July 10, 1998

### **Introduction**

The great value of insects and other terrestrial arthropods to both the theory and practise of conservation biology lies in their highly specific adaptations across a wider range of habitats and niches than any comparable group of animals. Since most arthropod species have populations regulated by density independent factors and are r-strategists, they are highly sensitive to perturbations at small scales in both time and space. They are sensitive to pollution and contamination from many sources, make excellent biodiversity indices, have the capability of being cheaply and rapidly collected in statistically significant numbers, and are easily identified to the species level in several some groups (e.g. butterflies, dragon- and damsel-flies, and many moths, larger beetles, orthoptera, and larger flies), and higher taxon levels (family) in all groups.

The arthropod surveys performed at NWAS Corona were not exhaustive, but comprehensive. They can provide a baseline for future studies and could serve as indicators in the event any habitat enhancements are proposed. They also have value in the assessment of the habitat status as a natural resource. Two quantitative approaches were applied to respectively estimate the community of flying insects (malaise trapping) and ground dwelling species (pitfall trapping). Trapping was augmented by periodic conventional net collecting (sweeping) and visual identification.

### **Methods**

Four data collecting methods were employed at the NWAS Corona: sight identification (butterflies and beetles), sweeping, pitfall trapping, and a malaise trap. The first two methods were applied across the entire habitat where conditions indicated habitat values would support some native arthropod communities. Pitfall traps were set in plant associations that are representative of the region. The malaise trap was set at the interface of the riparian zone west of Lake Norconian. Locations of the traps is indicated on the attached site map, which also outlines the major plant communities.



Pitfall traps consist of one quart cottage cheese containers filled with about 200 ml of non-toxic anti-freeze and buried in the soil such that the rim of the containers are at ground level. Any ground dwelling arthropod falling into the traps are preserved for routine pick up. The method provides non-biased, or at least repeatable, quantitative sampling of the community of ground dwelling species that can be employed for comparative analysis over time and place. We now have data from over fifty trap sites across coastal southern California with sampling started in 1989. We are reaching a point where meaningful data are available for comparing these sites and conditions. The raw data are in the UCLA Urban Wildlands group (Department of Geography) BIOTA database and a voucher collection of all specimens is maintained.

Both pitfall and malaise traps were set out on August 1, 1995 with samples collected monthly from September 21, 1995 through November 19, 1996. Malaise trap samples were lost between December 1995 and May 1996 because of vandalism of the trap during this period. Some pitfall samples were variously vandalized or destroyed by coyotes. Sweep and visual determinations were also made on all days the traps were sampled. The traps were initially placed by Rogers and Mattoni with subsequent sampling made by Rogers. All determinations were made by Rogers to the lowest taxonomic level he could easily ascertain. Butterflies and most bee- and hover-flies were determined to species level. In the complete summary data given for both trapping methods in two tables, taxa are all classified to family. Where genera only are known species is indicated by sp after the generic epithet. For cases where both genus or species is not determinable, these are indicated by gen & sp followed by a number.

### Results

In general arthropod diversity of the site is low based on quantitative samples from both pitfall and malaise traps. The situation for butterflies is particularly striking, but the pattern is similar for the other insect groups with which we have knowledge. The basic cause of the depauperate state is the poor representation of native plants, both in diversity and abundance. The remaining undeveloped open space has been impacted by several highly invasive non-native plants which have displaced natives. The lost natives serve as larval foodplant and nectar resources to which all the endemic insects were adapted.

The predominant nectar sources at which butterflies and other nectar seeking insects were taken were common buckwheat (*Eriogonum fasciculatum*), goldenbush (*Haplopappus [Isocoma] venetus*), and heliotrope (*Heliotropium curassavicum*), species that bloomed in early summer and fall. Predominant and sparse shrub cover include buckwheat (*Eriogonum fasciculatum*) with dense willow and mule fat in wet areas. Native plants provide poor nectar sources which correlates with low arthropod diversity of the site. There is no evidence of spring flowering annual forbs within the shrubland. Dense forb



With respect to arthropods of conservation concern, the only potential insect of would be the greenest tiger beetle, *Cicindella viridissima trancobarica*. This species was formerly widespread along the Santa Ana river and its tributaries and has been proposed for listing because of its now diminished populations. However, the species apparently is restricted to broad sandy/rocky stream beds near actively flowing waters. In spite of the riparian zones it would not be expected at NWAS. The beetle was nevertheless targeted for special attention, but we found no evidence of its presence.

The following two sections provides a listing, with commentary, on the two groups of insects that can be evaluated almost entirely: butterflies and beeflies.

### **Butterflies and Skippers (Lepidoptera, Papilionoidea and Hesperoidea)**

The following presents our findings, summarizes the entire expected butterfly community, and gives some conclusions concerning conservation biology for butterflies at NWAS Corona.

The following list has been developed using the overview information given by Mattoni, 1990, Butterflies of Greater Los Angeles. Although NWAS lies outside the boundaries of that report, there are no species to be dealt with that are not cited. Abbreviation notations concerning biological parameters of conservation interest are taken from that paper as follows:

Species number is from Mattoni, 1990, when preceded by XX these were seen or sampled. Species that are presently or historically expected are indented. Species generally declining over the past 25 years (\*), species apparently near extirpation in the general vicinity (\*\*). (G) indicates species found in all habitats including gardens in all urban areas.

General distribution: WS, widespread, found everywhere. NA, widespread but only in undisturbed habitat. LO, localised in colonies. RM, regular migrants usually found every year. SM, sporadic or rare migrants

Resident habitat type: U, universal in all habitats. S, coastal sage, C, chaparral, O, oak woodland or savannah. G, grassland. R, riparian. D, coastal dunes. M, saltwater marsh.

Relative abundance of adults (relative abundance as maximum number on an optimal day during the mid-flight period): V, very rare, none or one. R, rare, 2-4. O, occasional, 5-9. A, abundant, 10-49. C, common, over 50.

Dispersal range: 0, moves less than 100 m. 1, moves 100-1000 m. 2, moves 1-50 km. 3, moves over 50 km.

Voltinism: S, single brooded. D, double brooded. M, more than two broods per year.

Adult flight times: Months seen in field.

Diapause stage: E, egg. L, larva (instar in parenthesis). P, pupa. A, adult.

Larval foodplant range: M, monophagous, feeds only plants within a genus. O, oligophagous, feeds on plants within a family. P, polyphagous, feeds on two or more families.

Taxon								
<b>PAPILIONIDAE</b>								
<b>XX1. Anise swallowtail (G)</b>								
	<i>Papilio zelicaon</i>	WS	U	A	2	M(Jan-Dec)	P	P
<b>XX2. Western tiger swallowtail (G)</b>								
	<i>Papilio rutulus rutulus</i>	WS	U	A	2	M(Feb-Oct)	P	P
<b>XX4a. Giant swallowtail (G)</b>								
	<i>Papilio cresphontes</i>	WS	U	A	2	M9Feb-Oct)	P	O
<b>PIERIDAE</b>								
<b>XX4. Cabbage butterfly (G)</b>								
	<i>Pieris rapae</i>	WS	U	C	2/3	M(Jan-Dec)	P?	P
<b>XX6. Common white (G)</b>								
	<i>Pieris protodice</i>	WS	U	A	2/3	M(Jan-Dec)	P	P
7. Sara orange tip possibly present								
	<i>Anthocharis sara sara</i>	NA	U	A	1	D(Feb-Apr)	P	O
II generation (Apr-Jun)								
<b>XX8. Alfalfa butterfly (G). FP many legumes. Larvae found on <i>Astragalus leucopsis</i>.</b>								
	<i>Colias eurytheme</i>	WS	U	C	2-3	M(Jan-Dec)	LL	O
9. Harford's sulfur FP <i>Astragalus leucopsis</i> not found on site but nearby								
	<i>Colias alexandra hardfordi</i>	NA	S/C	O	2	D(Mar-Sep)	LL	O?
11 Cloudless sulfur (G, introduced), FP Cassia, ornamental								
	<i>Phoebis sennae marcellina</i>	WS	U	O	3	M(Mar-Oct)	-	O
<b>XX12. Nicippe sulfur (G, introduced), FP Cassia, ornamental</b>								
	<i>Eurema nicippe</i>	WS	U	O	2-3	M(Feb-Nov)	-	O
<b>NYMPHALIDAE</b>								
<b>XX13. Striated queen FP Asclepias</b>								
	<i>Danaus gilippus strigosus</i>	RM	U	O	3	M(Mar-Nov)	A	M
<b>XX14. Monarch (G)</b>								
	<i>Danaus plexippus</i>	WS	U	A	Ax	3	M(Jan-Dec)	A
<b>XX17. Gulf fritillary (G) FP. ornamental passion flower</b>								
	<i>Agraulis vanillae incarnata</i>	WS	U	C	2-3?	M(Mar-Nov)		
<b>**19. Gabb's checkerspot</b>								
	<i>Chlosyne gabbii gabbii</i>	LO	U	A	0-1	S(Mar-Jun)	L	O
Decreasing everywhere near disturbance. FP <i>Corethrogyne</i> and <i>Encelia</i> on site. Most likely previously present recently known from many localities in the region.								
<b>XX20. Red admiral (G) FP <i>Urtica</i></b>								
	<i>Vanessa atalanta rubria</i>	WS	U	O	3	M(Mar-Nov)	A	P
This and the following 4 species are widespread								
<b>XX20. Painted lady (G) FP polyphagous</b>								
	<i>Vanessa cardui</i>	WS	U	O	3	M(Feb-Nov)	A	P
<b>XX22. West coast lady (G) FP many mallows</b>								
	<i>Vanessa carye anabella</i>	WS	U	O	3	M(Jan-Dec)	A	P
<b>XX23. American lady (G) FP <i>Gnaphalium</i> spp.</b>								
	<i>Vanessa virginiensis</i>	WS	U	O	3	M(Jan-Dec)	A	P
<b>XX24. Mourning cloak (G) FP <i>Salix</i>, <i>Populus</i>. Unquestionably occurs.</b>								
	<i>Nymphalis antiopa</i>	WS	U	O	3	M(Jan-Dec)	A	P
<b>**26. Satyr anglewing FP <i>Urtica</i>. Should occur in riparian areas</b>								
	<i>Polygonia satyrus satyrus</i>	LO	R	R	1	S(Jun-Apr)	A	M
<b>XX27. Buckeye (G) FP <i>Plantago</i>, all spp; snapdragons, and scrophs.</b>								
	<i>Precis coenia</i>	WS	U	A	1!	M(Mar-Nov)	A?	P



\*28. Lorquin's admiral FP *Salix*. riparian reaches with arroyo willow abundant  
*Limnitis lorquini lorquini* LO R O 1 D(Apr-Sep) L P

## LYCAENIDAE

- XX30. Behr's metalmark FP *Eriogonum fasciculatum*.  
*Apodemia mormo virgulti* LO S/C/D C 1! D(Mar-Oct) E M
- XX31. Dusky metalmark FP *Encelia californica*, *Baccharis glutinosa*  
*Calephelis nemesis* LO S/C O 1 M(Feb-Oct) L O
32. Great purple hairstreak FP mistletoe. Occurs commonly nearby  
*Atlides halesus corcorani* NA R/C/OVR ? M(Mar-Oct) P M
- XX33. Common hairstreak (G) FP polyphagous  
*Strymon melinus pudica* WS U A 2 M(Feb-Nov) P P  
LO O O 1 S(Nay-Jul) E P
- \*\*34. Sylvan hairstreak FP *Salix*.  
*Satyrium sylvinus dryope* LO R O 1 S(May-Jul) E M  
Riparian species, not seen but occurs in riparian along Santa Ana river. Flies in May
- 38 Western elfin FP many.  
*Callophrys augustus iroides* NA U O 1 S(Feb-Jun) P P
39. California green hairstreak Unquestionably occurs, flies in spring  
*Callophrys affinis perplexa* NA C/S/D A 1 S(Mar-Apr) P P
- ?\*42. Purplish copper FP *Polygonum* and *Rumex*.  
*Lycaena helloides* LO R A 1 M(Apr-Oct) L O
- XX43. Figmy blue FP many Chenopods. Common  
*Brephidium exilis* NA U A 2 S(Feb-Nov) P P
- XX44. Marina blue (G) FP polyphagous  
*Leptotes marina* WS U C 2/3 M(Jan-Dec) P P
- \*\*45. Western tailed blue FP *Astragalus leucopsis*,  
*Everes amyntula* LO S/C/D O 1 M(Feb-Sep) L M
- XX46. Acmon blue FP *Eriogonum spp* and *Lotus scoparius*  
*Plebejus acmon acmon* NA U C 1 M(Feb-Nov) L P
47. Southern blue FP *Lotus scoparius*. Unquestionably occurs  
*Glaucopsyche lygdamus australis* LO U A 0-1 S(Feb-Apr) P O
- XX48. Bernardino blue FP. *Eriogonum fasciculatum*. Unquestionably occurs.  
*Euphilotes bernardino bernardino* LO S/C/D C 0-1 S(Apr-Jul) P M

## HESPERIDAE

- XX50. Fiery skipper (G) FP grasses.  
*Hylephila phyleus* WS U C 3 M(Jan-Dec) L O
- XX\*53. Sandhill skipper FP grasses. Unquestionably occurs  
*Polites sabuleti sabuleti* LO S/C/D O 1 M(Apr-Sep) L O?
- XX54. Field skipper FP grasses. Unquestionably occurs  
*Atalopetes campestris* NA U A 3 M(Apr-Nov) L O?
55. Woodland skipper FP grasses.  
*Ochlodes sylvanoides sylvanoides* NA C/O A 1 S(Jul-Sep) L O?
56. Rural skipper FP grasses. Unquestionably occurs earlier.  
*Ochlodes agricola agricola* NA U A 1 S(Apr-Jul) L O?
- XX57. Umber skipper FP grasses.  
*Paratrytone melane* NA S/R A 2-3? D(Apr-Sep) L O
- XX59. Funereal duskywing FP *Lotus scoparius*, other legumes  
*Erynnis zarucco funeralis* NA U A ? M(Feb-Oct) L O
- XX60. Western checkered skipper FP many mallows  
*Pyrgus communis albescens* NA U A 1-2? M(Feb-Oct) L O



A total of 30 species of butterflies were observed during our census. Twenty three of these are "garden" species that are found throughout urban southern California and will be found everywhere throughout the year. The remaining seven species are commonplace, but are restricted to areas with some native vegetation. All seven can be found in small areas, or less than a few acres, as long as their foodplants are present. The seven have three foodplants, all of which are abundant at NWS: California sunflower, deerweed, mulefat, and common buckwheat.

Several species of more than usual interest may occur and are noted in the above listing. Absence of some of these may be attributed to 1996-1997 being a poor insect year because of the rain pattern and distribution. Others do not have foodplants on the site, but their foodplants are known from nearby. Our findings show that butterflies are valuable indicators of general habitat status. This is a consequence of a more thorough knowledge of butterfly ecology than any other animals.

#### Beeflies (Diptera: Bombyliidae)

Recent study by a small group of entomologists is expanding our knowledge of this family of flies across southern California. Because of their diverse ecological role in natural community structure as predators, parasitoids, or hyperparasitoids in their larval stages; their adult role in pollination, ease of identification of the larger species in the field, and of their diversity; beeflies should have increasing value for biota assessment. Most species of southern California are now described, although their distributions and life histories are incompletely known and nectar resources are only now being recorded.

The following listing includes all species positively confirmed at the Naval Station. The listing gives in order: scientific name/time of adult flight period/larval hosts/noted adult nectar resources (NN denotes not known). With additional effort at least 10 more species may be found. The number of beefly species at any natural community locality in southern California approximates the number of butterflies, except beeflies are very rare in urbanized landscapes. Again we are presented with a significant group of animals for use as indicator species of ecological conditions.

1. *Lepidanthrax* sp. nr. *orbites* /June/life history unknown/NN
2. *Villa lateralis* /July-Aug./Noctuid moth larvae/*Eriogonum fasciculatum*
3. *V.* nr. *molitor* /July-Sept/Noctuid moth larvae/*E. fasciculatum*
4. *Paravilla syritus* /May June/anthophorid *Diadacia* bees (*Opuntia* nectar gatherers)/*E. fasciculatum*
5. *C hrysanthrax adumbrata*/Sept./hyperparasitic on myzenid wasps/*Haplopappus*
6. *Thyridanthrax nugator*/June-Aug./host grasshoppers/*E. fasciculatum*
7. *T. atrata* /July-Aug./ *Bembix* sp. (sand wasps)/*E. fasciculatum*



8. *Hemipenthes lepidota* /Aug.-Sept./hyperparasitic on tachnid flies and ichneumonid wasps/*E. fasciculatum*
9. *Poecilanthrax littoralis* /Aug.-Sept./host noctuids/*Lepidospartum*
10. *Exoprosopa fascipennis* /June/wasp larvae/*E. fasciculatum*
11. *Geron* sp./May-June/hosts tortricid, pyralid moths/NN
12. *Pthiria* sp./Sept./host unk/NN
13. *Mythicomyia* sp. /May-June/ anthophorid bees/NN

Although most of the beeﬂies recorded were in low numbers, there is surprising richness in comparison to the number of natural area butterﬂies. However, there is a conspicuous absence of members of the genus *Bombylius*, several species of which are usually quite common in all natural areas. This is probably because of the extremely low nectar source availability in springtime, when adults of these beeﬂies are out.

#### Other data

Besides the usually commonplace Diptera and Lepidoptera that were sweep collected or noted in the sections on butterﬂies or beeﬂies, the only other insects taken were: Hymenoptera, *Bombus sonorus*, *B. vosnesenskii*, *Anthophorus urbanica*, *Pepsis mildei*, and *Osmia* sp.; Orthoptera, *Trimerotropis* sp. Odonata, *Pantala hymenaea* and ten additional dragon- and damsel ﬂies associated with lake edges and stagnant water; Coleoptera, *Crosidius* sp (Cerambycidae) abundant on coyote bush ﬂowers when in bloom in the fall. The latter are host to nectaring *Pepsis* wasps, indicating that tarantula species are common.

Fall blooming mulefat (*Baccharis salicifolia*) is host to several unidentiﬁed bee, small wasp, small ﬂy, and beetle species.

#### Arthropod diversity and conclusions

Quantitative data from pitfall traps are presented in the appended table 2. The overall pattern is one of an extremely depauperate arthropod fauna. Not only is species richness low, but numbers of individuals of each species as well. Simultaneous work in the Colton area, on Delhi Sands habitat bordering the Santa Ana river, as produced over 120 ground dwelling arthropods from pitfall traps, with much higher yields of individuals and a higher number of endemics.

We do not have malaise trap data from nearby areas, but both numbers and densities of species were very much lower than from insularized coastal sage scrub communities in urban matrices near the immediate coast that we have sampled over the past eight years. The DFSP at San Pedro has produced over 160 species from the malaise trap with over 40 moths alone.

With less than 50 species of native flowering plants in a monotonous topoclimatic landscape, low arthropod diversity is not surprising. With flowering plants forming the base of the food chain, low species richness at the primary herbivore level should substantially reduce the complex webs that are found on less disturbed sites with greater physical relief and connections to other habitat. NWAS Corona is a small island now isolated from other natural habitats.

The reduction of butterflies to the 23 garden species plus the seven non-urban adapted species provides an excellent indicator of habitat value of the site. A minimum of 15 additional species probably occurred in historic times. These would have been supported by an only additional four species of larval foodplants that were certainly present on the site or nearby. The riparian corridor alone, connecting with the Santa Ana river, would have maintained three riparian butterflies not now present (and apparently declining throughout southern California).

The butterfly scenario provides a good indicator of general habitat quality loss. Although open space itself provides some resources for migrating species as birds, especially waterfowl that can use Lake Norconian, these habitat values are limited and specialized. In the longer term the remaining native communities are depauperate and declining. However, any program to enhance habitat should be carefully evaluated by comparative cost effectiveness of more suitable and appropriate sites.



TABLE 1

Arthropod community as randomly sampled in a malaise trap in the border riparian area of Nwas operated from September 1995 to November 1996

Insect order in caps/boldface, e.g. **LEPIDOPTERA**. Beneath order, family, genus and species given with undetermined genus (gen) species (sp with number). Subfamily or tribe designations given for certain taxa. Each of six samples represents about one month collection.

Sample date	21.ix.95	17.x.95	18.xi.95	14.vii.96	10.x.96	19.xi.96
<b>HOMOPTERA</b>						
1. Cicadellidae, gen & sp 1	5	3	2	2		
2. Cicadellidae, gen & sp 2	1				12	5
3. Cicadellidae, gen & sp 3	4				7	2
4. Cicadellidae, gen & sp 4						3
5. Cicadellidae, gen & sp 5						1
6. Membracidae, Vanduzee sp.		2	2			
<b>HEMIPTERA</b>						
7. Alydidae, Alydus sp 1	1					
8. Alydidae, Harmostes reflexulus	1					
9. Lygaeidae, Aphanus sp 1	1			9		
10. Lygaeidae, gen & sp 1	3					
11. Lygaeidae, Blissus sp 1						2
12. Miridae, Miris sp 1						1
13. Miridae, gen & sp 1						1
<b>DERMAPTERA</b>						
14. Forficula auricularia			1			
<b>ORTHOPTERA</b>						
15. Acrididae, Melanoplus sp 1	1	1		1	1	
16. Mantidae, Stagmomantis californica			1			
<b>EPHEMERIDA</b>						
17. fam, gen, sp 1 (damaged, unident)		1				
<b>NEUROPTERA</b>						
18. Hemerobiidae, gen & sp 1	1					
19. Chrysopidae, gen & sp 1						1
<b>LEPIDOPTERA</b>						
20. Hesperidae, Hylephila phyleaus	3		1			
21. Hesperidae, Pyrgus albescens	1					
22. Lycaenidae, Brephidium exilis	1	3	1			2

Appendix Table 1 malaise trap, NWS (continued)

Sample date	21.ix.95	17.x.95	18.xi.95	14.vii.96	10.x.96	19.xi.96
23. Pyralidae, <i>Disatictis fracturalis</i>	3	1			1	
24. Pyralidae, gen & sp 1	4		1			
25. Pyralidae, gen & sp 2						7
26. Pyralidae, gen & sp 3						2
27. Pyralidae, gen & sp 4				1		
28. "micro", fam. gen & sp 1				1		
29. Ptertophoridae, gen & sp 1	1		2			10
30. Noctuidae, gen & sp 1	1					1
31. Noctuidae, gen & sp 2			2			
32. Geometridae, gen & sp 1						1
<b>COLEOPTERA</b>						
33. Malachiidae, <i>Collops</i> sp	1					
34. Bruchidae, gen & sp 1	1					
<b>DIPTERA</b>						
35. Ceratopogonidae gen & sp 1						2
36. Chironomidae gen & sp 1	7					3
37. Chironomidae gen & sp 2	4	3	1			
38. Chironomidae gen & sp 3	1					
39. Chironomidae gen & sp 4						
40. Culicidae, gen & sp 1	2	1	2	6	6	17
41. Simuliidae gen & sp 1						1
42. Agromyzidae gen & sp 1	4		1	1		5
43. Agromyzidae gen & sp 2	2			1		2
44. Anthomyiidae gen & sp 1	1	1	1	14		
45. Anthomyiidae gen & sp 2	2		2			8
46. Anthomyiidae gen & sp 3	3					25
47. Anthomyiidae gen & sp 4			2			
48. Anthomyiidae gen & sp 5			1			
49. Bombyliidae, <i>Villa lateralis</i>	1					
50. Bombyliidae, <i>Geron</i> sp 1	1				1	
51. Bombyliidae, <i>Mythicomyia</i> sp 1	1					
52. Bombyliidae, <i>Paravilla syritus</i>	2					
53. Calliphoridae, <i>Phaenicia</i> sp 1		1				4
54. Calliphoridae, <i>Eucalliphora lilaiea</i>						1
55. Chloropidae, gen & sp 1			2	1		1
56. Chloropidae, gen & sp 2				2		
57. Chloropidae, gen & sp 3						2
58. Dolichopodidae, <i>Condylostylus</i> sp 1	4	2	1	3	5	1
59. Dolichopodidae, gen & sp 1	65	1	4	1	3	3
60. Dolichopodidae, gen & sp 2	1				1	

Appendix Table 1 malaise trap, NWS (continued)

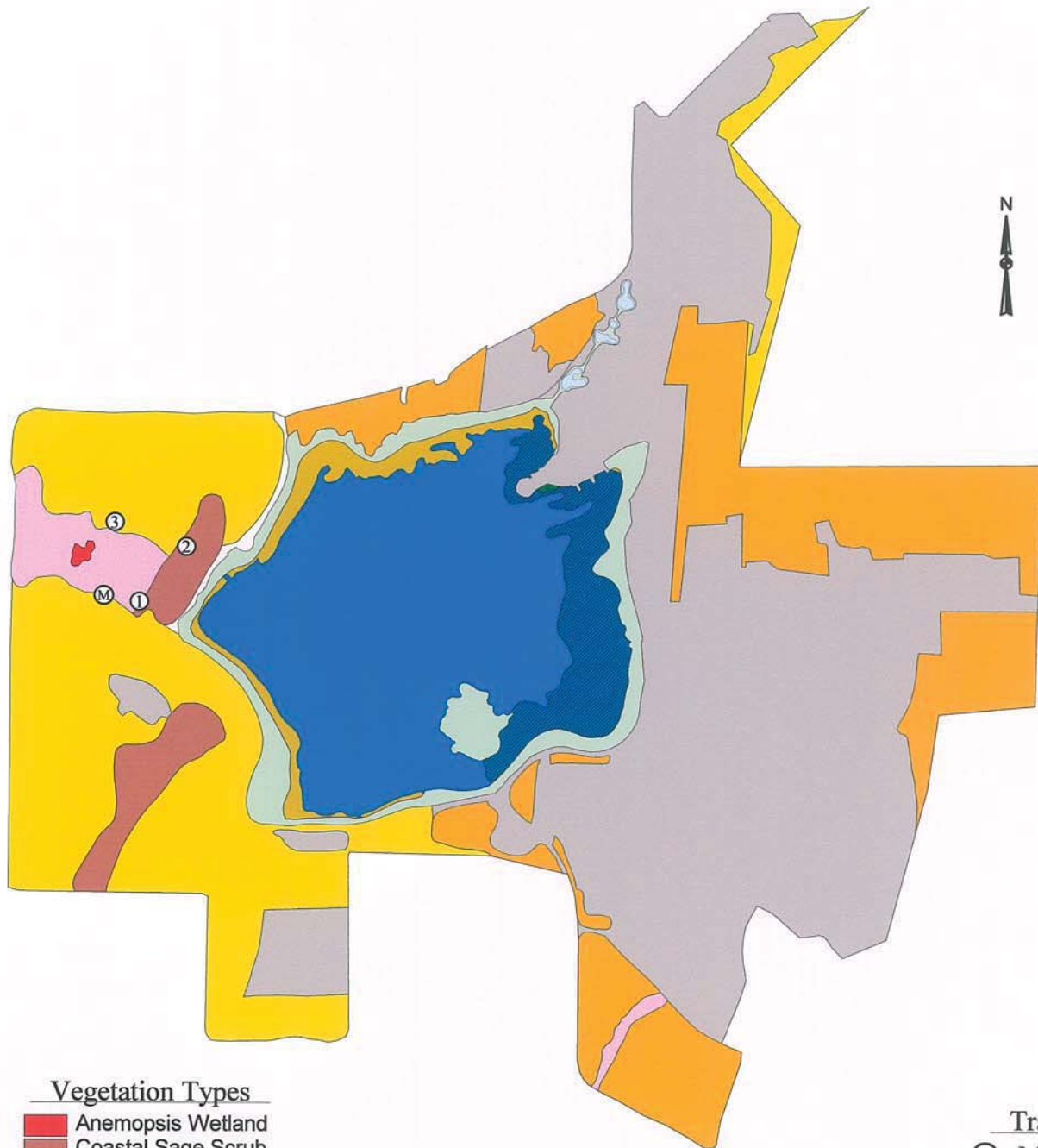
Sample date	21.ix.95	17.x.95	18.xi.95	14.vii.96	10.x.96	19.xi.96
61. Dolichopodidae, gen & sp 3						4
62. Dolichopodidae, Dolichopodus sp			1	1		
63. Heliomyzidae, gen & sp 1					3	
64. Lauxanidae, gen & sp 1		1	1			
65. Lonchaeidae gen & sp 1	1	1	4			1
66. Milichiidae, gen & sp 1	2		2	8		
67. Muscidae, Musca domestica	1					
68. Muscidae, Stomoxys calcitrans			1			6
69. Muscidae, Phaonia californica		1	1			
70. Muscidae, gen & sp 1						1
71. Otitidae, Ceroxys latiusculus		47				79
72. Otitidae, Euxesta sp.		2				
73. Otitidae, gen & sp 1		1	1		1	
74. Phoridae, gen & sp. 1	1		1			
75. Pipunculidae, Pipunculus sp 1						2
76. Platystyomatidae, Rivellia sp 1	1		1		2	1
77. Sarcophagidae, gen & sp 1	4	3	1	12	1	1
78. Sarcophagidae, gen & sp 2 (Milto)	2	1	2	2	2	2
79. Sarcophagidae, Eumachromia sp.				1		
80. Scenopinidae, Scenopsis sp 1					1	
81. Stratiomidae, Myxosargus sp.	2	2		2	1	
82. Stratiomyidae, Neomtelus sp		1				
83. Syrphidae, Paragus tibialis	2	3	12	6		4
84. Syrphidae, Baccha clavata	1	2	1			4
85. Syrphidae, Volucella lau						1
86. Syrphidae, Syrirta pipiens		1			1	6
87. Syrphidae, Lathyrophthalmus aeneus		1				2
88. Syrphidae, Aemosyrphus polygrammus						1
89. Syrphidae, Eristalis latifrons		1				
90. Syrphidae, Eupoedes volucris		2	2			
91. Syrphidae, Syrphus sp.			1			
92. Syrphidae, Mesograpta marginata			1			
93. Tabanidae, Tabanus punctifer	1	1	1			
94. Tachinidae, Phasiinae, gen & sp 1	1	1	15	1		
95. Tachinidae, gen & sp 1		2	1		1	
96. Tachinidae, gen & sp 2		1				
97. Tachinidae, gen & sp 3			2			
98. Tachinidae, gen & sp 4			1			
99. Tephrididae, gen & sp 1		1	1			



Appendix Table 1 malaise trap, NWAS (continued)

Sample date	21.ix.95	17.x.95	18.xi.95	14.vii.96	10.x.96	19.xi.96
<b>HYMENOPTERA</b>						
100. Chalcidae, gen & sp 1	1			1		
101. Chalcidae, gen & sp 2	1	1			1	
102. Chalcidae, gen & sp 3	1					
103. Ichneumonidae, gen & sp 1					1	
104. Trigonatidae, gen & sp 1	1					
105. Vespidae, Eumenes sp. 1					1	
106. Pompilidae, gen & sp 1	2	1		4		
107. Pompilidae, gen & sp 2	1			1		
108. Pompilidae, gen & sp 3				3		
109. Pompilidae, gen & sp 4				1	2	
110. Pompilidae, gen & sp 5					1	
111. Sphecidae, Tachysphex sp 1	2			6		
112. Sphecidae, Tachysphex sp 2				1		
113. Sphecidae, Liris sp 1	1					
114. Sphecidae, Crabo sp 1	1	1				
115. Sphecidae, Oxybelini, gen & sp 1	1					
116. Sphecidae, Crecerini, gen & sp 1	1					
117. Sphecidae, Larrinae, gen & sp 1	1	1				
118. Sphecidae, Prionix, sp 1				1		1
119. Formicidae, Iridomyrmex humilis	>900	800	c. 300	c. 300	c. 300	c. 300
120. Chrysididae, gen & sp 1					1	
121. Chrysididae, Chrysops fuscipes					1	
122. Halictidae, Lasioglossum sp 1	1				1	
123. Halictidae, Agapostemon texanus			2			2
124. Megachilidae, Megachilis sp 1	1					
125. Colletidae, Colletes sp 1						1
126. Apidae, Apis mellifera					1	
<b>ARACHNIDA (Class)</b>						
<b>ARANAE</b>						
127. Agelenidae				9		

# NWAS Corona Vegetation



## Vegetation Types

-  Anemopsis Wetland
-  Coastal Sage Scrub
-  Managed Grounds
-  Lake Norconian
-  Lake Margin Vegetation
-  Lillypads
-  Non-native Grassland
-  Non-native Grassland (Mowed)
-  Riparian Woodland
-  Reeds
-  Submerged Vegetation
-  pond

## Traps

-  Malaise
-  Pitfall #1
-  Pitfall #2
-  Pitfall #3

200 0 200 400 Meters

TABLE 2

Arthropod community as randomly sampled in three pitfall traps in the border riparian area of NWAS, operated from September 1995 to November 1996. Total numbers in all traps given.

Arthropod class and insect orders in caps/boldface, e.g. LEPIDOPTERA. Beneath order, family, genus and species given with undetermined genus (gen) species (sp with number). Subfamily or tribe designations given for certain taxa. Not all traps were equally sampled due to vandalization.

Sample date	ix.95	x.95	xi.95	i.96	iii.96	iv.96	v.96	vi.96	vii.96	viii.96	ix.96	x.96	xi.96
<b>ISOPTERA (class)</b>													
1. Armadillidium sp. 1	26	9	7	0	18	52	10	25	67	50	51	21	7
2. Porcellio sp. 1	0	0	17	0	40	39	0	5	10	23	5	3	0
3. gen & sp 4	0	0	0	0	0	0	10	0	0	0	0	0	0
<b>PSEUDOSCORPIONES (Class)</b>													
4. Fam. gen & sp 1	2	0	0	0	1	5	5	3	2	2	1	2	0
<b>ARACHNIDA (Class)</b>													
<b>ARANAE</b>													
5. Dysderidae, Dysdera crocata	2	0	0	0	1	5	5	3	2	2	1	2	0
6. Gnaphosidae, gen & sp 5	2	0	0	0	0	0	0	0	0	0	0	0	0
7. Gnaphosidae, gen & sp 7	0	0	0	0	0	0	0	0	0	2	0	0	0
8. Lycosidae, gen & sp. 12	0	0	0	0	0	0	0	0	0	1	0	0	0
9. Lycosidae, gen & sp 9	0	0	0	3	0	0	0	0	0	0	0	0	0
10. Lycosidae, gen & sp. 8	0	0	5	0	0	0	0	0	0	0	0	0	0
11. Oxypodidae, gen & sp 2	1	0	0	0	0	0	0	0	0	0	0	0	0
12. Salticidae, gen & sp 5	0	0	0	0	0	0	0	1	0	0	0	3	0
<b>OPILIONES (Class)</b>													
13. Phalangidea, gen & sp 1	0	0	0	0	0	29	0	0	0	0	0	0	0
<b>DERMAPTERA</b>													
14. Forficulidae, Euboriella ann	0	0	0	0	0	0	1	0	0	0	0	0	0
15. Forficulidae, Forficula sp. 2	0	0	1	7	0	1	0	0	0	0	0	0	0
<b>EMBIOPTERA</b>													
16. Fam, gen & sp 1	0	0	0	0	0	1	0	0	0	0	3	0	1
<b>ORTHOPTERA</b>													
17. Gryllidae, Gryllus sp. 1	0	0	0	0	0	2	2	0	0	0	0	0	3
18. Rhaphidophoridae, Ceuthophilus californicus	0	0	0	0	0	3	0	0	0	0	0	0	0
19. Stenopalmatidae, Stenopalmatis sp. 3	0	0	0	0	0	0	0	0	0	1	0	0	0
<b>THYSANURA</b>													
20. Lepismatidae, gen & sp. 1	1	0	0	0	0	0	0	0	0	0	0	0	0
21. Machilidae, gen & sp. 1	11	0	0	0	0	0	0	5	6	15	3	1	0
<b>HEMIPTERA</b>													
22. Lygaeidae, gen & sp 6	0	0	0	0	0	0	0	0	2	0	0	0	0
<b>LEPIDOPTERA</b>													
23. Arctiidae, Arachnis picta0	0	0	0	0	0	0	0	0	0	1	0	0	0







**APPENDIX I**  
**WILDLIFE INVENTORY**

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Appendix I. List of all species observed at NAVWPNSTA Detachment Norco

**BIRDS**

<b>Scientific Name</b>	<b>Common Name</b>	<b>International/ Federal/State</b>	<b>Status</b>	<b>Source and Date Surveyed</b>
<b>Order ACCIPITRIFORMES (hawks, eagles, vultures, osprey)</b>				
<b>Family Accipitridae</b>				
<i>Accipiter striatus</i>	Sharp-shinned hawk		CITES/ -/-	A&K 1995-96; CBC 2003-04; Myers 2009; RS 2010
<i>Accipiter cooperii</i>	Cooper's hawk		CITES/-/-	A&K 1995-96; CBC 1998-99, 2004-05, 2010; Myers 2009; RS 2012; FSC 2012
<i>Aquila chrysaetos</i>	Golden eagle		CITES/-/-	Bloom 1994-95
<i>Buteo jamaicensis</i>	Red-tailed hawk		CITES/BCC/-	Bloom 1994-95; A&K 1995-96; CBC 1998-2010; RS 2007; Myers 2008-09; FSC 2012
<i>Buteo lineatus</i>	Red-shouldered hawk		CITES/-/-	A&K 1995-96; Bloom 1994-95; CBC 1998, 2000-01; Myers 2009; RS 2012
<i>Circus cyaneus</i>	Northern harrier		CITES/-/-	CBC 2007
<b>Family Cathartidae</b>				
<i>Cathartes aura</i>	Turkey vulture		-/-/-	Bloom 1994-95; A&K 1995-96; CBC 1998-2010; Myers 2008-09; RS 2010
<b>Family Pandionidae</b>				
<i>Pandion haliaetus</i>	Osprey		CITES/-/-	A&K 1995-96; Myers 2009; RS 2010
<b>Order ANSERIFORMES (ducks, geese, swans)</b>				
<b>Family Anatidae</b>				
<i>Aix sponsa</i>	Wood duck		-/-/-	A&K 1995-96; RS 2011

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Family Anatidae (cont.) <i>Anas acuta</i>	Northern pintail	CBC 1990, 1993-94; A&K 1995-96; CBC 1998-2010; RS 2007; Myers 2008-09	-/-
<i>Anas americana</i>	American widgeon	CBC 1990-91, 1993-94; A&K 1995-96; CBC 1998-2010; RS 2007; Myers 2008-09	-/-
<i>Anas clypeata</i>	Northern shoveler	CBC 1991, 1993-94; A&K 1995-96; CBC 1998-10; RS 2007; Myers 2008-09; FSC 2012	-/-
<i>Anas crecca</i>	Green-winged teal	CBC 1990-91, 1993-94; A&K 1995-96; CBC 1998-2004, 2008, 2010; RS 2007; Myers 2008-09	-/-
<i>Anas cyanoptera</i>	Cinnamon teal	CBC 1991, 1993-94; A&K 1995-96; CBC 1998-2010; RS 2007; Myers 2008-09; FSC 2012	-/-
<i>Anas discors</i>	Blue-winged teal	CBC 1990-91, 1993; A&K 1996; CBC 2000, '02-04, 06-09; RS 2007; Myers 2008-09	-/-
<i>Anas penelope</i>	Eurasian wigeon	A&K 1996; CBC 2001, 2009; RS 2007	-/-
<i>Anas platyrhynchos</i>	Mallard	CBC 1990-91, 1993-94; A&K 1995-96; CBC 1998-2010; RS 2007; Myers 2008- 09; FCS 2012	-/-
<i>Anas strepera</i>	Gadwall	CBC 1990, 1993-94; A&K 1995-96; CBC 1999-2005, 2007-08, 2010; RS 2007; Myers 2008-09	-/-



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Family Anatidae (cont.)				
<i>Anser albifrons</i>	Greater white-fronted goose	-/-	-/-	CBC 2002
<i>Aythya affinis</i>	Lesser scaup	-/-	-/-	A&K 1996; CBC 1999, 2003, 2005, 2007-08; Myers 2008-09
<i>Aythya americana</i>	Redhead	-/-	-/-	CBC 1991; A&K 1995-96; CBC 2000-05, 2007-10; Myers 2008-09; RS 2010
<i>Aythya collaris</i>	Ring-necked duck	-/-	-/-	CBC 1990, 1993-94; A&K 1995-96; CBC 1998-2005, 2007-10; RS 2007 Myers 2008-09
<i>Aythya valisineria</i>	Canvasback	-/-	-/-	CBC 1990-91, 1993-94; A&K 1996; CBC 1998-2010; RS 2007; Myers 2008-09
<i>Branta canadensis</i>	Canada goose	CITES/-	-/-	CBC 1991, 1993-94; A&K 1995-96; CBC 1999-2003, 2005-10; RS 2007 Myers 2009; FSC 2012;
<i>Branta hutchinsii</i>	Cackling goose	-/-	-/-	Myers 2009
<i>Bucephala albeola</i>	Bufflehead	-/-	-/-	A&K 1996; CBC 1999, 2001, 2003-10; RS 2007; Myers 2008-09; FSC 2012
<i>Chen rossii</i>	Ross's goose	-/-	-/-	CBC 2005
<i>Dendrocygna bicolor</i>	Fulvous whistling-duck	-/-	-/-	A&K 1995
<i>Lophodytes cucullatus</i>	Hooded merganser	-/-	-/-	A&K 1996
<i>Melanitta perspicillata</i>	Surf scoter	-/-	-/-	A&K 1995 ;Myers 2009

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<b>Family Anatidae (cont.)</b> <i>Mergus merganser</i>	Common merganser		-/-	A&K 1996; CBC 2000; RS 2007; CBC 1998-2010; RS 2007; Myers 2008-09; FSC 2012
<b>Order APODIFORMES (swifts, hummingbirds)</b>				
<b>Family Apodidae</b> <i>Aeronautes saxatalis</i>	White-throated swift		-/-	CBC 1998-99, 06-07, 2010; Myers2008; RS 2010
<i>Chaetura vauxi</i>	Vaux's swift		-/-	RS 2011
<b>Family Trochilidae</b> <i>Archilochus alexandri</i>	Black-chinned hummingbird		CITES-/-	Myers 2009
<i>Calypte anna</i>	Anna's hummingbird		CITES-/-	A&K 1995-96; CBC 2000-05, 2007-10; RS 2007; Myers 2008-09
<i>Selasphorus sasin</i>	Allen's hummingbird		CITES-/-	RS 2010
<b>Order CHARADRIIFORMES (gulls, terns, plovers)</b>				
<b>Family Charadriidae</b> <i>Charadrius vociferus</i>	Killdeer		-/-	A&K 1995-96; CBC 1999, 2005, 2007, 2009; Myers 2009; RS 2010
<b>Family Laridae</b> <i>Larus argentatus</i>	Herring gull		-/-	CBC 1999, 2007; Myers 2009
<i>Larus californicus</i>	California gull		-/-	CBC 1990-91; A&K 1996; CBC 1999 -2010; RS 2007; Myers 2008-09

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<b>Family Laridae (cont.)</b>					
<i>Larus delawarensis</i>	Ring-billed gull	-/-	-/-	CBC 1991, 1993-94; A&K 1995-96; CBC 1998-2005, 2007-10; RS 2007; Myers 2008-09 Myers 2009	
<i>Larus glaucescens</i>	Glaucous-winged gull	-/-	-/-		
<i>Larus philadelphia</i>	Bonaparte's gull	-/-	-/-	CBC 1990-91, 1994; A&K 1995-96; CBC 1999-2009; RS 2007; Myers 2008-09	
<i>Larus thayeri</i>	Thayer's gull	-/-	-/-	Myers 2009	
<i>Sterna forsteri</i>	Forster's tern	-/-	-/-	CBC 1994; Myers 2009; RS 2010	
<i>Sterna caspia</i>	Caspian tern	-/-	-/-	A&K 1996; Myers 2009;	
<b>Family Recurvirostridae</b>					
<i>Himantopus mexicanus</i>	Black-necked stilt	-/-	-/-	CBC 1991, 1999-2000; RS 2012	
<b>Family Scolopacidae</b>					
<i>Actitis macularia</i>	Spotted sandpiper	-/-	-/-	CBC 1994, 1998-99, 2004-05; Myers 2008-09; RS 2010	
<i>Gallinago delicata</i>	Wilson's snipe	-/-	-/-	CBC 1999, 2002-04, 2007; RS 2007	
<i>Gallinago gallinago</i>	Common snipe	-/-	-/-	CBC 1990-91; A&K 1996	
<i>Limnodromus scolopaceus</i>	Long-billed dowitcher	-/-	-/-	CBC 1994, 1999-2000	
<i>Calidris minutilla</i>	Least sandpiper	-/-	-/-	CBC 1991, 1999	

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<b>Order COLUMBRIFORMES (doves &amp; pigeons)</b>				
<b>Family Columbidae</b>				
<i>Columba livia</i>	Feral rock dove		-/-	A&K 1995-96; CBC 1999, 2001, 2004-05, 2007; RS 2007; Myers 2008-09
<i>Streptopelia decaocto</i>	Eurasian collared-dove		-/-	Myers 2009; CBC 2010; RS 2010
<b>Family Columbidae (cont.)</b>				
<i>Zenaidura macroura</i>	Mourning dove		-/-	A&K 1995-96; CBC 1998-2010; RS 2007; Myers 2008-09; FSC 2012
<b>Order CORACIIFORMES (kingfishers, woodpeckers)</b>				
<b>Family Alcedinidae</b>				
<i>Megasceryle alcyon</i>	Belted kingfisher		-/-	CBC 1994; A&K 1995-96; CBC 1998-02, 2004-10; RS 2007; Myers 2008-09
<b>Order CUCULIFORMES (cuckoos, roadrunners)</b>				
<b>Family Cuculidae</b>				
<i>Geococcyx californianus</i>	Greater roadrunner		-/-	A&K 1995-96; FSC 2012
<b>Order FALCONIFORMES (falcons)</b>				
<b>Family Falconidae</b>				
<i>Falco columbarius</i>	Merlin		CITES/-	Bloom 1994-95; RS 2007; Myers 2009
<i>Falco mexicanus</i>	Prairie falcon		CITES/BCC/-	A&K 1995-96; FSC 2012
<i>Falco peregrinus</i>	Peregrine falcon		CITES/BCC/-	A&K 1995-96; CBC 2006
<i>Falco sparverius</i>	American kestrel		CITES/-	Bloom 1994-95; A&K 1995-96; CBC 1999-06, 2008-10; RS 2007; Myers 2008-09
<b>Order GAVIFORMES (loons)</b>				
<b>Family Gaviidae</b>				
<i>Gavia immer</i>	Common loon		-/-	CBC 2003

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<b>Order GRUIFORMES (rails, coots)</b>				
<b>Family Rallidae</b>				
<i>Fulica americana</i>	American coot	-/-		CBC 1990-91, 1993-94; A&K 1995-96; CBC 1998-2010; RS 2007; Myers 2008-09; FSC 2012
<i>Gallinula chloropus</i>	Common moorhen	-/-		CBC 1990, 1993-94; A&K 1995-96; CBC 1998-10; RS 2007; Myers 2008-09
<i>Porzana carolina</i>	Sora	-/-		A&K 1996; CBC 2001, 03-04; Myers 2009; RS 2011
<i>Rallus limicola</i>	Virginia rail	-/-/-		A&K 1996; Myers 2009
<b>Order PASSERIFORMES (perching birds)</b>				
<b>Family Aegithalidae</b>				
<i>Psaltriparus minimus</i>	Bushtit	-/-		A&K 1995-96; CBC 1998-02, 2004-06, 2008-10; Myers 2008-09; RS 2010
<b>Family Alaudidae</b>				
<i>Eremophila alpestris</i>	Horned lark	-/-		A&K 1995-96; RS 2007
<b>Family Bombycillidae</b>				
<i>Bombycilla cedrorum</i>	Cedar waxwing	-/-		CBC 2003, 2005, 2008-10; Myers 2008-09; RS 2010
<b>Family Cardinalidae</b>				
<i>Passerina amoena</i>	Lazuli bunting	-/-		Myers 2009
<i>Passerina caerulea</i>	Blue grosbeak	-/-		A&K 1996
<i>Pheucticus melanocephalus</i>	Black-headed grosbeak	-/-		Myers 2009
<b>Family Corvidae</b>				
<i>Aphelocoma californica</i>	Western scrub-jay	-/-		RS 2011

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<b>Family Corvidae (cont.)</b>				
<i>Corvus brachyrhynchos</i>	American crow		-/-	A&K 1995-96; CBC 1999-03, 2007-09; RS 2007; Myers 2008-09
<i>Corvus corax</i>	Common raven		-/-	A&K 1995-96; CBC 2003-10; RS 2010; Myers 2008-09
<b>Family Emberizidae</b>				
<i>Ammodramus savannarum</i>	Grasshopper sparrow		-/-	USFWS 1980 or Hamilton 1987
<i>Chondestes grammacus</i>	Lark sparrow		-/-	A&K 1995-96; CBC 1999, 2004, 2007-08, 2010; Myers 2008-09; RS 2010
<i>Geothlypis trichas</i>	Common yellowthroat		-BCC/-	A&K 1995-96; CBC 1998-01, 2003-10; RS 2007; Myers 2008-09
<i>Icterus bullockii</i>	Bullock's oriole		-/-	A&K 1996; Myers 2008-09; RS 2010
<i>Icterus cucullatus</i>	Hooded oriole		-/-	A&K 1996; Myers 2009; RS 2010
<i>Junco hyemalis</i>	Dark-eyed junco		-/-	A&K 1995-96; CBC 2004, 2007-08; Myers 2008-09; RS 2010
<i>Melospiza lincolni</i>	Lincoln's sparrow		-/-	A&K 1995-96; CBC 1999-01, 2003, 2005-07, 2010; Myers 2008-09; RS 2012
<i>Melospiza melodia</i>	Song sparrow		-BCC/-	A&K 1995-96; CBC 1999-01, 2003-05, 2007-10; RS 2007; Myers 2008-09
<i>Molothrus ater</i>	Brown-headed cowbird		-/-	A&K 1996; Myers 2009; RS 2010
<i>Passerculus sandwichensis</i>	Savannah sparrow		-/-	CBC 2002, 2007-08, 2010; Myers RS 2012



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<b>Family Emberizidae (cont.)</b>				
<i>Passerella iliaca</i>	Fox sparrow		-/-	CBC 2001; Myers 2009
<i>Pipilo chlorurus</i>	Green-tailed towhee		-/-	A&K 1995-96
<i>Pipilo crissalis</i>	California towhee		-/-	A&K 1995-96; CBC 1999-01, 2003-05, 2007-10; Myers 2008-09; RS 2010
<i>Pipilo maculatus</i>	Spotted towhee		-/BCC/-	A&K 1995-96; CBC 2000-02; RS 2010
<i>Piranga ludoviciana</i>	Western tanager		-/-	A&K 1996; Myers 2009; RS 2010
<i>Quiscalus mexicanus</i>	Great-tailed grackle		-/-	A&K 1996; CBC 2006-10; RS 2007; Myers 2008-09
<i>Spizella passerina</i>	Chipping sparrow		-/-	A&K 1995-96
<i>Sternella neglecta</i>	Western meadowlark		-/-	A&K 1995-96; CBC 1998, 2003, 2010; RS 2007; Myers 2009
<i>Zonotrichia atricapilla</i>	Golden-crowned sparrow		-/-	CBC 1999, 2004-05, 2007; Myers 2008
<i>Zonotrichia leucophrys</i>	White-crowned sparrow		-/-	A&K 1995-96; CBC 1999-2010; RS 2007; Myers 2008-09
<b>Family Fringillidae</b>				
<i>Carduelis psaltria</i>	Lesser goldfinch		-/-	A&K 1995-96; CBC 2000-01; Myers 2008-09; RS 2010
<i>Carpodacus mexicanus</i>	House finch		-/-	A&K 1995-96; CBC 1999, 2001-05, 2007-10; RS 2007; Myers 2008-09
<i>Spinus lawrencei</i>	Lawrence's goldfinch		-/BCC/-	RS 2011

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<b>Family Fringillidae (cont)</b> <i>Spinus tristis</i>	American goldfinch		-/-	CBC 2001; Myers 2009; RS 2010
<b>Family Hirundinidae</b> <i>Hirundo pyrrhonota</i>	Cliff swallow		-/-	A&K 1995-96; Myers 2009; RS 2010
<i>Hirundo rustica</i>	Barn swallow		-/-	A&K 1995-96; CBC 2003; Myers 2009; RS 2010
<i>Iridoprocne bicolor</i>	Tree swallow		-/-	CBC 2001; Myers 2009; RS 2010
<i>Stelgidopteryx serripennis</i>	Northern rough-winged swallow		-/-	A&K 1995-96; CBC 2006; Myers 2009; RS 2010
<i>Tachycineta thalassina</i>	Violet-green swallow		-/-	A&K 1995-96; RS 2012
<b>Family Icteridae</b> <i>Agelaius phoeniceus</i>	Red-winged blackbird		-/-	A&K 1995-96; CBC 2000, 2004-05, 2010; Myers 2009; RS 2010
<i>Euphagus cyanocephalus</i>	Brewer's blackbird		-/-	A&K 1996; CBC 2000; Myers 2009
<i>Xanthocephalus xanthocephalus</i>	Yellow-headed blackbird		-/-	CBC 2000-01, 2003-06, 2010; RS 2011
<b>Family Laniidae</b> <i>Lanius ludovicianus</i>	Loggerhead shrike		BCC/-	A&K 1995-96; CBC 1999
<b>Family Mimidae</b> <i>Mimus polyglottos</i>	Northern mockingbird		-/-	A&K 1995-96; CBC 1998-2010; RS 2007; Myers 2008-09
<i>Toxostoma redivivum</i>	California thrasher		-/-	CBC 2009

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<b>Family Motacillidae</b>				
<i>Anthus rubescens</i>	American pipit	-/-	-/-	A&K 1995-96; CBC 1999, 2003, 2007;
<i>Regulus calendula</i>	Ruby-crowned kinglet	-/-	-/-	A&K 1995-96; CBC 1999-01, 2003-10; Myers 2008-09; RS 2010
<i>Sialia mexicana</i>	Western bluebird	-/-	-/-	A&K 1995-96; CBC 2002, 2005-06, 2008-09; Myers 2008-09; RS 2010
<b>Family Parulidae</b>				
<i>Wilsonia pusilla</i>	Wilson's warbler	-/-	-/-	A&K 1995-96; Myers 2009; RS 2010
<i>Oreothlypis celata</i>	Orange-crowned warbler	-/-	-/-	A&K 1995-96; CBC 1999, 2004-05, 2008-09; Myers 2008-09; RS 2010
<i>Oreothlypis ruficapilla</i>	Nashville warbler	-/-	-/-	RS 2010
<i>Dendroica coronata</i>	Yellow-rumped warbler	-/-	-/-	A&K 1995-96; CBC 1998-2010; RS 2007; Myers 2008-09; FSC 2012
<i>Dendroica nigrescens</i>	Black-throated gray warbler	-/-	-/-	RS 2011
<i>Dendroica occidentalis</i>	Hermit warbler	-/-	-/-	RS 2012
<i>Dendroica petechia</i>	Yellow warbler	-/-	-/-	A&K 1995-96; Myers 2009; RS 2010
<i>Dendroica townsendi</i>	Townsend's warbler	-/-	-/-	RS 2012
<b>Family Passeridae</b>				
<i>Passer domesticus</i>	House sparrow	-/-	-/-	A&K 1995-96; CBC 2008-10; Myers 2008-09; RS 2010

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<b>Family Polioptilidae</b> <i>Polioptila caerulea</i>	Blue-gray gnatcatcher		-/-/-	CBC 2001, 2008-10; Myers 2008
<b>Family Ptilonotidae</b> <i>Phainopepla nitens</i>	Phainopepla		-/-/-	CBC 2000, Myers 2009
<b>Family Sturnidae</b> <i>Sturnus vulgaris</i>	European starling		-/-/-	A&K 1995-96; CBC 1998-02, 2004, 2006-10; RS 2007; Myers 2008-09
<b>Family Troglodytidae</b> <i>Cistothorus palustris</i>	Marsh wren		-/-/-	A&K 1995-96; CBC 2000, 2004-05, 2008-10; RS 2007; Myers 2008-09
<i>Salpinctes obsoletus</i>	Rock wren		-/-/-	CBC 2008-09; Myers 2008-09
<i>Thryomanes bewickii</i>	Bewick's wren		-/-/-	CBC 1999-01, 2003-04, 2007-09; Myers 2008-09
<i>Troglodytes aedon</i>	House wren		-/-/-	A&K 1995-96; CBC 1999-00, 2004, 2008-10; Myers 2008-09; RS 2011
<b>Family Turdidae</b> <i>Catharus ustulatus</i>	Swainson's thrush		-/-/-	Myers 2009
<i>Catharus guttatus</i>	Hermit thrush		-/-/-	CBC 2008-09; Myers 2008
<b>Family Tyrannidae</b> <i>Empidonax difficilis</i>	Pacific-slope flycatcher		-/-/-	A&K 1995-96
<i>Empidonax wrightii</i>	Gray flycatcher		-/-/-	Myers 2009

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<b>Family Tyrannidae (Cont.)</b>				
<i>Myiarchus cinerascens</i>	Ash-throated flycatcher		-/-	A&K 1995-96; RS 2012
<i>Sayornis nigricans</i>	Black phoebe		-/-	A&K 1995-96; CBC 1998-10; RS 2007; Myers 2008-09; FSC 2012
<b>Famly Tyrannidae (cont.)</b>				
<i>Sayornis saya</i>	Say's phoebe		-/-	A&K 1995-96; CBC 2000, 2003-10; Myers 2008-09; RS 2010
<i>Tyrannus verticalis</i> 2010	Western kingbird		-/-	A&K 1995-96; Myers 2008-09; RS
<i>Tyrannus vociferans</i>	Cassin's kingbird		-/-	A&K 1995-96; CBC 1999-07, 2009-10; RS 2007; Myers 2008-09
<b>Family Vireonidae</b>				
<i>Vireo bellii pusillus</i>	Least Bell's vireo		-/FE/SE	USFWS 1980 or Hamilton 1987
<i>Vireo gilvus</i>	Warbling vireo		-/-	RS 2012
<b>Order PELICANIIFORMES (herons, egrets, ibis)</b>				
<b>Family Ardeidae</b>				
<i>Ardea alba</i>	Great egret (common)		-/-	CBC 1993-94; A&K 1995-96; CBC 1998-2010; RS 2007; Myers 2008-09; FSC 2012
<i>Ardea herodias</i>	Great blue heron		-/-	CBC 1991, 1993-94; A&K 1995-96; CBC 1998, 2000-10; RS 2007; Myers 2008-09; FSC 2012
<i>Botaurus lentiginosus</i>	American bittern		-/-	RS 2010

<u>Scientific Name</u>	<u>Common Name</u>	<u>International/Federal/State</u>	<u>Status</u>	<u>Source and Date Surveyed</u>
<b>Family Ardeidae (cont.)</b>				
<i>Bubulcus ibis</i>	Cattle egret	-/-	-/-	A&K 1995-96; CBC 1990-91, 1994; CBC 1999-2001
<i>Butorides virescens</i>	Green heron	-/-	-/-	A&K 1995-96; CBC 1998, 00, 06-08; Myers 2008-09; RS 2010
<b>Family Ardeidae (cont.)</b>				
<i>Egretta thula</i>	Snowy egret	-/-	-/-	CBC 1993-94; A&K 1995-96; CBC 1999-2000, 2002-10; RS 2007; Myers 2008-09; FSC 2012
<i>Ixobrychus exilis</i>	Least bittern	-/-	-/-	RS 2007
<i>Nycticorax nycticorax</i>	Black-crowned Night-Heron	-/-	-/-	CBC 1994; A&K 1995-96; CBC 1999- 07, 2000-08, 2010; RS 2007; Myers 2008-09; FSC 2012
<b>Family Pelicanidae</b>				
<i>Pelecanus erythrorhynchos</i>	American white pelican	-/-	-/-	CBC 2002-03, 2005; Myers 2009
<b>Family Threskiornithidae</b>				
<i>Plegadis chihii</i>	White-faced ibis	-/-	-/-	CBC 2007
<b>Order PICIFORMES</b>				
<b>Family Picidae</b>				
<i>Colaptes auratus</i>	Northern flicker	-/-	-/-	A&K 1995-96; CBC 1998, 2000, 2004- 10; RS 2007; Myers 2008-09
<i>Picoides nuttalli</i>	Nuttall's woodpecker	-/-	-/-	A&K 1995-96; CBC 1999, 2001-02, 2005, 2008-10; Myers 2008-09; RS 2010



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<b>Family Picidae (cont.)</b>			
<i>Picoides pubescens</i>	Downy woodpecker	-/-/-	A&K 1995-96; CBC 2000
<i>Sphyrapicus ruber</i>	Red-breasted sapsucker	-/-/-	A&K 1995-96; RS 2010
<b>PODICIPEDIFORMES (grebes)</b>			
<b>Family Podicipedidae</b>			
<i>Aechmophorus occidentalis</i>	Western grebe	-/-/-	CBC 1993-94; A&K 1995-96; CBC; 1998-2010; RS 2007; Myers 2008-09; FSC 2012
<b>Family Podicipedidae (cont.)</b>			
<i>Aechmophorus clarkii</i>	Clark's grebe	-/-/-	CBC 1990; A&K 1995-96, CBC 1999-2010; RS 2007; Myers 2008-2009
<i>Podiceps auritus</i>	Horned grebe	-/-/-	CBC 2000; RS 2007
<i>Podiceps nigricollis</i>	Eared grebe	-/-/-	CBC 1994; A&K 1995-96; CBC 1998-2010; RS 2007; Myers 2008-09
<i>Podilymbus podiceps</i>	Pied-billed grebe	-/-/-	CBC 1991-94; A&K 1995-96; CBC 1998-2010; RS 2007; Myers 2008-09; FSC 2012
<b>Order STRIGIFORMES (owls)</b>			
<b>Family Strigidae</b>			
<i>Athene cunicularia</i>	Burrowing owl	CITES/BCC/-	A&K 1995-96; RS 2007
<i>Bubo virginianus</i>	Great horned owl	CITES/-/-	Bloom 1994-95; A&K 1995-96; Myers 2009
<i>Megascops kennicottii</i>	Western screech-owl	-/-/-	Myers 2009 ; A&K 1995-96; Myers 2009

<b>Scientific Name</b>	<b>Common Name</b>	<b>International/Federal/State</b>	<b>Status</b>	<b>Source and Date Surveyed</b>
<b>Family Tytonidae</b> <i>Tyto alba</i>	Barn owl		CITES/-/-	Bloom 1994-95
<b>Order SULIFORMES</b>				
<b>(cormorants)</b>				
<b>Family Phalacrocoracidae</b> <i>Phalacrocorax auritus</i>	Double-crested Cormorant		-/-/-	CBC 1990-91, 93-94; A&K 1995-96; CBC 1998-2010; RS 2007; Myers 2008-09; FSC 2012
<b>HERPTILES</b>				
<b>Order SALIENTIA (frogs)</b>				
<b>Family Ranidae</b> <i>Lithobates catesbeiana</i> <i>Pseudacris regilla</i>	Bullfrog Pacific treefrog		-/-/- -/-/-	Phillips 1996 Phillips 1996
<b>Order SQUAMATA (lizards, snakes)</b>				
<b>Family Anguillidae</b> <i>Elgaria multicarinatus</i>	Southern alligator lizard		-/-/-	Phillips 1996
<b>Family Colubridae</b> <i>Pituophis melanoleucus</i> <i>Thamnophis couchi</i>	Gopher snake Western aquatic garter snake		-/-/- -/-/-	Phillips 1996 Hamilton 1987
<b>Family Iguanidae</b> <i>Sceloporus occidentalis</i> <i>Uta stansburiana</i>	Western fence lizard Side-blotched lizard		-/-/- -/-/-	Phillips 1996 Hamilton 1987
<b>Family Leptotyphlopidae</b> <i>Rena humilis</i>	Western blind snake		-/-/-	Phillips 1996

<u>Scientific Name</u>	<u>Common Name</u>	<u>International/Federal/State</u>	<u>Status</u>	<u>Source and Date Surveyed</u>
<b>Family Plethodontidae</b> <i>Batrachoseps nigriventris</i>	California slender salamander		-/-/-	Hamilton 1987
<b>Order TESTUDINATA (turtles)</b> <b>Family Chelydridae</b> <i>Trachemys scripta</i>	pond slider		-/-/-	USFWS 1980 or Hamilton 1987
<b>MAMMALS</b> <b>Order CARNIVORA</b> <b>Family Canidae</b> <i>Canis familiaris</i> <i>Canis latrans</i> <i>Urocyon cinereoargenteus</i>	Domestic dog Coyote Gray fox		-/-/- -/-/-	Phillips 1996 Phillips 1996 USFWS 1980 or Hamilton 1987
<b>Family Felidae</b> <i>Felis sylvestris catus</i>	Feral domestic cat		-/-/-	Phillips 1996
<b>Family Mustelidae</b> <i>Mephitis mephitis</i> <i>Mustela frenata</i>	Striped skunk Long-tailed weasel		-/-/- -/-/-	Phillips 1996 Phillips 1996
<b>Family Procyonidae</b> <i>Procyon lotor</i>	Raccoon		-/-/-	Phillips 1996
<b>Order LAGOMORPHA (rabbits)</b> <b>Family Leporidae</b> <i>Lepus californicus</i> <i>Sylvilagus audubonii</i>	Black-tailed rabbit Desert cottontail		-/-/- -/-/-	Hamilton 1987 Phillips 1996
<b>Order MARSUPIALIA</b> <i>Didelphis virginiana</i>	Virginia opossum		-/-/-	Phillips 1996

<b>Scientific Name</b>	<b>Common Name</b>	<b>International/Federal/State</b>	<b>Status</b>	<b>Source and Date Surveyed</b>
<b>Order RODENTIA</b>				
<b>Family Cricetidae</b>				
<i>Reithrodontomys megalotis</i>	Western harvest mouse		-/-	Phillips 1996
<b>Family Geomyiidae</b>				
<i>Thomomys bottae</i>	Botta's pocket gopher		-/-	Phillips 1996
<b>Family Muridae</b>				
<i>Mus musculus</i>	House mouse		-/-	Phillips 1996
<i>Rattus rattus</i>	Black Rat		-/-	Phillips 1996
<b>Family Sciuridae</b>				
<i>Spermophilus beecheyi</i>	California ground squirrel		-/-	Phillips 1996
<b>FISH</b>				
<b>Family Clupeidae</b>				
<i>Dorsara petenense</i>	Threadfin Shad		-/-	USFWS 1980 or Hamilton 1987
<b>Family Centrarchidae</b>				
<i>Lepomis macrochirus</i>	Bluegill		-/-	USFWS 1980 or Hamilton 1987
<i>Lepomis</i> sp.	Sunfish		-/-	USFWS 1980 or Hamilton 1987
<i>Micropterus salmoides</i>	Largemouth Bass		-/-	USFWS 1980 or Hamilton 1987
<b>Family Cyprinidae</b>				
<i>Ictalurus Ictalurus</i>	Channel catfish		-/-	USFWS 1980 or Hamilton 1987
<b>Family Poeciliidae</b>				
<i>Gambusia affinis</i>	mosquitofish		-/-	USFWS 1980 or Hamilton 1987

**International designations:**

CITES: Convention on International Trade in Endangered Species of Wild Fauna and Flora (2012)

**Federal designations: (federal ESA). Until 1996, FWS maintained a list of Category 2 candidates, described as species of concern, but with insufficient data to support listing. This list is no longer maintained and FWS has no Species of Concern category.**

FE: Federally listed, endangered.

- Migratory Bird Treaty Act  
BCC Birds of Conservation Concern

**State designations: (California Endangered Species Act)**

SE: State listed, endangered.

Listing Status Source: U.S. Fish and Wildlife Service (USFWS) 2012. Birds Protected by the Migratory Bird Treaty Act: <http://www.fws.gov/migratorybirds/RegulationsPolicies/-/ndx.htm#s>

USFWS . 2008. Birds of conservation concern 2008. Division of Migratory Bird Management. Arlington, Virginia. 93 pp. <http://www.fws.gov/migratorybirds/NewReportsPublications/SpecialTopics/BCC2008/BCC2008.pdf>

California Department of Fish and Game (CDFG). 2011. Special Animals List. Biogeographic Data Branch California Natural Diversity Database. January.

Survey Sources:

USFWS (1980 Included 221 acres of adjacent property to NWAS Corona)

Hamilton (1987 Included 221 acres of adjacent property to NWAS Corona)

CBC = Christmas Bird Counts 1990-1994, 1998-2010

Phillips (1996)

A&K = Aigner and Koehler (1996)

Bloom (1997)

Myers (2009)

FSC = Friends of the Sierra Club 2012

RS = R.Schallman 2012





## **APPENDIX J**

### **COOPERATIVE AGREEMENTS**

#### **Cooperative Agreement Between Detachment Norco And The City Of Norco**

Note: Purpose to issue a new utility service contract with the City of Norco for potable water, sewer and recycled/reclaimed water to establish separate services/accounts to both California Rehabilitation Center and Detachment Norco facilities respectively from the point of the City's meter connections complete and ready for use. This contract is consistent with the signed MOA and points of understanding direct result between all parties dated 18 August 2009 to ensure an orderly transition of the separate potable water, sewer and recycled/reclaimed water contracts services/accounts provided by the City.

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<b>AWARD/CONTRACT</b>		1. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 700)		RATING	PAGE 1 OF 12 PAGES
2. CONTRACT (Proc. Inst. Ident.) NO. N62473-11-C-3809		3. EFFECTIVE DATE UPON SIGNATURES		4. REQUISITION/PURCHASE REQUEST/PROJECT NO. 861442	
5. ISSUED BY NAVFAC SouthWest 1220 Pacific Highway (Building 110) San Diego, CA 92132-5187		CODE RAQ1FH	6. ADMINISTERED BY (if other than Item 5)		

7. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) City of Norco 2870 Clark Avenue Norco, CA 92860 (951) 270-5607		8. DELIVERY <input type="checkbox"/> FOB ORIGIN <input type="checkbox"/> OTHER (See below)	
9. DISCOUNT FOR PROMPT PAYMENT		10. SUBMIT INVOICES (4 copies unless otherwise specified) TO THE ADDRESS SHOWN IN	
CODE 4PXR2		FACILITY CODE	
11. SHIP TO/MARK FOR NWS SEAL BEACH DETACHMENT CORONA		12. PAYMENT WILL BE MADE BY DFAS Cleveland	
13. AUTHORITY FOR USING OTHER THAN FULL AND OPEN COMPETITION: <input type="checkbox"/> 10 U.S.C. 2304(c) ( ) <input checked="" type="checkbox"/> 41 U.S.C. 253(c) ( )		14. ACCOUNTING AND APPROPRIATION DATA FUNDS WILL BE CITED ON MONTHLY INVOICES	

15A. ITEM NO.	15B. SUPPLIES/SERVICES	15C. QUANTITY	15D. UNIT	15E. UNIT PRICE	15F. AMOUNT
0001	Potable Water Services for the Naval Weapons Station Seal Beach Detachment Corona				
0002	Sewer Services for the Naval Weapons Station Seal Beach Detachment Corona				
0003	Recycled Water Services for the Naval Weapons Station Seal Beach Detachment				

15G. TOTAL AMOUNT OF CONTRACT  \$

(X)	SEC.	DESCRIPTION	PAGE(S)	(X)	SEC.	DESCRIPTION	PAGE(S)
PART I - THE SCHEDULE				PART II - CONTRACT CLAUSES			
<input checked="" type="checkbox"/>	A	SOLICITATION/CONTRACT FORM		<input checked="" type="checkbox"/>	I	CONTRACT CLAUSES	
<input checked="" type="checkbox"/>	B	SUPPLIES OR SERVICES AND PRICES/COSTS		PART III - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACH.			
<input checked="" type="checkbox"/>	C	DESCRIPTION/SPECS./WORK STATEMENT		<input checked="" type="checkbox"/>	J	LIST OF ATTACHMENTS	
	D	PACKAGING AND MARKING		PART IV - REPRESENTATIONS AND INSTRUCTIONS			
	E	INSPECTION AND ACCEPTANCE			K	REPRESENTATIONS, CERTIFICATIONS AND OTHER STATEMENTS OF OFFERORS	
	F	DELIVERIES OR PERFORMANCE			L	INSTRS., CONDS., AND NOTICES TO OFFERORS	
<input checked="" type="checkbox"/>	G	CONTRACT ADMINISTRATION DATA			M	EVALUATION FACTORS FOR AWARD	
	H	SPECIAL CONTRACT REQUIREMENTS					

CONTRACTING OFFICER WILL COMPLETE ITEM 17 OR 18 AS APPLICABLE

17. <input checked="" type="checkbox"/> CONTRACTOR'S NEGOTIATED AGREEMENT (Contractor is required to sign this document and return <u>1</u> copies to issuing office.) Contractor agrees to furnish and deliver all items or perform all the services set forth or otherwise identified above and on any continuation sheets for the consideration stated herein. The rights and obligations of the parties to this contract shall be subject to and governed by the following documents: (a) this award/contract, (b) the solicitation, if any, and (c) such provisions, representations, certifications, and specifications, as are attached or incorporated by reference herein. (Attachments are listed herein.)	18. <input type="checkbox"/> AWARD (Contractor is not required to sign this document.) Your offer on Solicitation Number _____ including the additions or changes made by you which additions or changes are set forth in full above, is hereby accepted as to the terms listed above and on any continuation sheets. This award consummates the contract which consists of the following documents: (a) the Government's solicitation and your offer, and (b) this award/contract. No further contractual document is necessary.
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19A. NAME AND TITLE OF SIGNER (Type or Print) <i>Berwin Hanna</i> BERWIN HANNA, MAYOR	20A. NAME OF CONTRACTING OFFICER REA D. ESTRELLA
19B. NAME OF CONTRACTOR BY _____ (Signature of person authorized to sign)	19C. DATE SIGNED 07/20/2011
20B. UNITED STATES OF AMERICA BY <i>[Signature]</i> (Signature of Contracting Officer)	20C. DATE SIGNED 29 JULY 2011

**PART I**

**SECTION B – SUPPLIES OR SERVICES AND PRICE/COSTS**

**FIRM FIXED-PRICE CONTRACT**

Subject to the terms and conditions in this contract, the City of Norco (City), shall establish separate services/accounts to sell and deliver Potable Water, Sewer Service and Recycled/Reclaimed Water to both California Rehabilitation Center (“CRC”) and the Naval Weapons Station Seal Beach Detachment Corona (“Navy”) facilities from the point of the City’s meter connections.

**CLIN** (Contract Line Item Number)

CLIN 0001 Potable water service shall be provided in accordance with the State of California, Department of Public Health Services approved rules and regulations and in accordance with the City of Norco Municipal Code, Title 14.

CLIN 0002 Sewer collection and treatment service shall be provided in accordance with the State of California approved rules and regulations and the City of Norco Municipal Code, Title 14.

CLIN 0003 Recycled/Reclaimed Non-Potable water service shall be provided in accordance with the State of California and the City of Norco (City), rules and regulations for the provision of recycled/reclaimed non-potable service.

**End of Section B**

**PART I - SECTION C**

**DESCRIPTION/ SPECIFICATION/ WORK STATEMENT**

**C.1 GENERAL REQUIREMENTS**

CLIN 0001 Potable Water Service/Account  
CLIN 0002 Sewer Service/ Account  
CLIN 0003 Recycled/Reclaimed Non-Potable Water Service/ Account

**C.2 PREMISES TO BE SERVED:**

**Naval Weapons Station (NWS) Seal Beach Detachment Corona, California**

**C.3 POINT OF DELIVERY**

See Statement of Work

**C.4 NATURE OF SERVICE OR CHANGE**

Establishment of New Utility Service Contract to provide Potable Water, Sewer Service and Recycled/ Reclaimed Non-Potable Water Services/ Accounts for Naval Weapons Station Seal Beach Detachment Corona

**C.5 ESTIMATED SERVICE**

See Statement of Work

**C.6 RATE SCHEDULE**

See Statement of Work

**C.7 DESCRIPTION OF WATER SERVICE**

See Statement of Work

**C.8 QUALITY OF WATER SERVICE**

The City of Norco (City), shall supply clear, potable water safe for human consumption in accordance with standards adopted by the California Department of Public Health Service for drinking and culinary water supplied by common carriers in interstate commerce and such revisions thereof as may be made from time to time.

**C.9 TERM OF CONTRACT**

Requested service date for all Utilities Service Contracts for Potable Water, Sewer and Recycled/Reclaimed water fees separate services/accounts for the Navy is JULY 1, 2011. The Contract shall extend for an indefinite period of time. The Contract is subject to termination by the Government provided that a 30 day notice is given to the City of Norco (City), prior to termination.

**C.10 METERING**

See Statement of Work – Single, 8 inch potable water meter connection

**End of Section C**



**Part I**

**SECTION D – PACKAGING AND MARKING**

This section is not applicable.

**SECTION E – INSPECTION AND ACCEPTANCE**

This section is not applicable.

**SECTION F – DELIVERIES OR PERFORMANCE**

This section is not applicable.

**PART I – SECTION G**

**CONTRACT ADMINISTRATION**

**G.1 PAYMENT**

The City of Norco (City), shall be paid by the designated disbursing office for services furnished under this contract at the rate(s) specified herein and the applicable rules and regulations for the provision of water service per the City of Norco Municipal Code.

Payments hereunder shall be contingent upon the availability of appropriations and shall not be made in advance of the service rendered.

**G.2 INVOICING INSTRUCTIONS**

The City of Norco (City), shall submit invoices to:

P.O. BOX 30088, College Station, Texas, 77842-3088

**G.3 CONTRACT ADMINISTRATION DATA**

a. PROCUREMENT CONTRACTING OFFICER (PCO) name/address:

Naval Facilities Engineering Command, SouthWest 1220 Pacific Highway San Diego, CA 92132	Rea D. Estrella (619) 532-3822 Fax (619) 532-3979
--	---

b. The TECHNICAL ENGINEER for this contract is:

Nestor Valdemoro  
(619) 532-3977  
Fax (619) 532-4071

c. WATER DISTRICT name/address:

City of Norco 2870 Clark Avenue Norco, CA 92860	William R. Thompson (951) 270-5607
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d. CUSTOMER name/address:

Naval Weapons Station (NWS) Seal Beach Detachment Corona, California 2300 Fifth Street Norco, CA 92860	Kevin Bourelle (760) 497-8795
---	----------------------------------

e. The Pay Office for this contract is: (DO NOT SEND INVOICES TO THIS ADDRESS)

**DFAS Cleveland, N68732**

G.4 **ACCOUNTING AND APPROPRIATION DATA**

**Funding for usage and recurring service charges**

CLIN 0001 Funding for service will be cited by the certifying activity when invoices are processed for payment.

CLIN 0002 Funding for service will be cited by the certifying activity when invoices are processed for payment.

CLIN 0003 Funding for service will be cited by the certifying activity when invoices are processed for payment.

**PART I**

**SECTION H: SPECIAL CONTRACT REQUIREMENTS**

This section is not applicable.

**End of Section H**

## PART II

### SECTION I – CONTRACT CLAUSES

#### **Federal Acquisition Regulations (FAR) Clauses**

This contract incorporates one or more Federal Acquisition Regulations (FAR) Clauses by reference, with the same force and full effect as if they were given in full text. Upon request, the Contracting Officer will make their text available.

52.217-8	OPTION TO EXTEND SERVICES (NOV 1999)
52.229-3	FEDERAL, STATE AND LOCAL TAXES (JULY 1995)
52.232-19	AVAILABILITY OF FUNDS FOR NEXT FISCAL YEAR (APR 1984)

#### **Defense Federal Acquisition Regulation Supplement (DFARS) Clause**

252.204-7004	REQUIRED CENTRAL CONTRACTOR REGISTRATION (MAR 2000)
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In the event of any inconsistency between the terms of this contract (including the specifications) and any rate schedule or exhibit incorporated in this contract by reference or otherwise, or any of the Contractor's rules and regulations, the terms of this contract shall control.

The following FAR clauses and provisions are incorporated in this contract and provided in Full Text:

52.241-4	CHANGE IN CLASS OF SERVICE (FEB 1985)
52.241-5	CONTRACTOR'S FACILITIES (FEB 1995)
52.241-7	CHANGE IN RATES OR TERMS AND CONDITIONS OF SERVICE FOR REGULATED SERVICES (FEB 1995)
52.241-11	MULTIPLE SERVICE LOCATIONS (FEB 1995)

#### **FAR 52.241-4, CHANGE IN CLASS OF SERVICE (FEB 1995)**

(a) In the event of a change in the class of service, such service shall be provided at the Contractor's lowest available rate schedule applicable to the class of service furnished.

(b) Where the Contractor does not have on file with the regulatory body approved rate schedules applicable to services provided, no clause in this contract shall preclude the parties from negotiating a rate schedule applicable to the class of service furnished.

#### **52.241-5, CONTRACTORS FACILITIES (FEB 1995)**

(a) The Contractor, at its expense, unless otherwise provided for in this contract, shall furnish, install, operate, and maintain all facilities required to furnish service hereunder, and measure such service at the point of delivery specified in the Service Specifications. Title to all such facilities

shall remain with the Contractor and the Contractor shall be responsible for loss or damage to such facilities, except that the Government shall be responsible to the extent that loss or damage has been caused by the Government's negligent acts or omissions.

(b) Notwithstanding any terms expressed in this clause, the Contractor shall obtain approval from the Contracting Officer prior to any equipment installation, construction, or removal. The Government hereby grants to the Contractor, free of any rental or similar charge, but subject to the limitations specified in this contract, a revocable permit or license to enter the service location for any proper purpose under this contract. This permit or license includes use of the site or sites agreed upon by the parties hereto for the installation, operation, maintenance, and repair of the facilities of the Contractor required to be located upon Government premises. All applicable taxes and other charges in connection therewith, together with all liability of the Contractor in construction, operation, maintenance and repair of such facilities, shall be the obligation of the Contractor.

(c) Authorized representatives of the Contractor will be allowed access to the facilities on Government premises at reasonable times to perform the obligations of the Contractor regarding such facilities. It is expressly understood that the Government may limit or restrict the right of access herein granted in any manner considered necessary (*e.g.*, national security, public safety).

(d) Unless otherwise specified in this contract, the Contractor shall, at its expense, remove such facilities and restore Government premises to their original condition as near as practicable within a reasonable time after the Government terminates this contract. In the event such termination of this contract is due to the fault of the Contractor, such facilities may be retained in place at the option of the Government for a reasonable time while the Government attempts to obtain service elsewhere comparable to that provided for hereunder.

#### **52.241-7, CHANGE IN RATES OR TERMS AND CONDITIONS OF SERVICE FOR REGULATED SERVICES (FEB 1995)**

(a) This clause applies to the extent services furnished under this contract are subject to regulation by a regulatory body. The Contractor agrees to give 30 days written notice of (1) the filing of an application for change in rates or terms and conditions of service concurrently with the filing of the application and (2) any changes pending with the regulatory body as of the date of contract award. Such notice shall fully describe the proposed change. If, during the term of this contract, the regulatory body having jurisdiction approves any changes, the Contractor shall forward to the Contracting Officer a copy of such changes within 15 days after the effective date thereof. The Contractor agrees to continue furnishing service under this contract in accordance with the amended tariff, and the Government agrees to pay for such service at the higher or lower rates as of the date when such rates are made effective.

(b) The Contractor agrees that throughout the life of this contract the applicable published and unpublished rate schedule(s) shall not be in excess of the lowest cost published and unpublished rate schedule(s) available to any other customers of the same class under similar conditions of use and service.

(c) In the event that the regulatory body promulgates any regulation concerning matters other than rates which affects this contract, the Contractor shall immediately provide a copy to the



Contracting Officer. The Government shall not be bound to accept any new regulation inconsistent with Federal laws or regulations.

(d) Any changes to rates or terms and conditions of service shall be made a part of this contract by the issuance of a contract modification unless otherwise specified in the contract. The effective date of the change shall be the effective date by the regulatory body. Any factors not governed by the regulatory body will have an effective date as agreed to by the parties.

**52.241-11, MULTIPLE SERVICE LOCATIONS (FEB 1995)**

(a) At any time by written order, the Contracting Officer may designate any location within the service area of the Contractor at which utility service shall commence or be discontinued. Any changes to the service specifications shall be made a part of the contract by the issuance of a contract modification to include the name and location of the service, specifying any different rate, the point of delivery, different service specifications, and any other terms and conditions.

(b) The applicable monthly charge specified in this contract shall be equitably prorated from the period in which commencement or discontinuance of service at any service location designated under the Service Specifications shall become effective.

**DEFENSE FEDERAL ACQUISITION REGULATION SUPPLEMENT (DFARS)  
CLAUSES**

252.204-7005 REQUIRED CENTRAL CONTRACTOR REGISTRATION CCR (MAR 2000)

**End of Section I**

**PART II**

**SECTION J – LIST OF ATTACHMENTS**

- J.1** Statement of Work
- J.2** Potable Water, Sewerage and Recycled/Reclaimed Water Specifications
- J.3** Memorandum of Agreement & Point of Understanding Between the Naval Weapons Station Seal Beach Detachment Corona and the City of Norco and the California Department of Corrections & Rehabilitation: Signed 18 August 2009.
- J.4** Exhibit “A” CRC/ NAVY Public Utilities
- J.5** Exhibit “B” City of Norco/ CRC/ NAVY Existing Site Utility Plan
- J.6** Exhibit “C” NAVY Proposed Utility Service Connections

**Attachment J.1**

**STATEMENT OF WORK  
CITY OF NORCO  
UTILITY SERVICE CONTRACT  
FOR  
POTABLE WATER, SEWER & RECYCLED/RECLAIMED WATER**

**Contract No. N62473-11-C-3809  
CREF NO. 861442**

**1. PURPOSE:**

- a. Basic Contract is deemed necessary to issue a New Utility Service Contracts with the City of Norco ("City") for Potable Water, Sewer and Recycled/Reclaimed Water to establish separate services/accounts to both California Rehabilitation Center ("CRC") and Naval Weapons Station Seal Beach Detachment Corona ("Navy") facilities respectively from the point of the City's meter connections complete and ready for use.
- b. This contract is consistent with the signed MOA and Points of Understanding direct result between the Navy, CRC and City, Attachment "A", dated 18<sup>th</sup> August 2009 to ensure an orderly transition of the separate potable water, sewer and recycled/reclaimed water contracts services/accounts provided by the City.

**2. GENERAL REQUIREMENTS:**

**NAVAL WEAPONS STATION (NWS) SEAL BEACH DETACHMENT  
CORONA (NAVY)**

**CLIN =** (Contract Line Item Number)

**CLIN 0001 POTABLE WATER SERVICE/ACCOUNT:**

Potable water service shall be provided in accordance with the State of California approved rules and regulations and in accordance with the City of Norco Municipal Code, Title 14.

- a. The City shall provide funds, design, construct, operate, maintain, furnish and install new potable water meter service connection at the 12" existing water main to provide separate service/account for the Navy on Fifth Street at or near the old entrance to the Navy facility complete and ready for use.

- b. The City shall provide funds, design, construct, operate, maintain, furnish and install new 8" water main pipeline and potable water meter connection to provide service/account for the Navy on Fourth Street at or near the new entrance to the Navy facility complete and ready for use.
- c. The City shall provide water meter to measure the Navy water consumption delivered for billing purposes at the City standard water rates.
- d. The Navy shall fund, design, construct, operate and maintain all facilities in their respective properties from the point of the City's meter connection, located outside of Navy property.
- e. The City shall not require an assessment of development impact fees for the proposed Navy water service connection.
- f. The City reserves the right to assess all appropriate water service connection and a development fee associated with this property if the State of California or Navy transfers ownership or develops the property for use other than current use by the State of California or Navy.

**CLIN 0002      SEWER SERVICE/ACCOUNT:**

Sewer service shall be provided in accordance with the State of California approved rules and regulations and in accordance with the City of Norco Municipal Code, Title 14.

- a. The City shall provide funds, design, construct, operate, maintain, furnish and install new sewer meter service connection at the existing sewer main line and discharge facilities including a bar screen and/or grinders to accept daily wastewater flows from the Navy for separate service/accounts and connect to the CRC on Western Avenue, South of Fifth Street complete and ready for use.
- b. The City shall provide funds, design, construct, operate, maintain, furnish and install new sewer meter service connection for the Navy from the existing sewer lift station located on Navy property to the City's sewer main on Third Street, within the Riverside Community College (RCC) Norco Campus complete and ready for use.
- c. The City shall furnish and install a temporary sewer meter to measure the Navy sewage flow to the City of Norco sewer system to collect and establish sufficient sewage flow usage data for billing purposes and billed the Navy by using the City standard sewer rates. This temporary sewer meter shall be removed after gathering sufficient usage data and

shall be replaced with a permanent calibrated sewer meter.

- d. The Navy shall fund, design, construct, operate and maintain all facilities in their respective properties from the point of the City's sewer service meter connection.
- e. The City shall obtain additional sewer treatment capacity at the Western Riverside County Regional Wastewater Authority (WRCRWA) at its own expense to accept and treat the Navy sewer discharges.

**CLIN 0003      RECYCLED/RECLAIMED NON-POTABLE WATER SERVICE/ACCOUNT:**

Recycled/Reclaimed Non-Potable water service shall be provided in accordance with the State of California and the City of Norco (City), approved rules and regulations for the delivery of recycled/reclaimed non-potable service.

- a. The City shall provide funds, design, construct, operate, maintain, furnish and install new recycled/reclaimed non-potable water main pipeline and non-potable water meter service connection for the Navy to provide separate service/account located near the Fourth Street entrance gate to the Navy facility complete and ready for use.
- b. The City shall provide funds, design, construct, operate, maintain, furnish and install new recycled/reclaimed non-potable water main pipeline and non-potable water meter service connection for the Navy to provide a service/account located on the Fifth Street adjacent to the Potable Water connection.

**3. REQUESTED SERVICE DATE:**

- a. Requested service date for all Utilities Service Contracts for Potable Water, Sewer and Recycled/Reclaimed water fees separate services/accounts for the Navy is JULY 1, 2011.

**4. PROJECT NAME AND LOCATION:**

- a. Utilities Service Contracts for Potable Water, Sewer and Recycled/Reclaimed Non-Potable Water services/accounts: **Naval Weapons Station (NWS) Seal Beach Detachment Corona, California.**

**Attachment J.2**

**Contract N62473-11-C-3809**

**CREF NO. 861442**

**WATER SERVICE SPECIFICATIONS**

**1. PREMISES TO BE SERVED:**

NAVAL WEAPONS STATION SEAL BEACH DETACHMENT CORONA,  
CALIFORNIA

2. **POINT OF DELIVERY:** The point of delivery of potable water shall be at the point of connection shown in attached Utilities Plan. This work shall be provided by the City of Norco (City) Water Department Service Area.

3. **NATURE OF SERVICE OR CHANGE:** The City of Norco (City) shall provide fund, design, construct, operate, maintain, furnish and install domestic potable water tap service connection for the Navy on Fourth Street at or near the new entrance to the Navy facility respectively from the point of the City's meter connections complete and ready for use, as shown in attached Utilities Plan.

4. **ESTIMATED SERVICE:** (For Domestic Potable Drinking Water System only)

Estimated daily maximum demand: **466 kgals**

Estimated annual consumption: **170,168 kgals**

Estimated New Water Connection Charge: **No Cost**

(The Government is in no way obligated to delivery nor is it restricted to the above estimate)

5. **RATE SCHEDULE:** Water rates shall be in accordance with the current City of Norco Water and Sewer Rates commercial, industrial facilities (Water Only).

**6. DESCRIPTION OF WATER SERVICE:**

a. The City shall have **350** gallons per minute of domestic potable water continuously available at the point of delivery at a pressure of not less than **65** pounds per square inch gauge or the standard pressure for this type of service.

7. **QUALITY OF WATER SERVICE:** The City shall supply clear, potable water safe for human consumption in accordance with standards adopted by the



United States Public Health Service for drinking and culinary water supplied by common carriers in interstate commerce and such revisions thereof as may be made from time to time.

8. **TERM OF SERVICE:** (check one)

- Definite, commencing \_\_\_\_\_ terminating \_\_\_\_\_
- Indefinite, commencing on or about JULY 1, 2011

9. **METERING:** Water shall be measured by water meters to be supplied by the City Water Department as mentioned below or be determined by City Water Department for the type of service required.

Fire Protection Water System	NONE
Potable Drinking Water System	TBD by City (water meter size)

10. **SIZE OF CONTRACTOR'S PIPELINE TO POINT OF DELIVERY:** Existing 8" and 12" inches diameter for domestic potable drinking water system.

**SEWERAGE SERVICE SPECIFICATIONS**

1. **PREMISES TO BE SERVED:**

NAVAL WEAPONS STATION SEAL BEACH DETACHMENT CORONA, CALIFORNIA

2. **ESTIMATED SERVICE:**

- Estimated average daily flow: 750 kgals
- Estimated average annual flow: 273,750 kgals
- Estimated New Sewer Connection Charge: No Cost

(The Government is in no way obligated to delivery nor is it restricted to the above estimate.)

3. **NATURE OF SERVICE OR CHANGE:**

- New Connection
- Change

4. **SERVICE TO BE RENDERED:** The City of Norco (City) shall provide funding, design, construct, operate, maintain and furnish a sanitary sewer connections at two locations: (the first location will connect to the CRC on Western Avenue, South of Fifth Street and the second location will be from the existing sewer lift station located on Navy property to the City's sewer main on Third Street, within the Norco College (Norco Campus) and sanitary sewage services as required by the Government and shall receive, carry, treat and dispose of all sanitary sewage originating from the Navy in such amounts as the Government desires to release into the City's sewer system and in a manner and by such means as will constitute

no hazard to the public health. The City shall operate their sewage disposal and treatment facilities in conformity with applicable laws, rules, and regulations promulgated by Federal, state and local authorities.

5. **TERM OF SERVICE:** Indefinite, Commencing on or about JULY 1, 2011

6. **POINT OF DELIVERY:** The sewage shall be delivered to the City by the Government at the point of connection shown in attached Utilities Plan. This work is to be provided by the City Service Area.

7. **SIZE OF SEWER TO POINT OF DELIVERY:** **Eight (8)** inches diameter. Shall be determined by City of Norco.

8. **RATE SCHEDULE:** Sewer rates shall be in accordance with the current City of Norco Water and Sewer Rates for Commercial, Industrial facilities (Sewer Only).

9. **ALTERATIONS AND ADDITIONS:** **None**

## **RECYCLED/RECLAIMED WATER SERVICE SPECIFICATIONS**

### **2. PREMISES TO BE SERVED:**

NAVAL WEAPONS STATION SEAL BEACH DETACHMENT CORONA,  
CALIFORNIA

10. **POINT OF DELIVERY:** The point of delivery of recycled water shall be at the point of connection shown in attached Utilities Plan. This work shall be provided by the City of Norco (City) Water Department Service Area.

11. **NATURE OF SERVICE OR CHANGE:** The City of Norco (City) shall provide fund, design, construct, operate, maintain, furnish and install new two recycled water tap service connections for the Navy, one near Fourth Street and second near Fifth Street on the Navy facility respectively from the point of the City's meter connections complete and ready for use, as shown in attached Utilities Plan.

12. **ESTIMATED SERVICE:** (For Recycled Water System only)

Estimated average daily usage: **466 kgals**

Estimated average annual usage: **170,168 kgals**

Estimated New Recycled Water Connection Charge: **No Cost**

(The Government is in no way obligated to delivery nor is it restricted to the above estimate)

13. **RATE SCHEDULE:** Recycled/Reclaimed water rates shall be in accordance with the current City of Norco Water and Sewer Rates commercial, industrial facilities (Recycled/Reclaimed Non-Potable Water Only).
14. **DESCRIPTION OF WATER SERVICE:**
- b. The City shall have 350 gallons per minute of recycled/reclaimed non-potable water continuously available at the point of delivery at a pressure of not less than 65 pounds per square inch gauge or the standard pressure for this type of service provided by the City of Norco.
15. **QUALITY OF WATER SERVICE:** The City shall supply clear, recycled/reclaimed non-potable water safe for irrigation, landscaping Lake Source supply in accordance with standards adopted by the United States Public Health Service for recycled/reclaimed non-potable water supplied by common carriers in interstate commerce and such revisions thereof as may be made from time to time.
16. **TERM OF SERVICE:** (check one)  
 Definite, commencing \_\_\_\_\_ terminating \_\_\_\_\_  
 Indefinite, commencing on or about JULY 1, 2011
17. **METERING:** Recycled/Reclaimed Non-Potable Water shall be measured by water meters to be supplied by the City Water Department as mentioned below or be determined by City Water Department for the type of service required.

Recycled/Reclaimed Non-Potable Water System: TBD by City (water meter size)

**10. SIZE OF CONTRACTOR'S PIPELINE TO POINT OF DELIVERY:** City of Norco shall provide funds, design, construct, operate, maintain, furnish and install Recycled/Reclaimed Non-Potable Water system connection to provide non-potable water to Navy facility as shown in the Utility Site Plan.

**MEMORANDUM OF AGREEMENT**

**BETWEEN**

**THE NAVAL WEAPONS STATION SEAL BEACH DETACHMENT CORONA**

**AND**

**THE CITY OF NORCO**

**AND**

**THE CALIFORNIA DEPARTMENT OF CORRECTIONS & REHABILITATION,**

This Memorandum of Agreement is entered into as of this 18<sup>th</sup> day of Aug., 2009, by and between the Naval Weapons Station Seal Beach Detachment Corona ("Navy") and the City of Norco ("City"), and the California Department of Corrections & Rehabilitation ("CDCR"). It is understood by all three parties that this Memorandum of Agreement is not a legally binding document and that utility service contracts and easements shall be established to complete this agreement.

**RECITALS**

WHEREAS, the California Rehabilitation Center ("CRC"), functioning under the direction of the CDCR, and the Naval Weapons Station Seal Beach (Navy) Detachment Corona, functioning under the direction of Commander, Navy Region Southwest, are located adjacent to one another within the City of Norco; and

WHEREAS, the City of Norco provides a full range of water treatment and distribution services as well as sewage collection and treatment services within the City's incorporated service area; and

WHEREAS, the City possesses multiple potable water sources that enable the supply of water to its distribution system that include local groundwater facilities, the Chino Desalter Authority ("CDA"), and the Arlington Desalter ("Arlington") as well as the Mills Filtration Plant ("Mills"); and

WHEREAS, the City currently provides approximately 800 gallons per minute (gpm) of potable water to the CRC and Navy at a single water connection located on Western Avenue; and

WHEREAS, the City has designed and is constructing a recycled water system to provide an alternative water irrigation source to users within its service area; and

WHEREAS, the City operates a sewage collection system with the ability to accept the CRC and the Navy daily sewage discharges for distribution to its treatment facility at the Western Riverside County Regional Wastewater Authority (WRCRWA); and

WHEREAS, the CRC contracts and owns 750,000 gallons per day (gpd) of Santa Ana Regional Interceptor (SARI) treatment and pipe line capacity, which accepts daily sewage discharges from the property; and

WHEREAS, the City is prepared to obtain additional treatment capacity from WRCRWA to provide sufficient treatment capabilities to accommodate additional wastewater flow from the CRC and Navy; and

#### POINTS OF UNDERSTANDING

NOW, THEREFORE, in consideration of the foregoing recitals, and the points of understanding hereinafter stated, the parties to this Memorandum of Agreement understand the following:

1. Potable Water Service.

a. The City will design, fund, construct, operate and maintain additional potable water connections to provide separate services to the CRC and Navy.

b. Specifically, the City will design, fund, install, and maintain 2 potable water connections for CRC, a new connection located on Fifth Street and the existing connection located on Western. The City will design, fund, install, and maintain an additional water connection for the Navy on Fourth Street at or near the new entrance to the facility.

c. The quantities of water delivered to the CRC and the Navy will be measured by individual meters and billed at the standard rates in effect for Industrial users within the City. Beginning October 1, 2009 each Agency will be billed separately for water metered and supplied by the City.

d. The CRC and the Navy will design, fund, construct, operate and maintain all facilities on their respective properties from the point of the City's meter connection. The Navy shall develop and issue easements for CRC water infrastructure located on Navy property. The CRC will retain maintenance responsibility for water infrastructure in support of their water system.

e. The City will not require an assessment of development impact fees for the proposed water service connection. The City reserves the right to assess all appropriate water and sewer connection and development fees associated with this property if the State of California transfers ownership or develops the property for use other than by the State of California.

2. Sewer Service.

a. The City will design, fund, construct, operate and maintain sewer line connections and discharge facilities including a bar screen and/or grinders to accept daily wastewater flows from the CRC and the Navy. The City will provide sewer connections at two locations. The first will connect to the CRC on Western Avenue, south of Fifth Street. The second sewer connection will be designed from the existing sewer lift station located on Navy property to the City's sewer main on Third Street, within the Riverside Community College (RCC) Norco campus.

b. The CRC will conduct a cost feasibility study to determine alternatives to use of the Navy sewer system for sewage disposal via the City of Norco.

c. The City shall install temporary meters to measure the amount of CRC sewage flowing into the Navy sewage system. A temporary meter shall also be installed to measure sewage flow to the City of Norco from the Navy system. These meters can be removed after sufficient data has been collected to determine sewage flow from the CRC and Navy.

d. The Navy shall develop and issue easements for CRC sewer infrastructure located on Navy property. The CRC will retain maintenance responsibility for sewer infrastructure in support of their sewer system.

e. The City will establish an institutional rate for sewer services provided to the CRC and the Navy. Beginning October 1, 2009 each Agency will pay separately for sewer service based on usage established by meters.

f. The City will obtain additional sewer treatment capacity at WRCRWA, at its own expense, to accept and treat the CRC and Navy sewer discharges. Each Agency will be responsible for maintaining their respective sewer laterals which connect into the main trunk line.

g. The CDCR will transfer ownership 250,000 gallons of SARI treatment and pipe line capacity to the City.

3. Recycled Water. The City will design, fund, construct, operate and maintain recycled water connections to the CRC and the Navy. A total of two recycled water connections for the Navy shall be provided, one near 4<sup>th</sup> St and a second near 5<sup>th</sup> street adjacent to the potable water connections.



4. Conveyance of Well-field Property. The CDCR acting by and through the Director of the Department of General Services State of California, will complete the re transfer of ownership of the 13.33-acre parcel located on Bluff Street between River Road and Vine Avenue in the City of Norco, identified as APN 121-110-00 (Parcel D). Conditions of re transfer are as required by the vesting deed, and approved by the Department of Health and Human Services, and facilitated through the US General Services Administration.
5. Design Review. The design of the metering, connection, flow control and pressure reducing facilities shall be subject to review and approval by all parties to this agreement.
6. Inspection of Facilities. The water and sewer connection points constructed by the CRC or the Navy referenced in this Memorandum of Agreement shall be subject to inspection and approval by the City during construction and again before activation.
7. Transfer of Obligation. Upon completion of the transfer of title of Parcel D to the City, the Navy shall also provide Lake Norconian to the City for use as a water storage facility. In return the City will assume the obligation for filling and maintaining the water levels at Lake Norconian, to include the reflecting ponds at the specified level marked with a metal plate at the boat dock. The City will ensure that the water quality delivered to the lake meets, or exceeds all regional water quality discharge permit standards, and obtain any required permits.
8. Changes. Changes/amendments may be made to this agreement by mutual written consent of all parties, and will be recorded and published as addenda to this agreement.
9. Effective Date. This MOA will become effective upon the completion of signatures.
10. Separate Counterparts. This Agreement may be executed in separate counterparts, each of which when so executed shall be deemed to be an original. Such counterparts shall, together, constitute and be one and the same instrument.

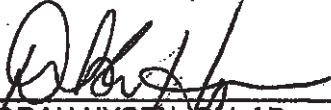
IN WITNESS WHEREOF, the parties have caused this agreement to be executed as of the date first above written.

CITY OF NORCO



KATHY AZEVEDO, MAYOR  
City Hall  
2870 Clark Avenue  
Norco, CA 92860

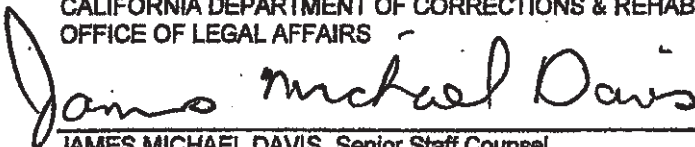
CALIFORNIA DEPARTMENT OF CORRECTIONS & REHABILITATION



DEBORAH HYSEN, Chief Deputy Secretary  
Facility Planning, Construction, and Management  
State of California  
9838 Old Placerville Rd. Suite B  
Sacramento, CA 95827

Approved as to form:

CALIFORNIA DEPARTMENT OF CORRECTIONS & REHABILITATION  
OFFICE OF LEGAL AFFAIRS



JAMES MICHAEL DAVIS, Senior Staff Counsel  
Attorney for CDCR

UNITED STATES NAVY



MARSHA R. DODSON, Contracting Officer  
NAVFAC Southwest  
1220 Pacific Highway  
San Diego, CA 92132

**APPENDIX K**  
**STAKEHOLDER CONTACTS**

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**Detachment Norco Integrated Natural Resources Management Plan (INRMP)  
2011  
Internal/External Stakeholders**

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**APPENDIX L**

**DETACHMENT NORCO IMPLEMENTATION TABLE**

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**Appendix L**

NOTE: As stated in Section 6.2 of the NAVWPNSTA Seal Beach Detachment Norco Integrated Natural Resources Management Plan, any obligation of funds for INRMP projects is subject to availability of funds appropriated by Congress.

**Table 1. NAVWPNSTA Seal Beach Detachment Norco Projects**

Project or Activity/Objective	EPR Number	ERL Number	INRMP Section	Scheduled Implementation	Prime Legal Driver	Focus Areas	Funding Source
<b>Land Use Management</b>							
<b>Objective: Implement land use and conservation policies to the extent practicable and in concert with the mission of the installation.</b>							
Perform a formal facility water conservation audit that would evaluate water conservation options for landscaped facilities.	NA	NA	5.1 and 5.3.2.1.1	Ongoing	EO 13423, EO13514	Ecosystem Integrity	PW In-house
Implement water conservation measures based on the results of a facility water conservation audit.	NA	NA	5.1 and 5.3.2.1.1	Ongoing	EO 13423, EO13514	Ecosystem Integrity	PW In-house
In consultation with NSWC, Identify the design objectives for the developed landscapes of the installation. Incorporate these goals and objectives into a Landscape Management Plan that would present management directives for both natural and developed landscapes of Detachment Norco. Implement the Landscape Management Plan per the Vegetation Management Program detailed below.	NA	NA	5.1 and 5.3.2	2014	EO 13423, EO13514	Ecosystem Integrity	EPSO/PW In-house
<b>Soil Management</b>							
<b>Objective: Prevent and control soil erosion and reduce likelihood of sedimentation of Lake Norconian and associated wetlands from erosion.</b>							
Develop new or use proven BMPs to prevent and control erosion and protect sensitive resources and habitats.	NA	NA	5.2	Ongoing	Sikes Act, CWA, EO 13423, OPNAVINST 5090.1C CH-1	Ecosystem Integrity	EPSO In-House
Ensure incorporation of BMPs in the preliminary engineering, design, and construction of facilities involving ground disturbance.	NA	NA	5.2	Ongoing	Sikes Act, CWA	Ecosystem Integrity	EPSO/PW In-house
<b>Vegetation Management Program</b>							
<b>Objective: Manage natural habitats (i.e. non-landscaped and undeveloped areas) for the benefit of native plant and wildlife species.</b>							
Conduct an initial vegetation inventory within the installation. In addition to this inventory, an evaluation of insects or birds that are dependent on specific plant species will be conducted	61013NR004	4	5.3.1	2014	Sikes Act, DoDI 4715.03, OPNAVINST 5090.1C CH-	Ecosystem Integrity	OM&N

**Appendix L**

Project or Activity/Objective	EPR Number	ERL Number	INRMP Section	Scheduled Implementation	Prime Legal Driver	Focus Areas	Funding Source
to determine if management of these species is necessary.					1, EO13112		
<b>Vegetation Management Program (cont'd)</b>							
<b>Objective: Manage natural habitats (i.e. non-landscaped and undeveloped areas) for the benefit of native plant and wildlife species. (cont'd)</b>							
Conserve, protect, maintain, and manage undeveloped areas of high biological value (i.e. coastal sage scrub, non-native grassland, and riparian/wetland habitats) on the installation	61013NR004, 61013NR007, 61013NR009	4	5.3.1	2015	Sikes Act, MBTA, OPNAVINST 5090.1C CH-1, CWA	Ecosystem Integrity	OM&N
In consultation with NSWC, prepare and implement a Landscape Management Plan which would include the management of vegetation within developed and undeveloped areas of the installation. The Landscape Management Plan would include objectives and tasks for the management of wildland fire vegetation, invasive and noxious weed species, and landscaped areas that are part of the Lake Norconian Historic District.	61013NR009	4	5.3.1	2012	Sikes Act, EO 11990, EO 13112, DoDI 6055.6 NHPA 36 CFR 800; DoD Directive 4710.1	Ecosystem Integrity	OM&N
Conduct habitat restoration activities: 1) Restore and revegetate upland areas that have been significantly disturbed by noxious weed control activities with appropriate native species that are known from the local region; 2) enhance existing coastal sage scrub (CSS) and grassland habitats by removing nonnative grasses and forbs and replanting with appropriate native species that are known from the local region.	61013NR007	4	5.4.1.1 & 5.3.1	2010-2015	Sikes Act, EO 11990, EO 13112,	Ecosystem Integrity	OM&N
Through processes such as NEPA review, EMS implementation, etc., continue to provide information to grounds maintenance personnel about sensitive habitat areas to be excluded from landscape maintenance activities.	NA	NA	5.3	Ongoing	Sikes Act	Ecosystem Integrity	EPSO In-House
Monitor the condition and trend of vegetation communities. Update the installation's vegetation mapping every five years, or as-needed, and maintain a GIS database for these data per the Geographical Information System Management Program detailed below.	61013NR004	4	5.3.1 and 5.14	2014	Sikes Act, OPNAVINST 5090.1C CH-1, DoDI 4715.03, EO 13112	Ecosystem Integrity	OM&N

**Appendix L**

Project or Activity/Objective	EPR Number	ERL Number	INRMP Section	Scheduled Implementation	Prime Legal Driver	Focus Areas	Funding Source
<b>Management of Anthropogenic Communities, Historic and Developed Landscapes</b>							
<b>Objective: Manage and maintain NRHP-listed historic landscaped areas within Detachment Norco</b>							
In consultation with NSWC, identify goals and management strategies for historic landscapes that are part of the NRHP-listed Historic District located within the installation. These goals and management strategies would be incorporated into and implemented per the Landscape Management Plan discussed above (Vegetation Management Program).	61013CR004	4	5.3.2	2015	Sikes Act, NHPA 36 CFR 800; DoD Directive 4710.1	Ecosystem Integrity	OM&N
Prior to the development of a Landscape Management Plan, meet with NSWC as needed but as least annually to identify and prioritize immediate landscape management needs.	NA	NA	5.3.2.1	Ongoing	Sikes Act	Ecosystem Integrity	EPSO/PW In-house
<b>Objective: Manage new landscaping to promote water conservation</b>							
Implement low maintenance plant requirements as a criterion for selection of any new plantings.	NA	NA	5.3.2.1.1	Ongoing	Sikes Act, EO13423	Ecosystem Integrity	EPSO/PW In-house
Replace lawn areas where they are not needed for recreation with drought tolerant plantings that are "water wise" plants and suitable to the local climate.	NA	NA	5.3.2.1.1	Ongoing	Sikes Act, EO 13423	Ecosystem Integrity	EPSO/PW In-house
Minimize fertilizer runoff to the lake by efficiently conserving water and limiting the use of fertilizer.	NA	NA	5.3.2.1.1	Ongoing	Sikes Act, EO 13423, CWA	Ecosystem Integrity	EPSO/PW In-house
Evaluate timing of watering needs, adjust irrigation systems and use automatic timers as practicable, and use mulches to reduce irrigation and conserve water.	NA	NA	5.3.2.1.1	Ongoing	Sikes Act, EO 13423	Ecosystem Integrity	EPSO/PW In-house
<b>Invasive Species Management Program</b>							
<b>Objective: Control high priority noxious and invasive plant species that have the potential to alter native upland plant communities.</b>							
Conduct an inventory of noxious weeds; identify and prioritize areas that are dominated by invasive species that are considered high priority by the Cal-IPC. Maintain a comprehensive noxious and invasive plant species list and GIS database.	6101312106	4	5.4.1.1 & 5.14	2013/Ongoing	FNWA, OPNAVINST 5090.1C CH-1, DoDI 4715.03, EO 11990, EO 13112	Ecosystem Integrity	OM&N
Based on the results of the noxious weed inventory, identify management goals and strategies to control of high priority noxious and invasive plant species. These goals and strategies will be implemented per the Landscape Management Plan discussed above.	NA	NA	5.4.1.1	2012	EO 13112	Ecosystem Integrity	EPSO In-House

**Appendix L**

Project or Activity/Objective	EPR Number	ERL Number	INRMP Section	Scheduled Implementation	Prime Legal Driver	Focus Areas	Funding Source
<b>Invasive Species Management Program (cont'd)</b>							
<b>Objective: Control high priority noxious and invasive plant species that have the potential to alter native upland plant communities. (cont'd)</b>							
Annually, or as-needed, eradicate or control the spread and introduction of nonnative and invasive upland plant species such as salt cedar, pampas grass, mustards, etc. with emphasis on those with greatest potential for negative impacts. Management of fan palms in developed areas will be done in consultation with NSWC.	6101312106	4	5.4.1.1	2012	EO 13112	Ecosystem Integrity	OM&N
Coordinate invasive species removal with Detachment Norco's current IPMP to control upland noxious plants in conjunction with the lake's aquatic plant pests, as required by OPNAVINST 6250.4A.	NA	NA	5.4.1.1	Ongoing	EO 13112	Ecosystem Integrity	EPSO In-House
Replace invasive plant species with native vegetation that occurs in the local area. Upland vegetation may include coastal sage scrub species and native bunchgrass.	61013NR006, 61013NR007	4	5.4.1.1	2015	Sikes Act, ESA, Plant Protection Act	Ecosystem Integrity	OM&N
<b>Objective: Control invasive wildlife species that have potential to alter wildlife communities.</b>							
Identify threats that invasive terrestrial and aquatic wildlife species (i.e. European starling, brown-headed cowbird, bullfrog, and African clawed frog) may pose to native songbird and aquatic species (i.e. predation, competition and nest parasitism)	61013NR001 and 61013NR002	4	5.4.1.1	2012-2013	EO 13112	Ecosystem Integrity	OM&N
Prepare and implement an Invasive Species Control Plan as necessary	TBD		5.4.1.1	TBD	EO13112	Ecosystem Integrity	OM&N
<b>Wetlands Management Program</b>							
<b>Objective: Manage and enhance wetland resources on Detachment Norco</b>							
As needed, update the existing wetland delineation. As part of any update, develop and maintain a GIS database for these resources.	TBD	4	5.5	2013	CWA, EO 13112, EO 11990, OPNAVINST 5090.1C CH-1, DoDI 4715.03	Ecosystem Integrity	OM&N
Enhance wetland habitat by annually, or as needed, controlling and removing nonnative and invasive wetland plant species with a focus on the riparian area below the dam. Target species should include species of concern according to	6101312106	4	5.5	2010-2015	EO 13112, EO 11990	Ecosystem Integrity	OM&N



## Appendix L

Project or Activity/Objective	EPR Number	ERL Number	INRMP Section	Scheduled Implementation	Prime Legal Driver	Focus Areas	Funding Source
the Cal-IPC.							
<b>Wetlands Management Program (cont'd)</b>							
<b>Objective: Manage and enhance wetland resources on Detachment Norco (cont'd)</b>							
Identify management strategies for the control of high priority noxious and invasive wetland plant species. These would be incorporated into the Landscape Management Plan.	NA	4	5.5	Ongoing	EO 13112, EO 11990	Ecosystem Integrity	EPSO In-House
Restore native wetland/riparian plant habitats that have been significantly disturbed by weed control activities. Revegetate these areas with appropriate native species that are known from the local region.	61013NR006	4	5.5	2010-2015	CWA, EO 11990	Ecosystem Integrity	OM&N
Monitor wetland community plant species composition and relative cover paying particular attention to invasion by noxious weeds and cover aquatic vegetation.	6101312106	4	5.5		Sikes Act, EO 11990	Ecosystem Integrity	OM&N
<b>Water Resources Management Program</b>							
<b>Objective: Protect the values of Lake Norconian and the ponds through appropriate resource management and enhancement, with an emphasis on maintaining a regional haven for migratory waterfowl.</b>							
Prepare a Lake Management Plan that will identify lake/pond management strategies and objectives that would provide an emphasis on management of the lake for wildlife species.	61013NR008	4	5.6.1 and 5.7.1	2014	Sikes Act, NPDES Permit	Ecosystem Integrity	OM&N
As part of the Lake Management Plan, develop water quality management goals and objectives, including standards for maintaining sufficient lake levels. Currently water samples are taken monthly by a landscape contractor, however, if more extensive water sampling instituted pursuant to the Lake Management Plan, this will be a separate, Navy-funded contract.	61013NR008	NA	5.6.1	2013	Sikes Act, NPDES Permit	Ecosystem Integrity	OM&N
Monitor lake levels and flows annually to develop information for making decisions to maintain reasonable lake and pond levels and flows. Improve circulation as necessary.	61013NR008	NA	5.6.1	Ongoing	Sikes Act, NPDES Permit	Ecosystem Integrity	OM&N
Reduce the amount of vegetative debris in the lake and ponds that could impede water flows.	610131210A	4	5.6.1	Ongoing	CWA, Sikes Act	Ecosystem Integrity	OM&N
Enhance lake and pond margins to provide cover and reduce sediment input while, where feasible, maintaining the historic landscape that is part of the NRHP listed Historic District.	610131210A	4	5.6.1 and 5.4.1.1	Ongoing	CWA, OPNAVINST 5090.1C CH-1, DoDI 4715.03, EO	Ecosystem Integrity	OM&N

**Appendix L**

Project or Activity/Objective	EPR Number	ERL Number	INRMP Section	Scheduled Implementation	Prime Legal Driver	Focus Areas	Funding Source
					11990		
<b>Water Resources Management Program (cont'd)</b>							
<b>Objective: Implement improvements to water quality systems of Lake Norconian and its related ponds</b>							
Based on water quality monitoring, install an aerator in Lake Norconian to improve water quality and increase circulation to help with vector control.	61013NR011	4	5.6.1	2012	Sikes Act, FWCA, NPDES Permit	Ecosystem Integrity	OM&N
Minimizing fertilizer runoff to the lake by efficiently conserving water.	NA	NA	5.3.2.1.1	Ongoing	Sikes Act, CWA	Ecosystem Integrity	PW In-house
Remove debris and dead vegetation within and surrounding the lake/ponds in order to reduce the amount of nutrient loading.	6101312101	4	5.6.1	Ongoing	Sikes Act, CWA	Ecosystem Integrity	OM&N
Continue to operate a pond recirculation system that pumps water from Lake Norconian to the uppermost pond in order to maintain water flow and habitat quality.	NA	NA	5.6.1	2012	CWA, OPNAVINST 5090.1C CH-10, DoDI 4715.03, EO 11990	Ecosystem Integrity	EPSO In-House
<b>Fish and Wildlife Management Program</b>							
<b>Objective: Promote a sustainable and diverse wildlife community through population protection, monitoring, and habitat stewardship compatible with the facility's mission and urban location.</b>							
Conduct a basewide wildlife inventory and maintain a comprehensive list of species that have been identified within the installation. Update basewide wildlife surveys every three to five years, or as-needed. Conduct focused surveys for specific species and monitor (i.e. bats, small mammals, herpofauna etc.) as necessary.	61013NR005	4	5.7	2012, 2015	Sikes Act, ESA, MBTA, FWCA, EO 13186	Fish and Wildlife Management and Public Access	OM&N
Promote and integrate surveys conducted by local birders and groups such as the Audubon Society.	NA	NA	5.7	Ongoing	Sikes Act	Fish and Wildlife Management and Public Access	EPSO In-House
Maintain a bird checklist for migratory and resident species that use the Detachment.	NA	NA	5.7	Ongoing	Sikes Act	Fish and Wildlife Management and Public Access	EPSO In-House
Maintain a fish inventory, from the results of fishing license holder requirements.	NA	NA	5.7	2014	Sikes Act	Fish and Wildlife Management and Public Access	EPSO In-House

## Appendix L

Project or Activity/Objective	EPR Number	ERL Number	INRMP Section	Scheduled Implementation	Prime Legal Driver	Focus Areas	Funding Source
Ensure protection of roosting sites and snags as necessary.	NA	NA	5.7	Ongoing	Sikes Act, ESA, MBTA, EO 13186	Fish and Wildlife Management and Public Access	EPSO In-House
<b>Fish and Wildlife Management Program (cont'd)</b>							
<b>Objective: Promote a sustainable and diverse wildlife community through population protection, monitoring, and habitat stewardship compatible with the facility's mission and urban location. (cont'd)</b>							
Evaluate the potential for nest enhancement activities such as the installation of nest boxes in habitats around the lake.	NA	NA	5.7	2015	Sikes Act	Fish and Wildlife Management and Public Access	EPSO In-House
Implement predator control programs, as necessary, in order to benefit native wildlife populations.	TBD	4	5.7.	Ongoing	Sikes Act, MBTA, EO 13186,	Fish and Wildlife Management and Public Access	OM&N
Maintain records of injured wildlife cases to monitor extent of problem.	NA	NA	5.7	Ongoing	Sikes Act	Fish and Wildlife Management and Public Access	EPSO In-House
Conduct an annual evaluation of the effectiveness of fish and wildlife management activities through the Navy Conservation Website INRMP Metrics Builder	NA	NA	5.7	2010-2015	Sikes Act	INRMP Project Implementation	EPSO In-House
<b>Wildlife Habitat Management</b>							
<b>Objective: Protect and conserve wildlife habitat areas, particularly Lake Norconian and associated ponds</b>							
Ensure that wildlife habitat is protected or enhanced in the Landscape Management Plan	NA	NA	5.7	2015	Sikes Act, MBTA	Ecosystem Integrity	EPSO In-House
Ensure protection of roosting sites and snags used by birds for nests.	NA	NA	5.7	Ongoing	Sikes Act, MBTA	Fish and Wildlife Management	EPSO In-House
Improve lake margin habitats by removing invasive species to support more native species and improve vector control.	6101312106	NA	5.7	Ongoing	EO 13112, MBTA, CWA	Ecosystem Integrity	OM&N
Consider installing nesting boxes within and adjacent to wetland areas around the lake to encourage bird breeding habitat.	NA	NA	5.7	2016	Sikes Act, MBTA	Fish and Wildlife Management	EPSO In-House
Protect the great blue heron rookery by providing information to those who utilize the lake for recreation.	NA	NA	5.7	Ongoing	Sikes Act, MBTA	Fish and Wildlife Management	EPSO In-House
Consider controlling nesting of European starlings if feasible.	TBD	4	5.7	TBD	EO 13112, MBTA	Fish and Wildlife Management	OM&N
Monitor bird populations every three to five years, or as-needed, to ensure that management practices are effective.	61013NR005	4	5.7	2015	Sikes Act, MBTA	Fish and Wildlife Management	OM&N
Prohibit persons utilizing the lake for recreation from	NA	NA	5.7	Ongoing	Sikes Act,	Ecosystem Integrity	EPSO In-House

**Appendix L**

Project or Activity/Objective	EPR Number	ERL Number	INRMP Section	Scheduled Implementation	Prime Legal Driver	Focus Areas	Funding Source
disturbing natural habitats utilized by wildlife.					MBTA		
Evaluate the need for natural habitat exclusion areas and provide signage within these areas as needed.	NA	NA	5.7	Ongoing	Sikes Act, MBTA	Ecosystem Integrity	EPSO In-House
<b>Wildlife Problems, Animal Damage Control, and Feral Animals</b>							
<b>Objective: Use Integrated Pest Management (IPM) methods to control pest species and minimize incidental take of non-target wildlife.</b>							
Control identified pest species that pose a nuisance, significant property damage, or potential health hazard while minimizing any incidental take of non-target wildlife.	NA	NA	5.7.2	Ongoing	DoDI 4150.7	Fish and Wildlife Management and Public Access	EPSO In-House
California ground squirrel colonies on the installation should be controlled only in areas where their burrows cause problems with base operations and maintenance, or safety.	NA	NA	5.7.2	Ongoing	DoDI 4150.7	Fish and Wildlife Management	PW In-house
<b>Objective: Monitor pesticide/herbicide applications within Detachment Norco</b>							
Ensure pesticide/herbicide applications will not negatively affect terrestrial or aquatic wildlife species by complying with the IPMP and all applicable regulations.	NA	NA	5.7.2	Ongoing	ESA, FWCA; FIFRA, PL 92-516	Fish and Wildlife Management and Public Access	EPSO In-House
<b>Special Status Species: Threatened and Endangered Species and Species of Special Concern Management Program</b>							
<b>Objective: Conserve and maintain riparian habitat within the installation for use by migratory birds.</b>							
Monitor riparian habitats within the installation every five years for suitability of southern willow flycatcher and least Bell's vireo breeding habitat to determine if protocol surveys are warranted. Perform USFWS protocol survey every 3 to 5 years accordingly.	61013NR003	4	5.8.1	2014	Sikes Act, ESA	Listed Species and Critical Habitat	OM&N
Conserve and maintain willow riparian habitat on the property for migratory birds by removing exotic species and replanting native species as needed.	61013NR006	4	5.8.1	2014	Sikes Act, ESA	Listed Species and Critical Habitat	OM&N
<b>Objective: Conserve and monitor coastal sage scrub habitat within the installation for migratory birds</b>							
Monitor CSS within the boundaries of the installation every five years in order to evaluate the potential for migratory bird breeding habitat.	61013NR007	4	5.8.1	2015	Sikes Act, ESA	Listed Species and Critical Habitat	OM&N
Consider the feasibility of improving disturbed buckwheat habitat in order to promote CSS diversity. Conservation	61013NR007	NA	5.8.1	2015	Sikes Act, ESA	Listed Species and Critical Habitat	EPSO In-house

**Appendix L**

Project or Activity/Objective	EPR Number	ERL Number	INRMP Section	Scheduled Implementation	Prime Legal Driver	Focus Areas	Funding Source
activities may include planting CSS species known to occur in the local region and removal of non-native grasses and forbs.							
<b>Special Status Species: Threatened and Endangered Species and Species of Special Concern Management Program (cont'd)</b>							
<b>Objective: Enhance, conserve and monitor potential burrowing owl habitat within the installation</b>							
Determine the presence of burrowing owls and manage for this species accordingly.	NA	NA	5.8.1	Ongoing	MBTA/Calif. ESA	Listed Species and Critical Habitat	EPSO In-House
Perform annual protocol-level surveys for burrowing owls using accepted County of Riverside methods if basewide avian surveys determine that this species is present onsite. All occupied burrows will be monitored and mapped during protocol-level surveys.	61013NR012	4	5.8.1	2013	MBTA/ Calif. ESA (Species of Special Concern - Priority 2)	Listed Species and Critical Habitat	OM&N
If burrowing owls are breeding onsite, management strategies will be implemented to protect them, such as visibly marking active burrows and implementing a mowing buffer of 500 feet during the breeding/nesting season (i.e., February – August).	NA	NA	5.8.1	Ongoing	MBTA/ Calif. ESA (Species of Special Concern - Priority 2)	Listed Species and Critical Habitat	EPSO/PW In-house
<b>Migratory Birds Management</b>							
<b>Objective: Enhance, conserve and monitor MBTA species and populations and associated habitat within Detachment Norco lands.</b>							
Monitor the suitable habitat within the installation every five years for the presence of MBTA species in accordance with PIF guidelines.	61013NR003	4	5.9	2014	MBTA, ESA, MBTA; EO 13186	Ecosystem Integrity	OM&N
Develop and maintain a bird checklist for migratory and resident species that use the Detachment.	NA	NA	5.9	Ongoing	Sikes Act	Ecosystem Integrity	EPSO In-House
Evaluate proposed activities and construction projects for their likelihood to kill, injure, or significantly disturb MBTA birds and mitigate for potential impacts.	NA	NA	5.9	Ongoing	MBTA rule, MBTA; EO 13186	Ecosystem Integrity	EPSO In-House
Conduct annual secretive marsh bird surveys utilizing national protocol.	N/A	NA	5.9	Ongoing	MBTA and EO 13186	Ecosystem Integrity	EPSO In-House
Provide notice to USFWS in advance of conducting any action that is intended to take migratory birds and ensure that the environmental analysis of actions required by NEPA or other established environmental review process evaluate the effects	NA	4	5.9	Ongoing	MBTA rule, MBTA, EO 13186	Ecosystem Integrity	EPSO In-House

## Appendix L

Project or Activity/Objective	EPR Number	ERL Number	INRMP Section	Scheduled Implementation	Prime Legal Driver	Focus Areas	Funding Source
of the actions and plans on migratory birds.							
Participate in DoD's Partnership in Flight program to conserve and manage neotropical birds and their habitat.	NA	NA	5.9	Ongoing	MBTA, OPNAVINST 5090.1C CH-1	Ecosystem Integrity	EPSO In-House
<b>Other Species of Regional Special Concern Management</b>							
<b>Objective: Protect and conserve sensitive species and the habitat areas they utilize, particularly Lake Norconian and associated ponds.</b>							
Ensure that species of regional and special concern are protected in the Landscape Management Plan and its implementation.	NA	NA	5.10	2015	Sikes Act, ESA	Listed Species and Critical Habitat	EPSO In-House
Update sensitive plant species surveys within the installation.	61013NR004	4	5.10	2015	Sikes Act, MBTA, Plant Protection Act	Listed Species and Critical Habitat	OM&N
Maintain an inventory and GIS database of species of regional special concern that have been identified through focused surveys.	NA	NA	5.10	Ongoing	Sikes Act	Listed Species and Critical Habitat	EPSO In-House
<b>Pollinator Management</b>							
<b>Objective: Maintain and enhance pollinator populations and their habitat when not in conflict with health and safety, or the military mission.</b>							
To the extent needed and feasible, collaborate with partners in conducting inventories and monitoring of populations of pollinators.	NA	NA	5.11	Ongoing	Sikes Act	Ecosystem Integrity	EPSO In-House
As needed, develop BMP's to ensure that pollinator species are not adversely impacted by Detachment Norco activities.	NA	NA	5.11	Ongoing	Sikes Act	Ecosystem Integrity	EPSO In-House
Revegetate with native species when possible.	61013NR006, 61013NR007	4	5.11	2014	Sikes Act, EO 11990, EO 13112	Ecosystem Integrity	OM&N
Control the spread of invasive species.	61013NR006, 61013NR007	4	5.11 and 5.4.1.1	2014	Sikes Act, EO 11990, EO 13112	Ecosystem Integrity	OM&N
If needed, develop and implement a management program that supports bee relocation as opposed to bee eradication.	NA	NA	5.11	Ongoing	Sikes Act	Ecosystem Integrity	EPSO In-House



**Appendix L**

Project or Activity/Objective	EPR Number	ERL Number	INRMP Section	Scheduled Implementation	Prime Legal Driver	Focus Areas	Funding Source
Utilize pest management strategies that do not impact pollinators.	NA	NA	5.11	Ongoing	FWCA, FIFRA,	Ecosystem Integrity	EPSO In-House
<b>Climate Change and Regional Growth</b>							
<b>Objective: Adapt and mitigate the adverse impacts of climate change through annual goal setting based on science-based scenarios, targets, collaborative planning, and adaptive management.</b>							
Identify species and communities resilient/vulnerable to climate change impacts by collaborating, as feasible, with partners in conducting climate change vulnerability assessments.	NA	NA	5.12	Ongoing	Sikes Act	Ecosystem Integrity	EPSO In-House
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 resource management planning.	NA	NA	5.12	Ongoing	Sikes Act	Ecosystem Integrity	EPSO In-House
To the extent necessary, improve the graphical depiction of the potential impacts of climate change scenarios for Detachment Norco to address anticipated shifts in species ranges and population abundances in climate change vulnerability assessments.	NA	NA	5.12	Ongoing	Sikes Act	Ecosystem Integrity	EPSO In-House
Provide for the management of threatened, endangered, and other special status species such that changes in distribution and abundance may be understood in the context of climate change.	NA	NA	5.12	Ongoing	Sikes Act	Ecosystem Integrity	EPSO In-House
Establish partnerships for collaboratively addressing climate change issues, as needed and feasible.	NA	NA	5.12	Ongoing	Sikes Act	Ecosystem Integrity	EPSO In-House
<b>Geographical Information System Management</b>							
<b>Objective: Ensure the technically sound, practical and appropriate use of library and computer technology to manage, analyze and communicate natural resource information in support of management decisions.</b>							
As needed, develop a current military use map that shows environmental considerations as well as military facilities.	NA	NA	5.14	TBD	Sikes Act	Ecosystem Integrity	EPSO In-House
Store, analyze and maintain data for research and survey projects involving natural resources on Detachment Norco,	NA	NA	5.14	Ongoing	Sikes Act	Ecosystem Integrity	EPSO In-House

**Appendix L**

Project or Activity/Objective	EPR Number	ERL Number	INRMP Section	Scheduled Implementation	Prime Legal Driver	Focus Areas	Funding Source
making the information accessible and readily available to multiple users.							
<b>Outdoor Recreation</b>							
<b>Objective: Promote compatible, sustainable, outdoor recreation opportunities while ensuring a healthy lake ecosystem.</b>							
Encourage wildlife watching by participating in public outreach programs and maintaining partnerships with organization such as the Audubon Society.	NA	NA	5.15.1	Ongoing	Sikes Act OPNAVINST 5090.1C CH-1, DoDI 4715.03	Fish and Wildlife Management and Public Use	EPSO In-House
Provide accessible recreation opportunities for disabled veterans and their families.	NA	NA	5.15	Ongoing	ADA, Sikes Act OPNAVINST 5090.1C CH-1, DoDI 4715.03	Fish and Wildlife Management and Public Use	EPSO In-House
Continue to implement the existing fishing policy.	NA	NA	5.15.2	Ongoing	Sikes Act, OPNAVINST 5090.1C CH-1		EPSO In-House
Develop a new fishing policy that will evaluate whether catch and release only is a reasonable fisheries management requirement.	NA	NA	5.15.2	Ongoing	Sikes Act OPNAVINST 5090.1C CH-1, DoDI 4715.03	Fish and Wildlife Management and Public Use	EPSO In-House
<b>Cultural Resources Management Measures</b>							
<b>Objective: Preserve the physical and ecological integrity of known Lake Norconian Club Historic District resources.</b>							
Continue to manage cultural resources in accordance with the priorities set forth by the ICRMP.	NA	NA	5.16	Ongoing	EO 11593, Preservation of Historical Archaeologic al Data Act of 1974;NHPA	Ecosystem Integrity	EPSO In-House
Monitor the presence of historic sites whenever projects	NA	NA	5.16.1	Ongoing	EO 11593;	Ecosystem Integrity	EPSO In-House

## Appendix L

Project or Activity/Objective	EPR Number	ERL Number	INRMP Section	Scheduled Implementation	Prime Legal Driver	Focus Areas	Funding Source
involving ground disturbance or development are proposed in areas likely to contain cultural resources.					Preservation of Historical Archaeological Data Act of 1974;NHPA		
<b>Training of Natural Resources Personnel</b>							
<b>Objective: Provide sufficient technical support to staff as well as training and networking opportunities to achieve INRMP goals and objectives.</b>							
Natural resources staff will maintain an updated Individual Development Plan that specifies relevant training that is desired/required.	NA	NA	5.20	Ongoing	Sikes Act	Ecosystem Integrity	EPSO In-House



**APPENDIX M**  
**AGENCY AND PUBLIC COMMENTS**

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**Comment Matrix**

*Draft Integrated Natural Resources Management Plan Naval Weapons Station Seal Beach Detachment Corona, Norco, California.*  
 City of Norco—Staff comments

<b>#</b>	<b>Page</b>	<b>Section/ Line</b>	<b>Reviewer</b>	<b>Comment</b>
1.	1-5	14	City staff	Will this include more access to the general public?
2.	1-6	34	City Staff	Will this include public access?
3.	2-9	3/24	City Staff	This section talks about future growth in Riverside County and its potential impact on biological resources. This segment makes it sound as if no planning or preparation has been done—the MSHCP effort should be mentioned here—it isn't referenced until p 2-12.
4.	3-6	3.1.4.1.1/ 22	City Staff	The usage of "free water" is not the actual language in the Agreement.
5.	3-7	3.1.4.1.1/ 29	City Staff	Makes reference to the "Midwest."
6.	4-5	4.5.1/29- 33	City Staff	Refers to a Tripartite Agreement. Another reference to this draft Agreement is made under "Cooperative Agreements on page 6-4 and says that the draft is in Appendix C, and cannot be located in that Appendix. This could possibly be something that the Base is pursuing in the future.
7.	4-6	4.5.1/3-5	City Staff	Are these for public use?
8.	5-20	5.13/744- 751	City Staff	This paragraph seems to conclude that the presence of the Base helps create the situation that it is not large enough to support all of the outdoor recreational demands that could be placed on it. But, the sentence by itself seems unsubstantiated and might affect future alternative land use development if taken out of context.
9.	5-22	5.14/807	City Staff	References an Integrated Cultural Resources Management Plan. The City does not have a copy of this to our knowledge.
10.	6-4	6.3//8	City Staff	References again the "Tripartite Agreement."
11.			City Staff	
12.			City Staff	

**DRAFT**  
**NAVAL WEAPONS STATION SEAL BEACH DETACHMENT CORONA**  
**INTEGRATED NATURAL RESOURCE**  
**MANAGEMENT PLAN**  
**NORCO, CALIFORNIA**  
**2010-2015**

**Comment Form**

Reviewer Name:
Reviewer Agency/Organization:
Reviewer Telephone Number:
Reviewer Mailing Address:
Reviewer e-mail Address:
Date Submitted: February 25, 2010

Comment #	Page Number	Line Number	Name	Comment	Comment Response
1	5-14	505	Katy Kughen US Fish and Wildlife Service - Carlsbad	There are no specifics on control of feral pets stated.	Bullet added to Section 5.15 about removal of feral pets.
2	5-16	591	K.Kughen	Wording suggests that LBV non-breeding season period is March through July. Breeding season is March 15 – September 15.	Corrected to reflect the breeding season.
3	5-16	593-4	K.Kughen	It is unclear to me what is meant by “seek mitigation credit prior to implementing enhancement projects.”	“ Seek mitigation credit” has been changed to “Cooperative Agreement”
4	5-17	619	K.Kughen	It is unclear to me what is meant by “seek mitigation credit prior to implementing enhancement projects.”	“ Seek mitigation credit” has been changed to “Cooperative Agreement”
5	5-17	653	K.Kughen	It is unclear to me what is meant by “seek mitigation credit prior to implementing enhancement projects.”	“ Seek mitigation credit” has been changed to “Cooperative Agreement”
6	General		K.Kughen	The INRMP states there is a mention of increased public use. If this is so, is there a plan on addressing this?	This statement has been changed through out the document to reflect current military security requirements. A new DoD memo

Comment #	Page Number	Line Number	Name	Comment	Comment Response
7	General		K. Kughen	Is there a vegetation plan/re-vegetation plan? Specifically, is there a plan on what native species may be planted in areas where invasives have been met?	<p>was released in Dec 2009, requiring increased security with heightened restrictions for public access.</p> <p>There is not, currently, a specific plan in place. The creation of a plan is dependant on Navy approval and funding. However, there is a list provided by Jeff Brandt (see comments 12 and 13 below) of priority invasive species for removal and native plants to be planned in their place. These list have been added to the goals and objectives in Sections 5.3.1, 5.3.2.2.1, and 5.4.1.1 of the INRMP.</p>
8	General		K. Kughen	Will water always be available for use by the ponds and therefore the riparian area? After the change in water use and delivery, will there be any monitoring to see if the riparian area is negatively impacted by the new water delivery method?	<p>According to the recent finalized MOA between the City of Norco, Detachment Corona, and the CRC, water will be supplied to Lake Norconian, by the City, to support the historical value of the Lake. Monitoring of the Lake will be dependant on funding from the Navy; however, monitoring of the ponds, lake, and riparian areas are included as part of the goals and objectives in Section 5.5 and 5.6.</p>
9	General		K. Kughen	I understand that historically landscaped areas need to remain landscaped, however, is it possible to use native plants and/or drought tolerant or less invasive species (palm species) in landscaped areas. I am unfamiliar with the landscaping requirements of registered national historic places and if the landscaping is defined on a species level or if it is more general that could allow for more native species to be incorporated into the landscaping plan.	<p>Replanting of species in the historical landscape can be done with native plant species when funding permits. However, certain historical species (including those that are now considered invasive), will remain. It is a priority and goal of Detachment Corona to remove invasive species that are not part of the historic landscape and replant those areas with native plant species, as funding permits.</p>

Comment #	Page Number	Line Number	Name	Comment	Comment Response
10			<p>Jeff Brandt California Department of Fish and Game Habitat Conservation Branch Inland Deserts Region</p>	<p>On appendix K, Wildlife Contact people, you have old info for CDFG (I think the list is out of date for several agencies). I'll get the most current CDFG info, staff names, and office addresses for you. I'll need a week to get this.</p>	<p>Please send to Margaret Wallerstein.</p>
11			<p>J Brandt (CDFG)</p>	<p>You should also include the Santa Ana Watershed Association of Resource Conservation Districts (SAWA), and either the Riverside-Corona RCD or the Inland Empire RCD depending on whose has Norco in their jurisdiction (I'm thinking it may be Riverside-Corona RCD).</p>	<p>Contact for the Riverside-Corona Resource Conservation District for Lake Norconian: Kerwin Russell Natural Resources Manager 4500 Glenwood Dr, #A Riverside, CA 92501 Russell@rccd.com 951-683-7691, ext. 203, office phone 951-683-3814, fax 951-236-3932, cell</p>
12				<p>These are my picks for exotic species management (from appendices F, H, and I):</p> <p>Birds: Brown-headed cowbird (Molothrus ater). Typically trapped and managed during spring-nesting season. European starlings (Sturnus vulgaris). I'm cluefree on BMPs for this cavity nester.</p> <p>Amphibians: Bullfrogs (Rana catesbeiana)</p> <p>Mammals: Feral cats (Felis silvestris catus) black rat (rattus rattus)</p> <p>Exotic plants to be managed within lake/pond riparian areas:</p>	<p>Removal of these exotic species have been added to the goals and objectives listed in Sections: 5.4.1.1, 5.5, 5.7, 5.7.2, and 5.10.</p>

Comment #	Page Number	Line Number	Name	Comment	Comment Response
13				<p>Pepper tree (Schinus mole) Tamarisk Eucalyptus Date palm (Phoenix) CA fan palm (Washingtonia) Pampas grass (Cortaderia jubata) Castor bean (Ricinus communis) Giant reed (Arundo donax)</p> <p>These are the plants I'd like to see as primary replacement's when exotics are taken out of riparian areas: mulefat cuttings (baccharis salicifolia) Willow cuttings (red, Goodings (is this black willow ?), sandbar, arroyo) cottonwood (don't remember cottonwood from site visit) Blue elderberry (Sambucus mexicana) Western sycamore (Plantanus racemosa)</p>	<p>Added to Sections 5.3.1, 5.3.2.2.1, and 5.4.1.1</p>
14	1-2	29	Wilkman Historical Services (WHS) - City consultant	<p>Reference is made here and in several other places to landscape issues, with recognition that there are historic landscape elements on the site that are deserving of special consideration. I suggest the plan be augmented with a chart/map describing/ showing the locations of historic landscape features so that those implementing the plan will have a ready source of information regarding the specific plant materials that are considered to be "historic".</p> <p>See comment 1 above.</p>	<p>Please refer to Detachment Corona's Integrated Cultural Resources Plan (ICRMP), 2005. Contact Margaret Wallerstein for assistance in locating this document.</p>
15	1-3	26	WHS	<p>Reference is made in several places to providing public access to the natural and cultural resources at the Lake Norconian site. Yet, public access is generally restricted. I would like to suggest the Navy install a cultural/natural resources interpretive feature somewhere off-site at a good vantage point. The purpose of the interpretive feature would be to explain the historical and natural elements on the site so that those who would not normally be allowed access to the Norconian property could, nonetheless, learn</p>	<p>Please refer to Detachment Corona's Integrated Cultural Resources Plan (ICRMP), 2005. Contact Margaret Wallerstein for assistance in locating this document.</p>
16	1-5	14	WHS	<p>This suggestion would be best discussed as part of the goals and objectives in the ICRMP. It would also depend on available funding.</p>	<p>This suggestion would be best discussed as part of the goals and objectives in the ICRMP. It would also depend on available funding.</p>

Comment #	Page Number	Line Number	Name	Comment	Comment Response
17	1-6	34	WHS	about the significance of the property. Such an interpretive feature should include references to the entire Norconian site, including both the state and federal lands. See comment 3 above.	This suggestion would be best discussed as part of the goals and objectives in the ICRMP. It would also depend on funding.
18	2-6	8-17	WHS	The first paragraph references the presence of one indigenous cultural resource site, however, the second paragraph says there are no known Native American resources on the site.	Wording changed to reflect the one indigenous cultural site. Please refer to the ICRMP for further information about this site.
19	2-6	30+	WHS	I would suggest the structures and land features on the National Register located outside of the footprint of the NSWC also be listed here to allow the reader to understand the overall historic context of the listing.	Please refer to Detachment Corona's Integrated Cultural Resources Plan (ICRMP), 2005. Contact Margaret Wallerstein for assistance in locating this document
20	2-7	10-12	WHS	See comment 1 above.	Please refer to Detachment Corona's Integrated Cultural Resources Plan (ICRMP), 2005. Contact Margaret Wallerstein for assistance in locating this document.
21	4-5	17-20	WHS	See comment 3 above.	This suggestion would be best discussed as part of the goals and objectives in the ICRMP. It would also depend on available funding.
22	4-6	3-4 and 19-23	WHS	See comment 3 above.	This suggestion would be best discussed as part of the goals and objectives in the ICRMP. It would also depend on available funding.
23	5-3	106-112	WHS	See comment 1 above.	Please refer to Detachment Corona's Integrated Cultural Resources Plan (ICRMP), 2005. Contact Margaret Wallerstein for assistance in locating this document.
24	5-4	117=119	WHS	See comment 1 above.	Please refer to Detachment Corona's Integrated Cultural Resources Plan (ICRMP), 2005.

Comment #	Page Number	Line Number	Name	Comment	Comment Response
25	5-6	221	WHS		Contact Margaret Wallerstein for assistance in locating this document.
26	5-20	747-749	WHS	Typo: "insavive" should be "invasive" See comment 3 above	This suggestion would be best discussed as part of the goals and objectives in the ICRMP. It would also depend on available funding.
27	5-22	807	WHS	I would like a copy of the ICRMP.	Please contact Margaret Wallerstein for assistance in locating the ICRMP.
28	5-22	841-843	WHS	See comment 1 above.	Please refer to Detachment Corona's Integrated Cultural Resources Plan (ICRMP), 2005. Contact Margaret Wallerstein for assistance in locating this document.
29	5-23	851-863	WHS	I would suggest this section be expanded to make specific reference to protection of historic landscape features.	Protection of Historic Landscapes is discussed in Section 5.14, Lines 846-847.
30	Appendix L, first page	Not numbered	WHS	Items 2 and 3 make reference to tree removals. Before any removal work is undertaken, it should be ascertained whether the tree materials are part of the historic landscape.	Protection of Historic Landscapes is discussed in Section 5.14, Lines 846-847. It is also discussed as part of the Goals and Objectives Section in reference to Cultural Resources.
31	Appendix L, first page	Not numbered	WHS	Reference is made in item 11 to repairing the pagoda in the top pond area. This reference should include a note that this is part of the National Register site and that any repairs must be done in accordance with the Secretary of Interior Standards for Rehabilitation.	This item as been removed from the INRMP. Please reference the ICRMP for information on the pagoda.
32	Appendix L, second page	Not numbered	WHS	Item 2 refers to installing a couple of interpretive features around the lake. It would seem that an off-site natural and cultural resources interpretive feature would be of greater value to the public, given the access restrictions of the site. Who will design the landscaping plan?	This suggestion would be best discussed as part of the goals and objectives in the ICRMP. It would also depend on available funding.
33	iv	12	Gini Austerman, MA, RPA Member, City of Norcoo Historic		



Comment #	Page Number	Line Number	Name	Comment	Comment Response
			Preservation Commission		
34	1-7	25	Gini Austerman	What is the suggested frequency of meeting with stakeholders?	Meeting with Stakeholders in reference to the INRMP will occur when changes affect the current goals and objectives in the INRMP.
35	1-11	21	Gini Austerman	Does the Navy have an equivalent of metrics builder for cultural resources?	Please refer to Detachment Corona's Integrated Cultural Resources Plan (ICRMP), 2005. Contact Margaret Wallerstein for assistance in locating this document.
36	2-7	18-21	Gini Austerman	What is the status/particulars of coordination effort? Who is involved with this effort?	Coordination efforts with stakeholders and appropriate Navy personnel, would be involved in any effort that may positively or negatively affect natural and cultural resources.
37	2-8	17-20	Gini Austerman	What is potential impact of the sewer project on the lake and historic landscape?	Potential impacts will be analyzed through required environmental and cultural documentation before the sewer project is approved for construction.
38	3-3	6	Gini Austerman	Detachment concord?	Changed.
39	3-13	8	Gini Austerman	Reference to palm trees other than the date palm?	Added
40	3-15	19-21	Gini Austerman	If the 5 small ponds are those listed on nrhp, any modification should be done in accordance with cultural resources laws and protection guidelines in consultation with State Historic Preservation Office.	Noted. Please refer to Detachment Corona's Integrated Cultural Resources Plan (ICRMP), 2005. Contact Margaret Wallerstein for assistance in locating this document.
41	3-4	117-123	Gini Austerman	Status and details of cultural landscape maintenance plan—city's Historic Preservation Commission could review	Noted. Please refer to Detachment Corona's Integrated Cultural Resources Plan (ICRMP), 2005. Contact Margaret Wallerstein for assistance in locating this document.
42	3-7	263-269	Gini Austerman	If modifications being contemplated involve any change to the	Noted. Please refer to Detachment

Comment #	Page Number	Line Number	Name	Comment	Comment Response
				structural integrity of the lake boundary, lake bottom or upper ponds please consult with city and city's historic preservation commission.	Corona's Integrated Cultural Resources Plan (ICRMP), 2005. Contact Margaret Wallerstein for assistance in locating this document.
43	5-8	295	Gini Austerman	Who determines any vegetation removal project?	Natural Resource Manager, and Commanding Officer, Detachment Corona. All projects must also be approved by the appropriate personnel at NAVFAC SW.
44	5-9	312-317	Gini Austerman	Any vegetation enhancement project along the banks of the lake or upper ponds should be reviewed with historic value in mind. Any construction/military activities in proximity to historic elements should be reviewed by Navfac cultural department. City's Historic Preservation commission could assist.	Noted.
45	5-10	352-353	Gini Austerman	Sediment removal projects should be reviewed by Navfac cultural department	Noted.
46	5-10	366-376	Gini Austerman	Any projects involving changes, modification, repair, equipment installation to lake, channels, ponds should be reviewed by navfac cultural dept prior to implementation. City's Historic Preservation Commission could assist.	Noted.
47	5-22	807+	Gini Austerman	"current" ICRMP is dated 2005. Is it available for review by the City and Historic preservation commission? Results of archaeology survey should be available to qualified persons (SOC qualified)	Contact Margaret Wallerstein for assistance in locating this document.
48	5-23	846-847	Gini Austerman	Consult with city's historic preservation commission and monitor by SOC qualified archaeologist or Navy's archaeologists.	Noted.
49	1-5	14	City of Norco Staff	Will this include more access to the general public?	This is a general list of the Sikes Act requirements for INRMP and an overview of what will be discussed in the following sections specific to Detachment Corona.
50	1-6	34	City of Norco Staff	Will this include public access?	Not at this time due to increased military security.
51	2-9	3/24	City of Norco Staff	This section talks about future growth in Riverside County and its potential impact on biological resources. This segment makes it sound as if no planning or preparation has been done—the MSHCP effort should be mentioned here—it isn't referenced until p 2-12.	Section 2.4.2 is an introduction to conservation planning in Southern California Region. The MSHCP covers a smaller region, and is a sub section of the specific conservation planning in the area of



**Comment Matrix**

*Draft Integrated Natural Resources Management Plan Naval Weapons Station Seal Beach Detachment Corona, Norco, California.*  
October 2009

<b>#</b>	<b>Page</b>	<b>Section/ Line</b>	<b>Reviewer</b>	<b>Comment</b>
1.	5-14	505	K.Kughen	There are no specifics on control of feral pets stated.
2.	5-16	591	K.Kughen	Wording suggests that LBV non-breeding season period is March through July. Breeding season is March 15 – September 15.
3.	5-16	593-4	K.Kughen	It is unclear to me what is meant by “seek mitigation credit prior to implementing enhancement projects.”
4.	5-17	619	K.Kughen	It is unclear to me what is meant by “seek mitigation credit prior to implementing enhancement projects.”
5.	5-17	653	K.Kughen	It is unclear to me what is meant by “seek mitigation credit prior to implementing enhancement projects.”
6.			K.Kughen	The INRMP states there is a mention of increased public use. If this is so, is there a plan on addressing this?
7.			K.Kughen	Is there a vegetation plan/re-vegetation plan? Specifically, is there a plan on what native species may be planted in areas where invasives have been met?
8.			K.Kughen	Will water always be available for use by the ponds and therefore the riparian area? After the change in water use and delivery, will there be any monitoring to see if the riparian area is negatively impacted by the new water delivery method?
9.			K.Kughen	I understand that historically landscaped areas need to remain landscaped, however, is it possible to use native plants and/or drought tolerant or less invasive species (palm species) in landscaped areas. I am unfamiliar with the landscaping requirements of registered national historic places and if the landscaping is defined on a species level or if it is more general that could allow for more native species to be incorporated into the landscaping plan.
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**Comment Matrix**

*Draft Integrated Natural Resources Management Plan Naval Weapons Station Seal Beach Detachment Corona, Norco, California.*

City of Norco comments:

Gini Austerman, MA, RPA

Member, City of Norco Historic Preservation Commission

#	Page	Section/ Line	Reviewer	Comment
1.	iv	12	ga	Who will design the landscaping plan?
2.	1-7	25	ga	What is the suggested frequency of meeting with stakeholders?
3.	1-11	21	ga	Does the Navy have an equivalent of metrics builder for cultural resources?
4.	2-7	18-21	ga	What is the status/particulars of coordination effort? Who is involved with this effort?
5.	2-8	17-20	ga	What is potential impact of the sewer project on the lake and historic landscape?
6.	3-3	6	ga	Detachment concord?
7.	3-13	8	ga	Reference to palm trees other than the date palm?
8.	3-15	19-21	ga	If the 5 small ponds are those listed on nrhp, any modification should be done in accordance with cultural resources laws and protection guidelines in consultation with State Historic Preservation Office.
9.	3-4	117-123	ga	Status and details of cultural landscape maintenance plan—city’s Historic Preservation Commission could review
10.	3-7	263-269	ga	If modifications being contemplated involve any change to the structural integrity of the lake boundary, lake bottom or upper ponds please consult with city and city’s historic preservation commission.
11.	5-8	295	ga	Who determines any vegetation removal project?
12.	5-9	312-317	ga	Any vegetation enhancement project along the banks of the lake or upper ponds should be reviewed with historic value in mind. Any construction/military activities in proximity to historic elements should be reviewed by Navfac cultural department. City’s Historic Preservation commission could assist.
13.	5-10	352-353	ga	Sediment removal projects should be reviewed by Navfac cultural department
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15.	5-22	807+	ga	“current” ICRMP is dated 2005. Is it available for review by the City and Historic preservation commission? Results of archaeology survey should be available to qualified persons (SOC qualified)

16.	5-23	846-847	ga	Consult with city's historic preservation commission and monitor by SOC qualified archaeologist or Navy's archaeologists.
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**City of Norco comments**  
**Wilkman Historical Services (City consultant)**  
**Comments on Draft INRMP for Naval Weapons Station Seal Beach Detachment Corona**  
**January 20, 2010**

#	Page	Section/ Line	Reviewer	Comment
1	1-2	29	WHS	Reference is made here and in several other places to landscape issues, with recognition that there are historic landscape elements on the site that are deserving of special consideration. I suggest the plan be augmented with a chart/map describing/showing the locations of historic landscape features so that those implementing the plan will have a ready source of information regarding the specific plant materials that are considered to be "historic".
2	1-3	26	WHS	See comment 1 above.
3	1-5	14	WHS	Reference is made in several places to providing public access to the natural and cultural resources at the Lake Norconian site. Yet, public access is generally restricted. I would like to suggest the Navy install a cultural/natural resources interpretive feature somewhere off-site at a good vantage point. The purpose of the interpretive feature would be to explain the historical and natural elements on the site so that those who would not normally be allowed access to the Norconian property could, nonetheless, learn about the significance of the property. Such an interpretive feature should include references to the entire Norconian site, including both the state and federal lands.
4	1-6	34	WHS	See comment 3 above.
5	2-6	8-17	WHS	The first paragraph references the presence of one indigenous cultural resource site, however, the second paragraph says there are no known Native American resources on the site.
6	2-6	30+	WHS	I would suggest the structures and land features on the National Register located outside of the footprint of the NSWC also be listed here to allow the reader to understand the overall historic context of the listing.
7	2-7	10-12	WHS	See comment 1 above.



8	4-5	17-20	WHS	See comment 3 above.
9	4-6	3-4 and 19-23	WHS	See comment 3 above.
10	5-3	106-112	WHS	See comment 1 above.
11	5-4	117=119	WHS	See comment 1 above.
12	5-6	221	WHS	Typo: “insavive” should be “invasive”
13	5-20	747-749	WHS	See comment 3 above
14	5-22	807	WHS	I would like a copy of the ICRMP.
15	5-22	841-843	WHS	See comment 1 above.
16	5-23	851-863	WHS	I would suggest this section be expanded to make specific reference to protection of historic landscape features.
17	Appendix L, first page	Not numbered	WHS	Items 2 and 3 make reference to tree removals. Before any removal work is undertaken, it should be ascertained whether the tree materials are part of the historic landscape.
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19	Appendix L, second page	Not numbered	WHS	Item 2 refers to installing a couple of interpretive features around the lake. It would seem that an off-site natural and cultural resources interpretive feature would be of greater value to the public, given the access restrictions of the site.



**APPENDIX N**  
**ENVIRONMENTAL ASSESSMENT**  
**(PROVIDED ON CD)**

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***Final***  
**Environmental Assessment for  
Implementation of the Updated  
Integrated Natural Resources  
Management Plan**

**Naval Weapons Station Seal Beach  
Detachment Norco  
Norco, California**

**January 2013**

***Prepared for:***

**U.S. Department of the Navy  
Naval Weapons Station Seal Beach  
Detachment Norco  
800 Seal Beach Boulevard  
Seal Beach, California 90740**





*FINAL*  
**ENVIRONMENTAL ASSESSMENT  
FOR  
IMPLEMENTATION OF THE UPDATED  
INTEGRATED NATURAL RESOURCES  
MANAGEMENT PLAN**

**NAVAL WEAPONS STATION SEAL BEACH  
DETACHMENT NORCO  
NORCO, CALIFORNIA**



**U.S. Department of the Navy  
Naval Weapons Station Seal Beach  
Detachment Norco**



**Commander, Navy Region Southwest**

**JANUARY 2013**



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**FINAL  
ENVIRONMENTAL ASSESSMENT  
FOR  
IMPLEMENTATION OF THE UPDATED  
INTEGRATED NATURAL RESOURCES MANAGEMENT  
PLAN**

**NAVAL WEAPONS STATION SEAL BEACH  
DETACHMENT NORCO  
NORCO, CALIFORNIA**

**Abstract:**

This Environmental Assessment (EA) has been prepared for the U.S. Department of the Navy (Navy) to determine if an Environmental Impact Statement (EIS) or Finding of No Significant Impact should be prepared regarding the management goals, objectives, and projects proposed in the updated Integrated Natural Resources Management Plan (INRMP) for Naval Weapons Station (NAVWPNSTA) Seal Beach Detachment Norco, located in Norco, California. The purpose of this updated INRMP is to meet the statutory requirements under the Sikes Act, as well as the requirements of various U.S. Department of Defense (DoD) and Navy Instructions. The updated INRMP is designed to provide for the continuation of military activities while preserving, protecting, and enhancing the natural resources and biodiversity of Detachment Norco. The updated INRMP provides strategies to guide natural resources management on Detachment Norco. Any requirement for the obligation of funds for projects in this updated INRMP shall be subject to the availability of funds appropriated by Congress, and none of the proposed projects shall be interpreted to require obligation or payment of funds in violation of any applicable federal law including the Anti-Deficiency Act, 31 U.S. Code (USC) §341, et seq.

**Point of Contact:** Sara Yamashita  
Environmental Planner  
Desert IPT, NAVFAC SW  
1220 Pacific Hwy  
San Diego, CA 92132  
Phone: (619) 532-3868

**JANUARY 2013**

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### EXECUTIVE SUMMARY

Naval Weapons Station (NAVWPNSTA) Seal Beach Detachment Norco (Detachment Norco) is located in northwest Riverside County, within the city limits of Norco, California. It is approximately 3 miles north of the City of Corona, 15 miles west of downtown Riverside, and 45 miles inland (i.e., east) of Santa Monica Bay.

Detachment Norco (formerly Detachment Corona) supports the Naval Sea Systems Command's Naval Surface Warfare Center Corona Division (NSWC Corona). NAVWPNSTA Seal Beach has command authority over Detachment Norco as the Class I and II property owner. Naval Sea Systems Command's NSWC Corona is the primary tenant of NAVWPNSTA Seal Beach Detachment Norco. NSWC Corona is the Navy's independent assessment agent and home to three national laboratory and assessment centers: the Joint Warfare Assessment Lab; the Measurement Science and Technology Lab; and the Daugherty Memorial Assessment Center. The mission of NSWC Corona is to *"Serve warfighters and program managers as the Navy's independent performance assessment agent throughout systems' lifecycles by gauging the Navy's warfighting capability of weapons and integrated combat systems, from unit to force level, through assessment of those systems' performance, readiness, quality, supportability, and the adequacy of training. Execute other responsibilities as assigned by the Commander, Naval Surface Warfare Center."*

The Sikes Act of 1997 (16 U.S. Code [USC] §670 et seq.) requires the Secretary of Defense to carry out a program to provide for the conservation and rehabilitation of natural resources on military installations. The Sikes Act requires that secretaries of military departments prepare and implement an Integrated Natural Resources Management Plan (INRMP) for each military installation containing substantial natural resources. The INRMP is the principal tool for managing military installation natural resources. It implements ecosystem management by setting goals for attaining a desired land condition. The INRMP also provides a viable framework for managing natural resources on the land that the military owns or controls in order to support the military mission, while also protecting and enhancing natural resources for multiple use, sustainable yield, and biological integrity (U.S. Department of Defense [DoD] 1996). 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.

The updated Detachment Norco INRMP establishes the goals, objectives, and projects for managing the natural resources to comply with applicable federal, state, and local regulations while also sustaining the military mission of Detachment Norco. Implementation of the updated INRMP would improve the quality of lands at Detachment Norco. The updated INRMP would help to guide future natural resources management activities at Detachment Norco.

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In accordance with the National Environmental Policy Act (NEPA) and its associated implementation regulations, this Environmental Assessment (EA) is an environmental impact analysis that addresses the potential impacts resulting from the implementation of the strategies proposed in the updated Detachment Norco INRMP.

This EA includes descriptions and evaluation of two alternatives, summarized as follows:

- **Alternative 1: Proposed Action/Preferred Action Alternative** – Implementation of the Updated Detachment Norco INRMP; and,
- **Alternative 2: No-Action Alternative** – Retain the Existing INRMP and Continue Current Management Levels.

The Preferred Alternative, Implementation of the Updated INRMP, would provide a net benefit to the environment relative to the No-Action Alternative, while also supporting the current levels of military activity at Detachment Norco. Alternative 2, the No-Action Alternative, would entail continued implementation of objectives and practices under the existing natural resources management program, while supporting current levels of military activity.

The alternatives analyzed in this EA would not result in significant impacts to area resources.

**Table 1 – Summary of Potential Environmental Consequences**

Resource Area	Environmental Consequences	
	Proposed Action – Implementation	No-Action
Geological Resources	The implementation of the Proposed Action would result in overall beneficial impacts to geological resources. Implementation of the updated INRMP would include developing new or implementing proven BMPs to prevent and control erosion. In addition, BMPs would be incorporated into the design and construction of any facility construction involving ground disturbance. Only minor disturbance of soils during invasive vegetation clearing and grading activities would occur and these would be minor and short-term in nature. Consequently, the implementation of the Proposed Action would have no significant impact on sensitive or regional geologic, physiographic, or topographic features.	Would result in no change – adverse or otherwise – to impacts associated with current operations and natural resource management goals/objectives at the installation. Beneficial practices under the existing INRMP would continue to be carried out at Detachment Norco.

**FINAL**

Environmental Assessment for Implementation of the Integrated Natural Resources Management Plan  
 Naval Weapons Station Seal Beach  
 Detachment Norco

Resource Area	Environmental Consequences	
	Proposed Action – Implementation	No-Action
Water Resources Including Wetlands	The implementation of the Proposed Action would result in overall beneficial impacts to water resources. Individual projects would protect and enhance water resources and wetlands at Detachment Norco. In addition, BMPs to control potential erosion and sedimentation would be implemented during all future ground disturbance. Therefore, implementation of the Proposed Action would not result in significant adverse impacts.	<p>Although beneficial practices under the existing INRMP would continue to be carried out at Detachment Norco, implementation would result in less than significant adverse impacts to water resources on the installation.</p> <p>The current conditions of ponds on the installation can be described as degraded. Because the existing INRMP pre-dates Seal Beach's responsibility for the ponds, this negative trend is likely to continue with the implementation of the No-Action Alternative.</p>
Biological Resources	The implementation of the Proposed Action would result in overall beneficial impacts to biological resources. Implementation of programs outlined in the updated INRMP would monitor, protect, and enhance vegetation communities, wildlife (including MBTA birds), threatened and endangered species, and species of regional concern at Detachment Norco. No significant short-term adverse impacts would result from implementation.	<p>Although beneficial practices under the existing INRMP would continue to be carried out at Detachment Norco, implementation would result in less than significant adverse impacts to biological resources on the installation.</p> <p>Due to the projected degradation of some habitat types (e.g. ponds), the implementation of the No-Action Alternative is likely to negatively impact particular biological resources (both particular habitats and the species that are associated with them).</p>
Land Use	The Proposed Action would overall beneficial impacts. Programs outlined in the updated INRMP would help to enhance quality of life at Detachment Norco; wildlife and vegetation management programs would contribute to efforts related to regional species and habitat conservation plans; and no projects or programs would result in inconsistencies or non-compliance with applicable land use plans or policies. No significant short-term impacts would result from implementation.	Would result in no change – adverse or otherwise – to impacts associated with current operations and natural resource management goals/objectives at the installation. Beneficial practices under the existing INRMP would continue to be carried out at Detachment Norco.

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Environmental Assessment for Implementation of the Integrated Natural Resources Management Plan  
Naval Weapons Station Seal Beach  
Detachment Norco

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Naval Weapons Station Seal Beach  
Detachment Norco

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Detachment Norco

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### ACRONYMS AND ABBREVIATIONS

AMEC	AMEC Earth & Environmental, Inc.
BCC	Bird of Conservation Concern
BMP	Best Management Practice
C	Federal Candidate
CBC	Christmas Bird Count
CDFW	California Department of Fish and Wildlife
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulation
CNPS	California Native Plant Society
CNDDDB	California Natural Diversity Database
CR	State Rare
CRC	California Rehabilitation Center
CSC	California Species of Special Concern
Detachment Norco	Naval Weapons Station Seal Beach Detachment Norco
DoD	U.S. Department of Defense
DoDI	U.S. Department of Defense Instruction
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
FE	Federally Endangered
FT	Federally Threatened
FSC	Federal Species of Concern
FP	State Fully Protected
GIS	Geographic Information System
INRMP	Integrated Natural Resources Management Plan
MBTA	Migratory Bird Treaty Act
MOU	Memorandum of Understanding
MSHCP	Multiple Species Habitat Conservation Plan
NAVFAC	Naval Facilities Engineering Command
NAVWPNSTA	Naval Weapons Station
NEPA	National Environmental Policy Act
NSWC Corona	Naval Surface Warfare Center Corona
OPNAVINST	Naval Operations Instruction
OSUD	Office of the Under Secretary of Defense
PE	Proposed Endangered
PT	Proposed Threatened
SE	State Endangered
SSC	California Species of Special Concern
ST	State Threatened
USC	U.S. Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USSCS	U.S. Soil Conservation Service

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### SECTION 1 INTRODUCTION

This Environmental Assessment (EA) has been prepared by the U.S. Department of the Navy (Navy) in accordance with the National Environmental Policy Act (NEPA) to evaluate the potential impacts that may be associated with implementation of Natural Resources Management Strategies outlined in the Naval Weapons Station (NAVWPNSTA) Seal Beach Detachment Norco (Detachment Norco) Integrated Natural Resources Management Plan (INRMP). The Navy is the Action Proponent, the land owner, and the federal Lead Agency for NEPA compliance and preparation of this EA. The facility is under the land administration responsibilities of the Commanding Officer of NAVWPNSTA Seal Beach.

NAVWPNSTA Seal Beach has command authority over Detachment Norco as the Class I and II property owner. Naval Sea Systems Command's Naval Surface Warfare Center, Corona Division (NSWC Corona) is the primary tenant of NAVWPNSTA Seal Beach at Detachment Norco. NSWC Corona is the Navy's premiere technical agent for independent assessment, range systems engineering, and metrology and calibration agent with a workforce that includes some 900 scientists, engineers, and support staff, and 400 contractors. As one of the newest federally designated laboratory sites in the nation, Detachment Norco is home to NSWC Corona's Joint Warfare Assessment Lab, the Measurement Science and Technology Lab, and the Daugherty Memorial Assessment Center, dedicated to fallen Sailor Petty Officer 1st Class Steven P. Daugherty. These world-class labs and assessment centers are vital to ensuring the best technical capability for the Navy and Armed Services. Detachment Norco scientific and technical activities require office, laboratory, data processing, and communications facilities. No training or troop activities are conducted on the Detachment. The mission of NSWC Corona is to *"Serve warfighters and program managers as the Navy's independent performance assessment agent throughout systems' lifecycles by gauging the Navy's warfighting capability of weapons and integrated combat systems, from unit to force level, through assessment of those systems' performance, readiness, quality, supportability, and the adequacy of training. Execute other responsibilities as assigned by the Commander, Naval Surface Warfare Center."*

#### 1.1 Project Location Description

Detachment Norco (formerly Detachment Corona before the Detachment's name was changed in 2011 to more accurately reflect its location and strong ties to the local community) is located in northwest Riverside County, within the city limits of Norco, California. It is approximately 3 miles north of the City of Corona, 15 miles west of downtown Riverside, and 45 miles inland (or east) of Santa Monica Bay. Primary access to Detachment Norco is provided by Interstate 15 (Figure 1). The installation is situated within 1 mile of the Santa Ana River. The current facility boundaries encompass approximately 243 acres including Lake Norconian (Figure 2). The California Rehabilitation Center (CRC), operated by the State Department of Corrections, adjoins Detachment Norco at its northern border.



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**General Vicinity Map**  
**Naval Weapons Station Seal Beach Detachment Norco,**  
**Norco, CA**

**FIGURE**  
**1**

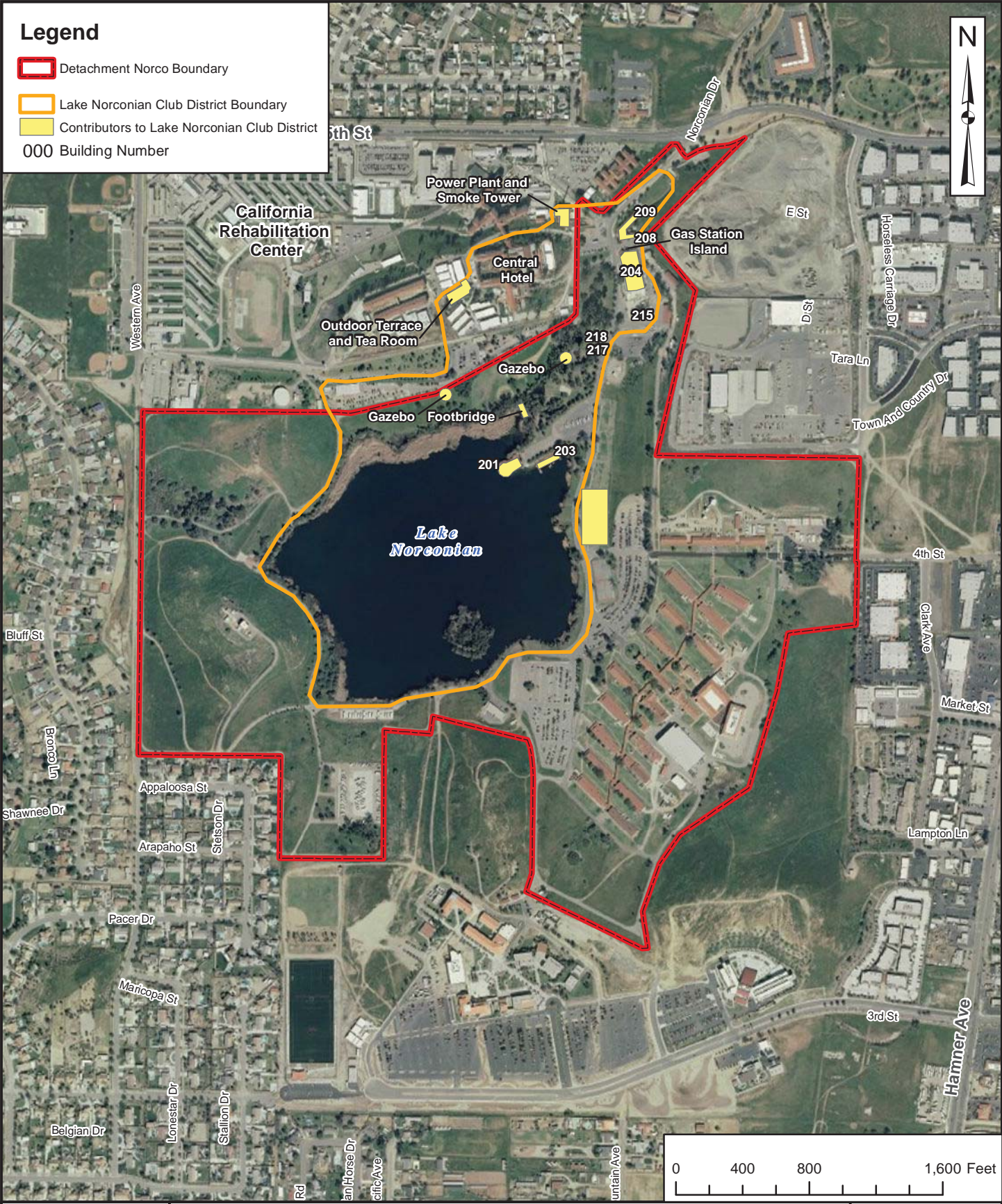
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**Legend**

- Detachment Norco Boundary
- Lake Norconian Club District Boundary
- Contributors to Lake Norconian Club District
- 000 Building Number



**Site Map**  
**Naval Weapons Station Seal Beach Detachment Norco,**  
**Norco, CA**

**FIGURE**  
**2**

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### 1.2 Integrated Natural Resources Management Plans

Preparation and implementation of an INRMP is required by the Sikes Act of 1997 (16 U.S. Code [USC] §670 et seq.), Department of Defense (DoD) Instruction (DoDI) 4715.03, *Environmental Conservation Program*, and Chief of Naval Operations Instruction (OPNAVINST) 5090.1C CH-1, the *Environmental and Natural Resources Program Manual*, which charges Navy installations, with land and water resources suitable for conservation and management, to prepare and implement a comprehensive INRMP that fulfills the requirements of the Sikes Act and follows *INRMP Guidance for Navy Installations* (Navy 2006).

The primary function of military installations is to ensure the preparedness of the Armed Forces. The Sikes Act requires that, consistent with the use of military installations to ensure the preparedness of the Armed Forces, each INRMP shall, where appropriate and applicable, provide for:

- Fish and wildlife management, land management, forest management, and fish and wildlife oriented recreation;
- Fish and wildlife habitat enhancement or modifications;
- Wetland protection, enhancement, and restoration where necessary for support of fish or wildlife;
- Integration of, and consistency among, the various activities conducted under the INRMP;
- Establishment of specific natural resources management objectives and timeframes for proposed actions;
- Continued use by the public of natural resources, subject to requirements necessary to ensure safety and military security, to the extent such use is not inconsistent with the needs of fish and wildlife resources management;
- Enforcement of natural resource laws and regulations;
- No net loss in the capability of military installation lands to support the military mission of the installation; and,
- Other activities that the Secretary of the military department considers appropriate.

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The INRMP provides installation planners with information needed to assist them early in the planning process and to help them assess environmental consequences of proposed actions. Additionally, the INRMP provides the basis for programming, formulating, and implementing Detachment Norco's natural resources management budget. The INRMP is a fully integrated plan that is developed based on input from myriad of stakeholders, including: installation planners; natural resources managers; regulatory agencies; interest groups; tenants; and the public. Development of this INRMP is also based on the concept of adaptive management of ecosystems. An adaptive management approach recognizes that protection and management actions are often implemented, by necessity, with imperfect knowledge. Recognition of this uncertainty allows development of monitoring and research approaches to progressively improve knowledge, and thus enhance decision-making and management capabilities.

The Sikes Act requires that INRMPs be prepared in coordination with the U.S. Fish and Wildlife Service (USFWS) and the state fish and game agency, here the California Department of Fish and Wildlife (CDFW). Such coordination should reflect the mutual agreement of all parties concerning the conservation, protection, and management of fish and wildlife resources on an installation. Further, the Sikes Act requires the public be afforded an opportunity to review and comment on the plan during its preparation. The 21-day public comment period for the draft EA began on 26 October 2012 and ended on 16 November 2012, during which no public comments were received.

### 1.3 Regulatory Requirements and Guidance

Preparation of this EA is a procedural requirement, in accordance with NEPA and Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] 1500-1508). Preparation of an EA is intended to ensure that federal agencies evaluate the potential for significant environmental impacts prior to making decisions or implementing proposed actions. This EA is compliant with the following policies and procedures:

- NEPA (42 USC §4321, et seq., as amended);
- CEQ Regulations for Implementing the Procedural Provisions of NEPA (40 CFR 1500-1508);
- 32 CFR 775, Navy Procedures for Implementing NEPA; and,
- Navy Procedures for Implementing NEPA (32 CFR §775), as described in OPNAVINST 5090.1C CH-1.

### 1.4 Purpose and Need for Action

The Proposed Action consists of the implementation of the updated INRMP for Detachment Norco, which is necessary for compliance with the Sikes Act, as amended. Its purpose is to provide guidance on the management of the Installation's natural resources now and into the future. The INRMP is a long-term planning document to guide the Installation Commander in the management of natural resources to support the installation mission, while protecting and



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enhancing installation resources for multiple use, sustainable yield, and biological integrity. The need for the Proposed Action is to meet the statutory requirements of the Sikes Act as well as the requirements of various relevant DoD and Navy Instructions. This Proposed Action fulfills the requirements OPNAVINST 5090.1C CH-1, the *Environmental and Natural Resources Program Manual*, which charges Navy installations, with land and water resources suitable for conservation and management, to prepare and implement a comprehensive INRMP that fulfills the requirements of the Sikes Act (as amended) as well as Office of the Under Secretary of Defense (OUSD) Memorandum of 08 August 1994, Implementation of Ecosystem Management in the Department of Defense, and follows the *INRMP Guidance for Navy Installations* (2006).

The updated INRMP for Detachment Norco establishes specific natural resources management goals and objectives, and identifies compliance strategies to achieve those goals and objectives. The INRMP was developed and updated in coordination with the USFWS and the CDFW and is intended to help guide future natural resources management activities at Detachment Norco.

The Proposed Action is to adopt and implement an updated INRMP for Detachment Norco that is consistent with military use of the installation and the goals and objectives established in the Sikes Act of 1997 (16 USC §670 et seq.). The updated INRMP is intended to help guide natural resources management activities at Detachment Norco in order to achieve the following goals:

- Identify, protect, conserve, and manage sensitive and significant natural resources and ecosystems;
- Promote the conservation of biodiversity whenever practicable;
- Use and care for natural resources to best serve our nation's present and future needs;
- Comply with all applicable Executive Orders (EOs) and federal, state, and local statutory and regulatory requirements, both substantive and procedural;
- Support the military mission by managing for the goal of no net loss to the operational carrying capacity of installation lands; and,
- Accommodate any necessary increased military mission requirements for uses of these lands.

Accomplishment of these goals will ensure the success of the military mission and the conservation of natural resources. The general philosophies and methodologies used throughout the updated Detachment Norco INRMP are focused on conducting required military mission activities while maintaining long-term ecosystem sustainability.

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### 1.5 Decision to Be Made

The decision to be made as a result of the analysis in this EA is first to decide if an Environmental Impact Statement (EIS) needs to be prepared. An EIS will need to be prepared if it is anticipated that the proposed action would have significant impacts on the human or natural environment. Should an EIS not be deemed necessary, a decision must be made as to whether to implement the proposed updated INRMP for Detachment Norco, by selecting an alternative analyzed within this EA. Selection of an alternative would be documented in a Finding of No Significant Impact.

### 1.6 Intergovernmental Coordination

Development of the updated Detachment Norco INRMP involved an interagency working group that consisted of representatives from the Navy, City of Norco, USFWS, CDFW, and the Lake Norconian Club Foundation. In addition, representatives from the Navy coordinated with the National Marine Fisheries Service as well as the National Oceanic and Atmospheric Administration.

### 1.7 Primary Issues Considered

A number of issues were identified during the initial scoping process for the updated Detachment Norco INRMP. The following list identifies items that required special emphasis in the updated INRMP:

- **Lake Management** – Assess and address the aesthetics, water quality, water flow/circulation/aeration, invasive species, vector control, and vegetation management/maintenance issues. Avoid problems such as the large-scale fish die-off observed in 1993 caused by herbicide application to algae which was not removed from the lake and consequently caused the fish to die two days later from lack of oxygen;
- **Species Management** – Assess and address the status of Detachment Norco's species and habitats. Conduct inventories for plants, wetlands, terrestrial invertebrates, small mammals, reptiles, fishes, amphibians, birds, and vegetation communities within the installation when funding permits. Maintain a species checklist and a Geographic Information System (GIS) database with the results of species and habitat surveys; and,
- **Landscape Management** – Conduct landscape management planning within the Lake Norconian Club Historic District in accordance with the planning goals of the Integrated Cultural Resources Management Plan. Landscape management for the entire facility will focus on protecting, maintaining, enhancing and managing natural resources.

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The overall strategy for addressing these primary issues, as well as other issues, is considered throughout the INRMP. The INRMP defines the strategy through a hierarchical format, starting with very broad, long-term statements, as goals, and ending with specific, short-term methods, as tasks.

Resource-specific management objectives and tasks have been further divided within the INRMP into compliance-based tasks and stewardship-based tasks, defined as follows:

- **Compliance-based Tasks** – Those that are required to meet the legal regulations governing the management of Navy lands and the needs of the military mission; and,
- **Stewardship-based Tasks** – Those that are designed to meet ecosystem-based conservation practices but that are not pursuant to regulatory requirement.

The purpose of this hierarchy is to provide direction to those tasked with everyday decisions about Detachment Norco's use and management of its natural resources. The updated INRMP's goals, objectives, and policies are designed to provide consistency and coordination needed among the various Navy with natural resources management duties and responsibilities involved in daily and annual decision-making affecting Detachment Norco.

### 1.8 Public Involvement

The Navy published a Notice of Availability on 26 October 2012 for a period of three consecutive days in a local publication, *The Press-Enterprise* (serving Riverside and San Bernardino Counties, California). It described the Proposed Action, solicited public input, and announced that the Draft EA was made available for public review at the County of Riverside Norco Public Library for a period of 21 days, ending on 16 November 2012. In addition, the EA was mailed to the Audubon Society, City of Norco, the Lake Norconian Club Foundation, USFWS, and the CDFW, and was also available for public review online at the Navy's website (<http://www.navyregionsouthwest.com/go/doc/4275/1550183/>).

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## SECTION 2 PROPOSED ACTION AND ALTERNATIVES

The Proposed Action is to implement the updated INRMP for Detachment Norco in compliance with the Sikes Act, OUSD Memorandum of 08 August 1994, *Implementation of Ecosystem Management in the Department of Defense*, and OPNAVINST 5090.1C CH-1. The management goals, objectives, and projects included in the updated INRMP were developed by the Navy in consultation with USFWS and CDFW staff. The Navy has gathered information from its internal sources, from other federal, state, and local agencies and non-governmental organizations who focus on conservation with an interest in the management of natural resources at Detachment Norco. The process of establishing these goals and objectives (Appendix A) was based on information about the military mission, existing natural resources, current conditions, and management issues at Detachment Norco. Proposed activities were reviewed for compliance with existing laws, regulations, EOs, and Navy policies.

Appendix A presents the goals, objectives, and projects contained in the updated INRMP.

### 2.1 Reasonable Alternative Criteria

NEPA and CEQ Regulations (40 CFR §1502.14[d]) for implementing the Procedural Provisions of NEPA establish a number of policies for federal agencies, including “*using the NEPA process to identify, consider, and assess reasonable alternatives to the Proposed Action that will avoid or minimize adverse effects of these actions on the quality of the human environment*” (40 CFR 1500.2 [e]). Only alternatives that would reasonably meet the defined need for the proposed action require detailed analysis in the EA. The range of reasonable alternatives in this EA was identified by evaluating their ability to meet the purpose and need for action and their ability to meet the following criteria (OPNAVINST 5090.1C CH-1):

- Be based on the principles of ecosystem management;
- Provide for sustainable multipurpose use of natural resources;
- Maintain compliance with relevant environmental regulations;
- Provide for public access for use of natural resources subject to safety and military security considerations;
- Establish specific natural resources management objective and timeframes for the Proposed Action; and,
- Prevent loss in the capability of military lands to support the military mission of the installation.

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### 2.2 Description of the Proposed Action and Alternatives

The two alternatives considered in the EA include the Proposed Action/Preferred Action Alternative (Alternative 1) and the No-Action Alternative (Alternative 2). NEPA requires agencies to consider a “No-Action” option that often provides a baseline condition against which the other alternatives may be evaluated. The alternatives are:

- **Alternative 1: Proposed Action/Preferred Action Alternative** – Implementation of the Updated Detachment Norco INRMP; and,
- **Alternative 2: No-Action Alternative** – Retain the existing INRMP and continue current management levels.

In addition, Table 3 provides a thorough comparison of the alternatives by the various resource areas.

Per Navy policy, all restoration projects that have the potential to enhance endangered species populations or habitat will be vetted through Navy chain of command and NEPA review prior to implementation to ensure no net loss or future encumbrance to military mission.

#### 2.2.1 Alternative 1: Proposed Action/Preferred Action Alternative - Implementation of the Updated Detachment Norco INRMP

The Proposed Action (Alternative 1) consists of implementing the updated Detachment Norco INRMP. The updated INRMP contains overriding goals to manage natural resources (as shown in Appendix A), including:

- Provide a sound basis for management and design of landscaping and grounds, their ability to enhance quality of life and foster a sense of community pride among those supporting and participating in activities at Detachment Norco;
- Protect and restore soil productivity, nutrient functioning and wildlife habitat through effective implementation of Best Management Practices (BMPs) to prevent and control soil erosion;
- Provide for a continued mosaic of natural and managed upland plant communities to promote biodiversity, erosion control, wildlife habitat, and aesthetics;
- Maintain and enhance historic landscapes registered as National Registered Historic Places;
- Eradicate invasive plant species that have potential to alter native upland and wetland plant communities;
- Control invasive wildlife species that have potential to alter wildlife communities;

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- Protect and enhance wetland resources at Detachment Norco;
- Ensure the maintenance of the water supply to Lake Norconian and its ponds in sufficient amounts to protect their many values, with an emphasis on waterfowl habitat;
- Protect the values of Lake Norconian and the ponds through appropriate resource management and enhancement, with an emphasis on maintaining a regional haven for migratory waterfowl;
- Promote a sustainable and diverse wildlife community for the lands surrounding Lake Norconian through habitat stewardship, population protection and monitoring, invasive species removal, and wildlife damage control compatible with the facility's mission and urban location;
- Use Integrated Pest Management methods to control noxious undesirable plants, rodents, and other pests found within Detachment Norco and to reduce the dependence on chemical means of control;
- Conserve and maintain riparian habitat within the installation for use by migratory birds, which may potentially include southwestern willow flycatcher (*Empidonax traillii extimus*) and least Bell's vireo (*Vireo bellii pusillus*);
- Conserve and monitor coastal sage scrub habitat within the installation for coastal California gnatcatcher (*Polioptila californica californica*) suitability;
- Enhance, conserve and monitor potential burrowing owl (*Athene cunicularia*) habitat within the installation;
- Enhance, conserve, and monitor MBTA species and associated habitat within the installation;
- Conserve the habitat and populations of sensitive species known to utilize Detachment Norco lands;
- Ensure the technically sound, practical, and appropriate use of library and computer technology to manage, analyze, and communicate natural resource information in support of management decisions;
- Promote compatible, sustainable outdoor recreation opportunities which enhance quality of life for military personnel, while conserving natural resources, and without compromising military readiness; and,
- Preserve the physical and ecological integrity of known sites that contain high to moderate archaeological potential.



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### **2.2.2 Alternative 2: No-Action Alternative – Retain the Existing INRMP and Continue Current Management Levels**

Under the No-Action Alternative, management programs proposed within the updated INRMP would not be implemented. The No-Action Alternative would result in maintaining the status quo of ecosystem management at Detachment Norco. Consequently, natural resources of Detachment Norco would be managed in compliance with the objectives and practices outlined in the 1998 Draft INRMP (Naval Facilities Engineering Command [NAVFAC] Southwest 1998), which was never finalized, and the Natural Resources Management Plan (U.S. Soil Conservation Service [USSCS] 1990). Both of these documents are no longer up to date with respect to Detachment Norco and do not reflect developments in the area of natural resource management since 1998.

### **2.3 Alternatives Considered but Not Carried Forward for Detailed Analysis**

Due to the relatively small size of Detachment Norco with its limited natural resources, there are no reasonable action alternatives to the Proposed Action of implementing the updated INRMP. Alternatives considered but not carried forward for detailed analysis were partial implementation of the updated INRMP with a focus on biological species protection and partial implementation of the updated INRMP with a focus on water resources. As this small Navy installation contains limited natural resources, there are few options in how they can be managed and these options are already incorporated into the Proposed Action. Also, these partial implementations of the updated INRMP alternatives were not deemed reasonable as the Proposed Action of implementing the updated INRMP itself allows for the implementation of a selection of the goals and objectives in the updated INRMP over time based on: current and future operational needs of the installation; changes in species populations and habitats; and other current and future environmental conditions. Thus, the Proposed Action encompasses a wide range of potential future projects and/or management decisions. Consequently, analysis of “partial implementation of the updated INRMP” alternatives would not be reasonable since partial implementation of the total projects in the updated INRMP is already built into the Proposed Action Alternative.

A compliance-driven management alternative to the Proposed Action was also 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 or the Endangered Species Act. 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’s 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

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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 not considered for further detailed analysis in this EA.

### **2.4 Resource Areas Minimally or Not Impacted**

The intent of NEPA is to focus the analysis on the environment (i.e., physical, biological, and social) potentially affected by a federal action. Resources and areas of the environment that are not present on or in the vicinity of Detachment Norco, or that would not have the potential to be affected by implementation of the Proposed Action or alternatives, are not described in this EA beyond Table 2, which lists these resources and provides the rationale for excluding them from further description and from impact analysis in the EA.

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**Table 2 – Resources Areas Minimally or Not Impacted**

Resource	Rationale for Excluding from Evaluation
Cultural Resources	Compliance with Section 106 of the National Historic Preservation Act for the updated Detachment Norco INRMP is accomplished through conformance with the 36 CFR 800 process, and is the responsibility of NAVWPNSTA Seal Beach. The potential for effects to historic properties for the updated Detachment Norco INRMP and any future and emergent implementation projects, as outlined in Section 5 of the updated Detachment Norco INRMP, are to be considered on an individual basis as separate undertakings and require review by authorized NAVWPNSTA Seal Beach cultural resources 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 to historic properties within the area of potential effect. Each determination requires consultation with the California State Historic Preservation Office and all relevant Native American tribes.
Air Quality	Detachment Norco is located in the Los Angeles South Coast Air Basin which has been designated as in extreme nonattainment status for federal and state 8-hour ozone standards, nonattainment for state 1-hour ozone standards, and nonattainment for federal and state fugitive dust standards (City of Norco 2008). Implementing the updated Detachment Norco INRMP would involve a negligible amount of ground disturbance; however, these activities would be minor and short-term in nature, and BMPs to prevent and control soil erosion as well as implementation of standard dust minimization practices would serve to reduce the amount of dust generated during ground disturbing activities (e.g., regularly watering exposed soils, soil stockpiling, and soil stabilization). Further, implementation of the Proposed Action would not result in any increase or decrease of existing operational emissions from stationary and mobile sources. Therefore, this resource area is not carried forward for detailed analysis.
Noise	There are no noise-sensitive receptors on or in the vicinity of Detachment Norco. Noise sources within Detachment Norco are limited to on- and off-road vehicles, including the tractor used to mow the installation. The noises associated with natural resources management activities are generally negligible. A small amount of noise could come from the short-term use of mechanical equipment and motor vehicles. Since human noise receptors on Detachment Norco and its immediate vicinity would notice little difference between the noise created from these actions and the much louder background noise from the adjacent urban environment, this resource area is not carried forward for detailed analysis.
Solid Waste	Solid waste services are currently provided by a third-party contractor and meet the demands at Detachment Norco. Implementation of the updated Detachment Norco INRMP would not increase or decrease the use, storage, generation, or disposal of solid waste. Therefore, this resource area is not carried forward for detailed analysis.
Infrastructure and Transportation	Implementing the updated Detachment Norco INRMP would not affect vehicular access to the facility or otherwise disrupt or improve traffic patterns. There would be no infrastructure improvements and utility usage would not increase or decrease. Therefore, this resource area is not carried forward for detailed analysis.
Socioeconomics	There would be no increase in contract personnel required to implement the updated Detachment Norco INRMP. Funding for projects would be negligible in relation to the operations and maintenance budget of Detachment Norco and would not affect the local economy. Therefore, this resource area is not carried forward for detailed analysis.
Environmental Justice <sup>1</sup> and Protection of Children <sup>2</sup>	No environmental justice populations have been documented in the vicinity of Detachment Norco, and implementing the updated Detachment Norco INRMP would not have any adverse impacts that would disproportionately affect minority communities or pose health or safety risks to children. Therefore, this resource area is not carried forward for detailed analysis.

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**Table 2 – Resources Areas Minimally or Not Impacted**

<b>Resource</b>	<b>Rationale for Excluding from Evaluation</b>
Hazardous Materials and Environmental Restoration Program Sites	Implementing the updated Detachment Norco INRMP would not increase or decrease the use, storage, generation, or disposal of hazardous materials and wastes at Detachment Norco. No Installation Restoration Program sites exist at Detachment Norco. Therefore, this resource area is not carried forward for detailed analysis.
Public Health and Safety	Currently, public access is granted to facilities at Detachment Norco on a limited basis. Implementing the updated Detachment Norco INRMP would not increase or decrease permitted public use of Detachment Norco's outdoor recreation facilities and would have no impact on other considerations such as safety, child protection, and security measures, including Anti-Terrorism/Force Protection features. Therefore, this resource area is not carried forward for detailed analysis.
Public Services	Public services utilized by or within Detachment Norco are minimal because of the small size of the installation and its restricted public access. As none of the alternatives would affect public services, this resource area is not carried forward for detailed analysis.
Visual Quality	Implementing the updated Detachment Norco INRMP would have no adverse impact on visual resources at Detachment Norco. The updated Detachment Norco INRMP would include vegetation management goals intended to promote visual resources and aesthetics at Detachment Norco which are anticipated to result in marked beneficial impacts. Therefore, this resource area is not carried forward for detailed analysis.

Notes:

<sup>1</sup> EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*

<sup>2</sup> EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*

## 2.5 Environmental Protection Measures

Since the Proposed Action would utilize standard BMPs, such as measures to control potential erosion and sedimentation and reduce fugitive dust emissions, and would moreover be implemented in compliance with all applicable federal, state, and local requirements, no other environmental protection measures or special procedures would be required given the nature and intent of the Proposed Action.

## 2.6 Summary of Potential Impacts and Avoidance/Minimization Measures

Table 3 summarizes potential environmental impacts as analyzed and detailed in Section 3, *Affected Environment and Potential Environmental Impacts*.

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**Table 3 – Summary of Potential Environmental Consequences**

Resource Area	Environmental Consequences	
	Proposed Action – Implementation	No-Action
Geological Resources	The implementation of the Proposed Action would result in overall beneficial impacts to geological resources. Implementation of the updated INRMP would include developing new or implementing proven BMPs to prevent and control erosion. In addition, BMPs would be incorporated into the design and construction of any facility construction involving ground disturbance. Only minor disturbance of soils during invasive vegetation clearing and grading activities would occur and these would be minor and short-term in nature. Consequently, the implementation of the Proposed Action would have no significant impact on sensitive or regional geologic, physiographic, or topographic features.	Would result in no change – adverse or otherwise – to impacts associated with current operations and natural resource management goals/objectives at the installation. Therefore, there would be no significant impacts.
Water Resources Including Wetlands	The implementation of the Proposed Action would result in overall beneficial impacts to water resources. Individual projects would protect and enhance water resources and wetlands at Detachment Norco. In addition, BMPs to control potential erosion and sedimentation would be implemented during all future ground disturbance. Therefore, implementation of the Proposed Action would not result in significant adverse impacts.	Would result in less than significant adverse impacts to water resources on the installation.  The current conditions of ponds on the installation can be described as degraded. Because the existing INRMP pre-dates Seal Beach's responsibility for the ponds, this negative trend is likely to continue with the implementation of the No-Action Alternative.
Biological Resources	The implementation of the Proposed Action would result in overall beneficial impacts to biological resources. Implementation of programs outlined in the updated INRMP would monitor, protect, and enhance vegetation communities, wildlife (including MBTA birds), threatened and endangered species, and species of regional concern at Detachment Norco. No significant short-term adverse impacts would result from implementation.	Would result in less than significant adverse impacts to biological resources on the installation.  Due to the projected degradation of some habitat types (e.g. ponds), the implementation of the No-Action Alternative is likely to negatively impact particular biological resources (both particular habitats and the species that are associated with them).
Land Use	The Proposed Action would overall beneficial impacts. Programs outlined in the updated INRMP would help to enhance quality of life at Detachment Norco; wildlife and vegetation management programs would contribute to efforts related to regional species and habitat conservation plans; and no projects or programs would result in inconsistencies or non-compliance with applicable land use plans or policies. No significant short-term impacts would result from implementation.	Would result in no change – adverse or otherwise – to impacts associated with current operations and natural resource management goals/objectives at the installation. Therefore, there would be no significant impacts.

## **SECTION 3**

### **AFFECTED ENVIRONMENT AND POTENTIAL ENVIRONMENTAL IMPACTS**

This section describes relevant existing environmental conditions for resources potentially affected by the Proposed Action and the No-Action Alternative. In compliance with CEQ regulations, Navy NEPA requirements, and OPNAVINST 5090.1C CH-1, the description of the affected environment focuses on only those resource areas potentially subject to impacts.

In the case of the Proposed Action, the affected environment description is limited primarily to Detachment Norco. Resource descriptions focus on geological resources, water resources, biological resources, and land use. Discussion of resource areas not requiring detailed analysis can be found in Table 2, Section 2.

#### **3.1 Geological Resources**

Geological resources consist of surface and subsurface materials and their properties. Principal geologic factors affecting the ability to support structural development are seismic properties (i.e., potential for subsurface shifting, faulting, or crustal disturbance), soil stability, and topography. The term soil, in general, refers to unconsolidated materials overlying bedrock or other parent material. Soil structure, elasticity, strength, shrink-swell potential, and erodibility all determine the ability for the ground to support man-made structures. Soils typically are described in terms of their complex type, slope, physical characteristics, and relative compatibility or constraining properties with regard to particular construction activities and types of land use. Topography is the change in elevation over the surface of a land area. An area's topography is influenced by many factors, including human activity, underlying geologic material, seismic activity, climatic conditions, and erosion. A discussion of topography typically encompasses a description of surface elevations, slope, and distinct physiographic features (e.g., mountains) and their influence on human activities.

##### **3.1.1 Existing Conditions**

Detachment Norco is located in the Southern California Coastal Plain geographic province, within rolling hills in a large intermediate valley bordered by the Santa Ana Mountain Range to the west, San Gabriel and San Bernardino mountains to the north, San Jacinto Mountains to the east, and a range of smaller hills at the southern boundary. Elevations on the installation range from 604 feet (184 meters) to 720 feet (220 meters), with slopes generally 2 to 15 percent; a large hill to the southwest consists of 50 percent slopes. Lake Norconian (without its associated ponds) spans 47 acres in the center of Detachment Norco (NAVFAC Southwest 1998).

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Detachment Norco lies within the Peninsular Range geological province. The major geological unit on the site is the rather coarse-grained granodiorites and tonalites of the Southern California Batholith. When weathered, these rocks produce decomposed granitic soils that are non-cohesive and highly erodible. Towards the Santa Ana River to the west, Quaternary alluvium of unconsolidated, poorly sorted gravel, sand, silt, and clay overlies older tertiary sediments of conglomerate, sandstone, and siltstones (Navy 1994).

Detachment Norco is located in areas that have historically been used for grazing and agriculture. Detachment Norco and its soils have been altered from their natural state by years of human use. The U.S. Department of Agriculture Soil Survey of Western Riverside Area, California (1971) indicates that Detachment Norco is underlain by primarily sandy loam soil types (Table 4, Figure 3).

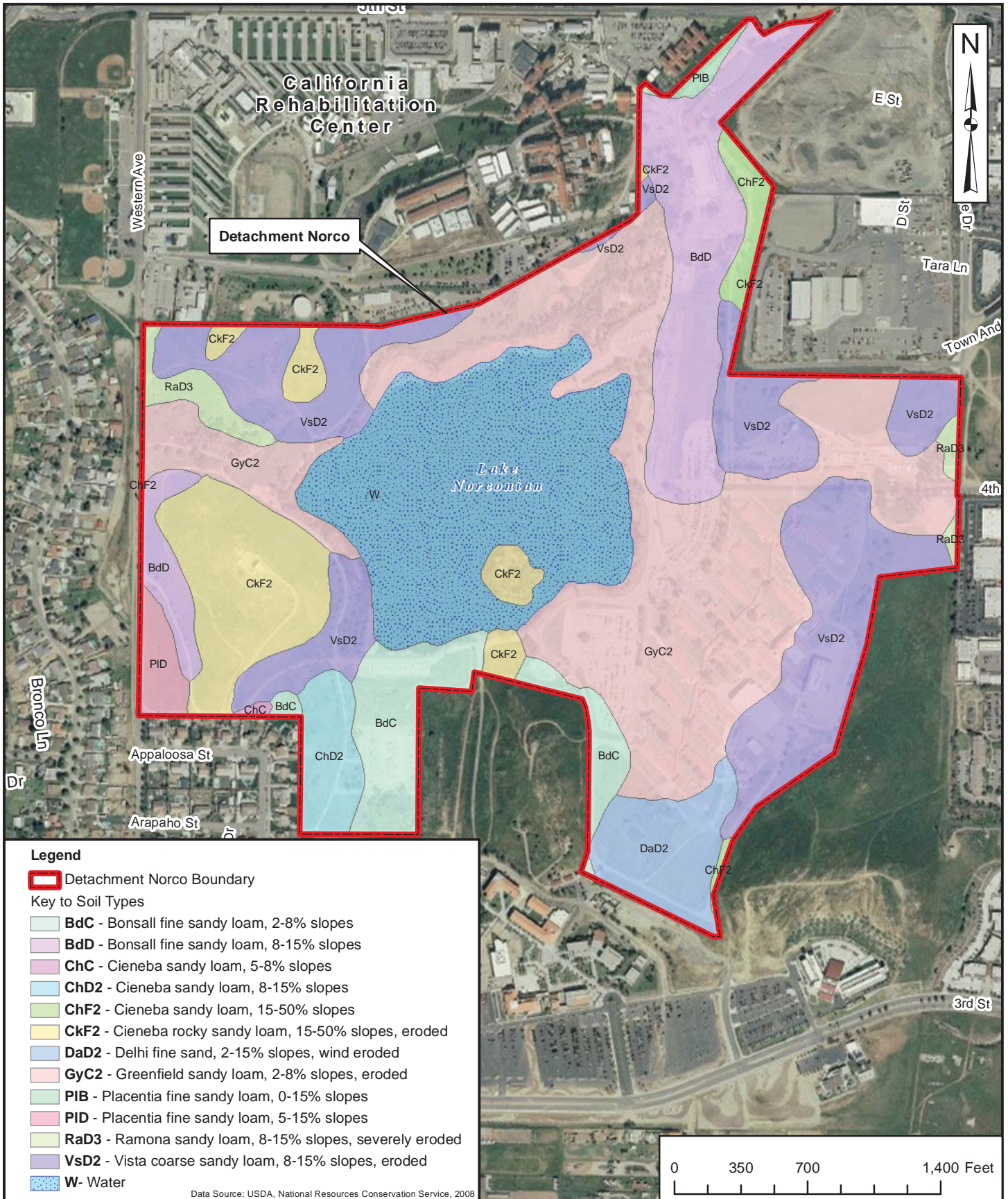
**Table 4 – Soil Types Present Within Detachment Norco**

Soil Type	Code	Acres
Bonsall fine sandy loam, 2-8% slopes	BdC	13.39
Bonsall fine sandy loam, 8-15% slopes	BdD	24.69
Cieneba sandy loam, 5-8% slopes	ChC	0.28
Cieneba sandy loam, 8-15% slopes	ChD2	5.59
Cieneba sandy loam, 15-50% slopes	ChF2	3.23
Cieneba rocky sandy loam, 15-50% slopes, eroded	CkF2	20.58
Delhi fine sand, 2-15% slopes, wind eroded	DaD2	9.29
Greenfield sandy loam, 2-8% slopes, eroded	GyC2	69.67
Placentia fine sandy loam, 0-15% slopes	PIB	0.95
Placentia fine sandy loam, 5-15% slopes	PID	2.94
Ramona sandy loam, 8-15% slopes, severely eroded	RaD3	3.97
Vista coarse sandy loam, 8-15% slopes, eroded	VsD2	45.33

Note: Acreages calculated using GIS layers. These values should be taken as estimates rather than an accurate description of real property boundaries.

Soils at Detachment Norco primarily developed in granitic material that was either weathered or washed down from upland areas. Granitic soils that washed to alluvial fans and terraces are Delhi, Greenfield, Placentia, and Ramona. Cieneba soils formed in coarse-grained igneous rock. The soils adjacent to the lake are classified as severely erodible. Detachment Norco soils are very deep, well drained to excessively drained, nearly level to moderately steep soils that have a surface layer of sand to sandy loam (USSCS 1990). The distribution of soils within Detachment Norco is depicted on Figure 3.





**Soil Types**  
**Naval Weapons Station Seal Beach Detachment, Norco**  
**Norco, California**

**FIGURE**  
**3**

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Naval Weapons Station Seal Beach  
Detachment Norco

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### **3.1.2 Proposed Action Impacts**

Implementation of the Proposed Action at Detachment Norco (implementation of the updated INRMP in compliance with the Sikes Act, OUSD Memorandum of 08 August 1994, Implementation of Ecosystem Management in the Department of Defense, and OPNAVINST 5090.1C CH-1) would involve minor disturbance of soils during invasive vegetation clearing and grading activities. However, these activities would be short-term in nature, and would have no impact on sensitive or regional geologic, physiographic, or topographic features. Under the updated INRMP, the Soil Management Program would include developing new or implementing proven BMPs to prevent and control erosion and protect sensitive species and habitats. In addition, BMPs would be incorporated into the design and construction of any facility construction involving ground disturbance. Therefore, implementation of the Proposed Action would result in an overall beneficial impact to geologic resources.

### **3.1.3 No-Action Alternative Impacts**

Under the No-Action Alternative, management programs proposed within the updated INRMP would not be implemented. The No-Action Alternative would result in maintaining the status quo of ecosystem management at Detachment Norco. Consequently, there would be no change from present conditions with regards to impacts to geological resources at Detachment Norco or in the region and geological resources would remain as described in Section 3.1.1, *Geological Resources*. Current management practices under the existing INRMP are aimed at protecting and restoring soil productivity, nutrient functioning, water quality, air quality, and wildlife habitat through effective implementation of BMPs to prevent and control soil erosion. The continuation of these practices, such as protecting slopes and channels and implementing re-vegetation practices, would result in a beneficial impact to geological resources. Therefore, there would be no significant impact to geological resources under the No-Action Alternative.

## **3.2 Water Resources Including Wetlands**

Water resources analyzed in this EA include surface water and groundwater resources. The quality and availability of surface and groundwater and potential for flooding are addressed in this section. Surface water resources comprise lakes, rivers, and streams and are important for a variety of reasons including ecological, economic, recreational, aesthetic, and human health. Groundwater comprises subsurface hydrologic resources and is an essential resource in many areas; groundwater is commonly used for potable water consumption, agricultural irrigation, and industrial applications. Groundwater properties are often described in terms of depth to aquifer, aquifer or well capacity, water quality, and surrounding geologic composition.



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Wetlands are defined by the U.S. Army Corps of Engineers and U.S. Environmental Protection Agency (USEPA) as “*those 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*” (33 CFR 328.3 [b]).

Wetlands provide a variety of functions including groundwater recharge and discharge; flood flow alteration; sediment stabilization; sediment and toxicant retention; nutrient removal and transformation; aquatic and terrestrial diversity and abundance; and uniqueness. Three criteria are necessary to define wetlands: vegetation (hydrophytes); soils (hydric); and hydrology (frequency of flooding or soil saturation). *Hydrophytic vegetation* is classified by the estimated probability of occurrence in wetland versus upland (non-wetland) areas throughout its distribution. *Hydric soils* are those that are saturated, flooded, or ponded for sufficient periods during the growing season and that develop anaerobic conditions in their upper horizons (i.e., layers). *Wetland hydrology* is determined by the frequency and duration of inundation and soil saturation; permanent or periodic water inundation or soil saturation is considered a significant force in wetland establishment and proliferation. Jurisdictional wetlands are those subject to regulatory authority under Section 404 of the Clean Water Act and EO 11990, *Protection of Wetlands*.

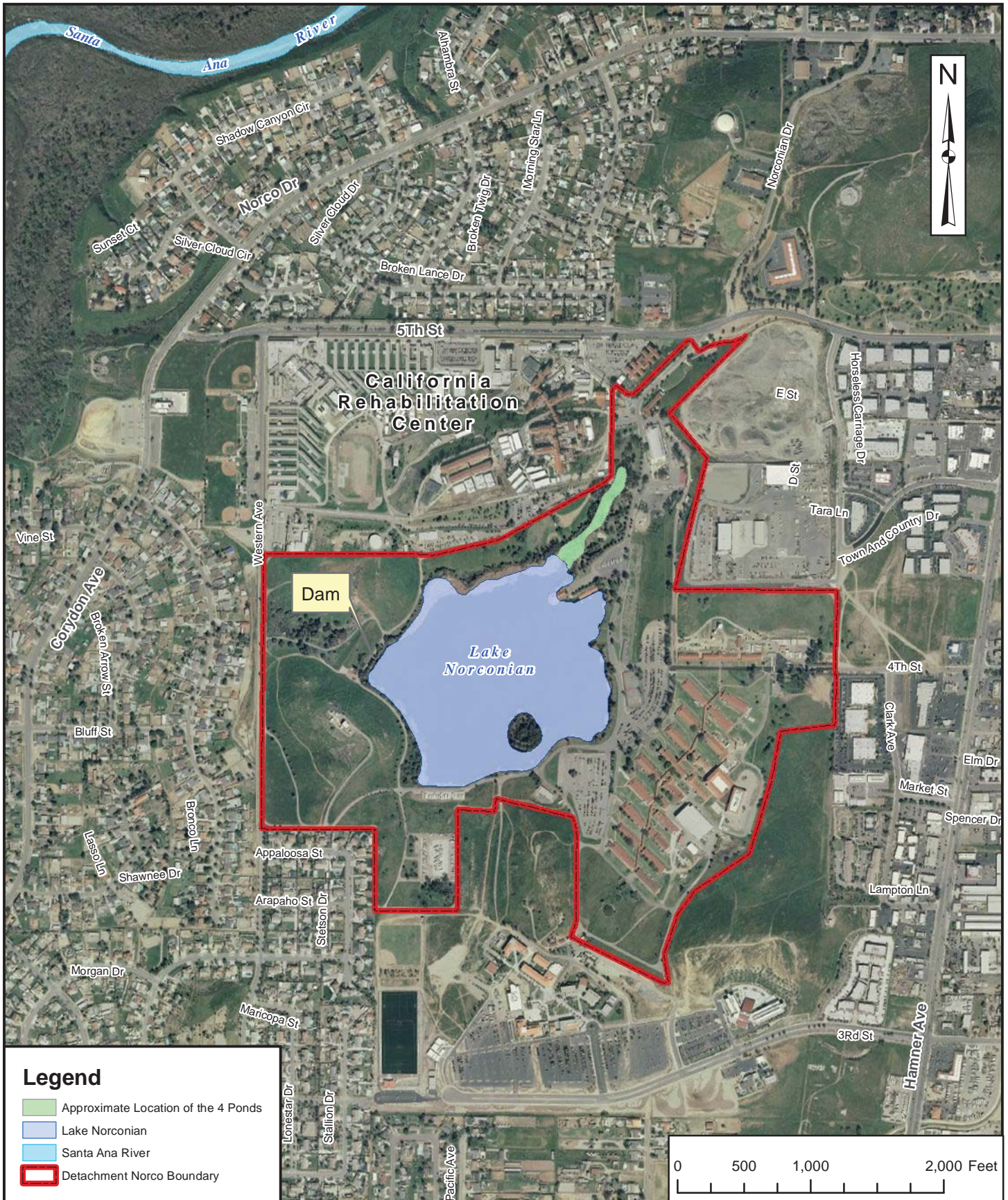
### 3.2.1 Existing Conditions

Described below are the existing conditions of water resources at Detachment Norco. The existing conditions are described in terms of hydrology, surface water, and wetlands.

#### 3.2.1.1 Hydrology

Detachment Norco is located in the middle of the Santa Ana River watershed, about 1 mile east of the river (Figure 4). Surface runoff from Detachment Norco tends to flow southerly towards the Temescal Wash (about 3 miles away), and then south-westerly to the Santa Ana River at the Prado Basin north of Prado Dam. Lake Norconian is the primary natural resource feature at Detachment Norco. This 47-acre (though often cited as 55-acre) artificial lake was constructed in 1928 as an attraction for the site’s original development, the Lake Norconian Club resort (NAVFAC Southwest 1998). The lake site, which was previously in agriculture before the resort was built, encompasses about 22 percent of the installation and is an integral part of the Historic District which is listed on the National Register of Historic Places. While the lake has significance in terms of cultural resources, it is also an important natural resource, particularly for migratory birds and waterfowl.





**Water Resources**  
**Naval Weapons Station Seal Beach Detachment Norco**  
**Norco, California**

**FIGURE**  
**4**

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Above the lake is a series of four small ponds, which cascade water from an inflow pipe above the uppermost pond. Although it was historically fed by well water, the level of the lake is currently maintained with a mix of non-potable well water fed into the lake near the west dam and potable water fed via the upper ponds. In 1989-90, the west dam was rebuilt; however, it does not meet state seismic safety standards (USSCS 1990).

### 3.2.1.2 Surface Water

Lake Norconian is not a typical lake as described in most lake management manuals (USEPA 1990a; McComas 1993; Cooke et al. 1993). Its primary water source does not originate from the watershed but is piped in from a groundwater source that is blended to meet domestic drinking water standards (Western Municipal Water District 2008). Except in years with high rainfall, the lake essentially has no outflow. Evaporation causes the greatest loss of water from the lake, which is partly compensated by the imported water. Winter conditions are mild so the lake does not freeze or have significant seasonal differences. Although artificial, the lake is not operated like a water supply reservoir with regular draw-downs. Lake Norconian represents a complex and dynamic ecosystem.

The lake and ponds are primarily fed by groundwater imported from a well field near the Santa Ana River. Water was previously delivered to Detachment Norco by the adjacent CRC, which became the water purveyor for the facility when ownership of the Navy Hospital transferred from the Navy to the state in 1962. The lake also receives water from runoff, precipitation, groundwater seepage, and the seepage recharge system.

The Navy, along with the City of Norco and the CRC, signed a Memorandum of Understanding (MOU) pertaining to water availability to Detachment Norco in 2011. Under the MOU, the City of Norco manages the water well field and provides Detachment Norco with water to fill the lake. The City of Norco also provides a water connection to the Detachment that provides potable water to the facility. A new sewer connection will be installed to provide a gravity feed to a different municipal sewer line thus eliminating the need for the current lift station. In addition, this MOU provided a reliable source of water to Lake Norconian and the Navy now has a water supply that is independent of the CRC. The City of Norco is planning on installing a reclaimed water line that will bring high-quality reclaimed water to Detachment Norco to supply the lake and landscape irrigation needs. Since the evaporation rate is very high in this arid environment, the lake would dry up without the supplemental water from the water system. Annual total flow depends on the amount of rainfall (drought, wet, normal years) and the water system's capability.

As with most small, shallow, urban lakes, Lake Norconian is a eutrophic (nutrient-rich) lake. This condition is qualitatively indicated by the greenish water color, the low clarity (< 2 feet secchi disk depth), large beds of aquatic vegetation, and the emission of hydrogen sulfide when sediments are disturbed (Sterner Environmental Consulting 1996). Quantitatively, Lake Norconian rates between eutrophic and hypereutrophic on the Trophic State Index (Marine Biochemists 1994-95; USEPA 1990a).



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### 3.2.1.3 Wetlands

Wetlands on Detachment Norco were identified during a wetland delineation conducted in May 1998 (NAVFAC Southwest 1998). Two types of wetland communities were delineated on the installation:

- *Scirpus validus* - *Typha latifolia* Marsh Wetland: Occurs around the margins of Lake Norconian; and,
- *Salix lasiolepis* - *Anemopsis californica* Riparian Scrub-Shrub Wetland: Occurs within a small area in a depression below the main dam that impounds Lake Norconian. This area contains significant cover of two obligate hydrophytes (*Anemopsis californica* and *Juncus balticus*).

Additional areas on the installation include the riparian draws and lake margins, the margins of the four small ponds that drain into the lake, and other small drainages. In the 1998 wetland delineation, Lake Norconian did not fall under the definition of Waters of the U.S (the lake is not hydrologically connected to navigable waters), and so did not fall under the jurisdiction of the federal Clean Water Act as an artificial lake that is fed by pumped groundwater in an upland situation (NAVFAC Southwest 1998).

Since 1998, the U.S. Army Corps of Engineers has issued new wetland delineation regulations. Consequently, a new wetland delineation should be prepared which reflects the change in regulations and may warrant a different determination for Lake Norconian. Refer to Table 5 in Section 3.3.1.1 for Detachment Norco vegetation communities that have potential to support wetlands habitats.

### 3.2.2 Proposed Action Impacts

Implementation of the Proposed Action would involve implementation of programs outlined in the updated INRMP. Individual projects listed in the Water Resources Management Program and Wetland Management Program, as well as other habitat management projects would each be designed and evaluated to protect and enhance water resources and wetlands at Detachment Norco. In addition, BMPs to control potential erosion and sedimentation would be implemented during all future ground disturbance. Therefore, implementation of the Proposed Action would have an overall beneficial impact to water resources.

### 3.2.3 No-Action Alternative Impacts

Under the No-Action Alternative, management programs proposed within the updated INRMP would not be implemented. The No-Action Alternative would result in maintaining the status quo of ecosystem management at Detachment Norco. The current conditions of the ponds at the installation can best be described as degraded. The ponds had been minimally managed at the time that they came under the responsibility of

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NAVWPNSTA Seal Beach. Because the existing INRMP pre-dated NAVWPNSTA Seal Beach's responsibility for the ponds, NAVWPNSTA Seal Beach was previously unable to develop and implement specific, intensive management for these resources. Water flow, natural, and cultural resources associated with the ponds are projected to become compromised if the ponds are left to the minimal management outlined in the existing INRMP. Under the No-Action Alternative, management strategies aimed at protecting the ponds would continue to be implemented through practices that are compatible with waterfowl management, protective of the food web, and cost effective. Such strategies include removing downed debris and invasive aquatic vegetation or wildlife, as well as preventing chemical pollution from pest management. Though the ponds are projected to degrade in the future, the implementation of this alternative would result in a less than significant adverse impact to water resources.

### **3.3 Biological Resources**

Biological resources include plants, animals and the habitats in which they occur, as well as ecological phenomenon that support them. Sensitive biological resources include the plant and animal species listed as threatened or endangered, or proposed as such, by the USFWS or CDFW. The Endangered Species Act of 1973 protects listed species against unlawful "take," which can include the killing, harm, or harassment of individuals, or any actions that may damage the habitat of such species. Federal Species of Concern are not protected by law; however, these species could become listed and protected at any time.

Migratory birds, as listed in 50 CFR 10.13, are also sensitive biological resources and are ecologically and economically important to the U.S. recreational activities, including bird watching and hunting, are practiced by many Americans. EO 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds 2001) requires federal agencies to evaluate the environmental effects of their actions on migratory bird species and, where feasible, implement policies and programs, which support the conservation and protection of migratory birds.

#### **3.3.1 Existing Conditions**

Described below are the existing conditions of biological resources at Detachment Norco. The existing conditions are discussed in terms of vegetation communities, wildlife, threatened and endangered species, migratory birds, and other species of regional special concern.

##### **3.3.1.1 Vegetation Communities**

Detachment Norco is characterized by eight major vegetation community types, which include non-native grassland, coastal sage scrub, developed and riparian/wetland communities (Table 5). Figure 5 illustrates the distribution of these communities within Detachment Norco (AMEC Earth & Environmental Inc. [AMEC] 2009). A description of each plant community type is provided below.

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Environmental Assessment for Implementation of the Integrated Natural Resources Management Plan  
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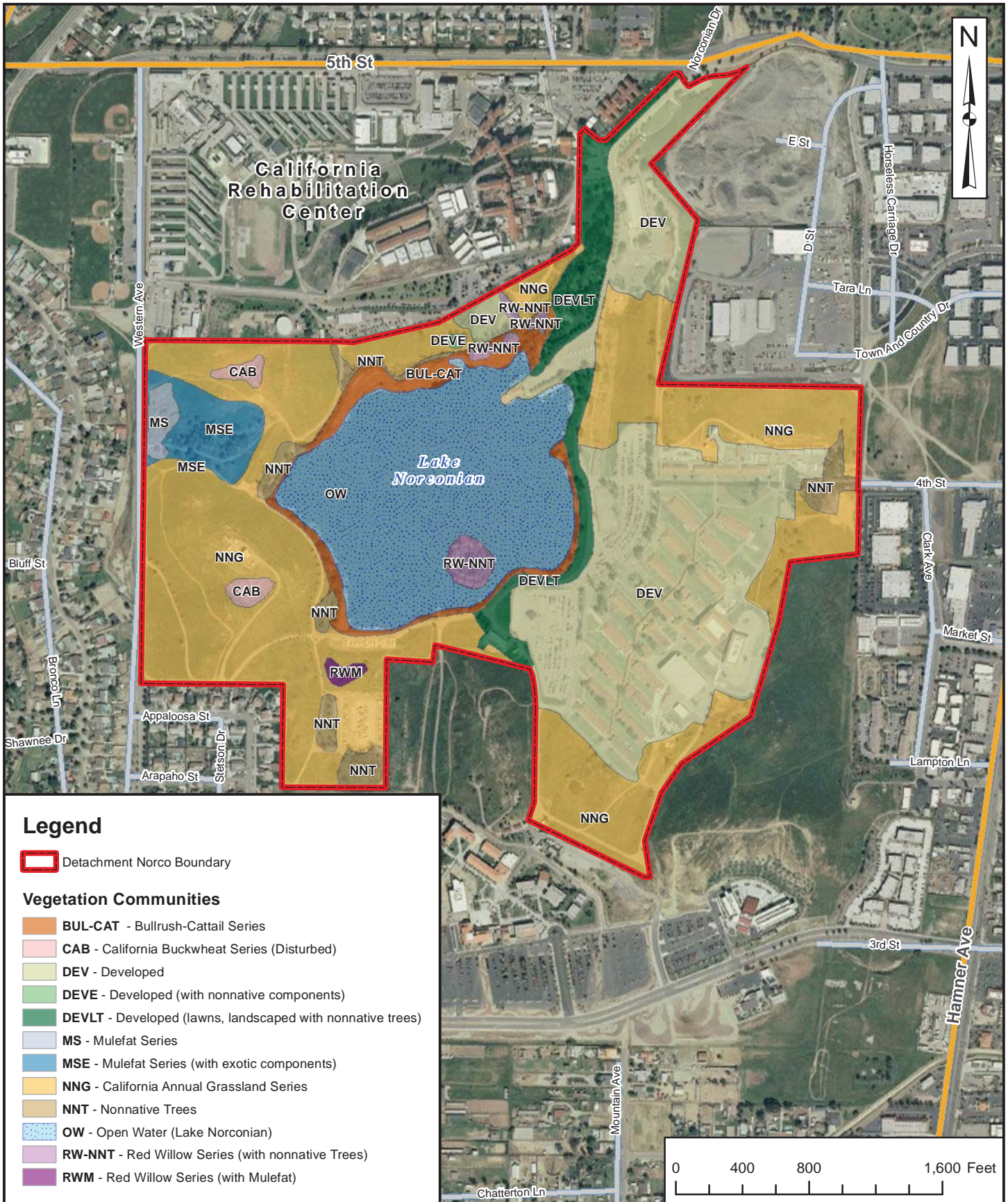
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**Table 5 – Vegetation Communities at Detachment Norco**

<b>Vegetation Community</b>	<b>Acreage</b>
<b>Upland Vegetation Communities</b>	
Non-native Grassland: California Annual Grassland Series	93.6
Coastal Sage Scrub: California Buckwheat Series	1.6
Non-Native Trees	6.0
Developed	77.9
<b>Riparian/Wetland Vegetation Communities</b>	
Bulrush Cattail Series	7.8
Mulefat Series	7.8
Red Willow Series	3.1
Open Water	43.1

Note: Acreages calculated using GIS layers. These values should be taken as estimates rather than an accurate description of real property boundaries.





**Vegetation Map**  
**Naval Weapons Station Seal Beach Detachment Norco**  
**Norco, California**

**FIGURE**  
**5**

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Naval Weapons Station Seal Beach  
Detachment Norco

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### **Non-Native Grassland: California Annual Grassland Series**

This extensive vegetation series is composed of many alien and native annual species. Plant composition typically is site specific (i.e., soils, aspect, etc.) and varies among stands. Grasslands are likely to be dominated by several species of grasses that have evolved to persist in concert with human agricultural practices such as slender oat (*Avena barbata*), wild oat (*Avena fatua*), fox tail chess (*Bromus madritensis*), soft chess (*Bromus hordeaceus*), ripgut grass (*Bromus diandrus*), barley (*Hordeum* spp.), Italian rye grass (*Lolium multiflorum*), English ryegrass (*Lolium perenne*), rat-tail fescue (*Vulpia myuros*), and Mediterranean schismus (*Schismus barbatus*) (Sawyer et al. 2009).



**Non-native Grassland Vegetation Community located on Detachment Norco.**

A majority of Detachment Norco is vegetated by non-native grassland (93.6 acres) (Figure 5). Typical annual species on Detachment Norco include wild oats, brome (*Bromus* sp.), burclover (*Medicago* sp.), dove weed (*Eremocarpus* sp.), wild mustard (*Brassica* sp.), and Russian thistle (*Salsola tragus*). Some of these areas are maintained for fuel management through periodic mowing. Non-native grassland is not considered a sensitive habitat; however, it may be a significant resource for wildlife species, support sensitive plant species, and/or serve as a habitat linkage.

### **Coastal Sage Scrub: California Buckwheat Series**

This vegetation community is considered a component of coastal sage scrub and is dominated by flat-topped buckwheat (*Eriogonum fasciculatum*). Other shrub species include California sagebrush (*Artemisia californica*), coyote brush (*Baccharis pilularis*), deerweed (*Lotus scoparius*), and bush monkeyflower (*Mimulus aurantiacus*) (Sawyer et al. 2009).

The California buckwheat vegetation community on Detachment Norco is considered “disturbed” due to the high percentage of non-native species and its fragmentation. Associated species include non-native grassland species listed above interspersed with flat-topped buckwheat, California sagebrush, chamise (*Adenostoma fasciculatum*), and goldenbush (*Isocoma menziesii*). Approximately 1.6 acres of coastal sage scrub occur within Detachment Norco (Figure 5).

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### **Non-Native Trees**

This vegetation community is comprised of non-native trees, usually intentionally planted, which are not maintained or artificially irrigated. Non-native tree stands within Detachment Norco include eucalyptus (*Eucalyptus* spp.), Brazilian pepper tree (*Schinus molle*), pine (*Pinus* spp.), and other decorative species including palm tree species. This habitat type has potential for nesting raptors and other bird species. Approximately 6 acres of non-native trees occur on Detachment Norco (Figure 5). Detachment Norco has proposed to remove some of the non-native trees within the riparian habitats associated with Lake Norconian.

### **Developed**

Developed areas are categorized as areas that have been constructed upon or otherwise physically altered to an extent that native vegetation is no longer supported. Developed land is characterized by permanent or semi-permanent structures, pavement or hardscape, and landscaped areas that often require irrigation. Areas where no natural land is evident due to a large amount of debris or other materials being placed upon it may also be considered developed.

A significant portion of Detachment Norco (77.9 acres) is occupied by developed areas including the scientific and engineering computer operations and analytical complexes (Figure 5). Some trees and shrubs remain from the original plantings for the Lake Norconian Club and represent varieties popular in the 1920s in Southern California gardens.

Landscaping around the buildings consists of lawns, mature trees, and shrubs. A variety of mature trees are evident, including eucalyptus, California sycamore (*Platanus racemosa*), Brazilian pepper tree, fan palm (*Washingtonia* sp.), date palm (*Phoenix* sp.), ash (*Fraxinus* sp.), carob (*Ceratonia siliqua*), white poplar (*Populus alba*), pines, oaks (*Quercus* sp.), and willows (*Salix* sp.). Lawns are primarily comprised of Bermuda grass (*Cynodon dactylon*).

### **Freshwater Marsh: *Bulrush-Cattail Series***

The bulrush-cattail vegetation series is dominated by cattail (*Typha* spp.) and bulrush (*Scirpus* sp.). It occupies freshwater or brackish wetland habitats that are permanently flooded, regularly flooded, semi-permanently flooded, seasonally flooded, irregularly flooded, or irregularly exposed (Sawyer et. al 2009).

Bulrush-cattail vegetation occupies approximately 7.8 acres along the lake margins (Figure 5). Stands of cattail and bulrush provide nest sites and cover for a variety of birds that utilize the lake. Invasive, non-native giant reed (*Arundo donax*) also occurs in small patches along the lake margin.



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### **Riparian Scrub: *Mulefat Series***

This community is dominated by mulefat (*Baccharis salicifolia*) and occurs within seasonally flooded and saturated canyon bottoms; irrigation ditches, and stream channels (Sawyer et. al 2009).

On Detachment Norco, mulefat vegetation occurs within a small drainage within the southwest portion of Detachment Norco (Figure 5). Associated species include mulefat, yerba mansa (*Anemopsis californica*), and Mexican elderberry (*Sambucus mexicana*). Approximately 7.8 acres of mulefat habitat occur within Detachment Norco.

### **Riparian Woodland: *Red Willow Series***

This vegetation community generally occupies freshwater wetland habitats that are seasonally flooded, or saturated. It is typically found in ditches, flood-plains, lake edges, low-gradient depositions along rivers, streams (Sawyer et. al 2009).

The willow vegetation community includes a variety of willows (*Salix* spp.) mixed with nonnative species including Brazilian pepper tree, date palm, and fan palm. This habitat is found along the lake margin north of the Lake Norconian Club and on the small island located within the lake (Figure 5). The island habitat provides breeding and roosting habitat for many species and also includes snags (standing, partly or completely dead tree) which are considered suitable habitat for nesting raptors. Approximately 3.1 acres of this community occurs on Detachment Norco.



**Vegetation present within the island located on Lake Norconian.**

### **Open Water/Aquatic Vegetation**

Lake Norconian is characterized as open water, and also supports phytoplankton (composed of diatoms), various species of algae, and submergent aquatic plants. Filamentous algae can be found along the shoreline and in the ponds during warm weather but are usually absent during the winter. Submergent vegetation including lilies (*Nymphaea mexicana*) are found in the northeast portion of the lake, near the inflow from the ponds. Additional species that can be found throughout the lake include muskgrass (*Chara* spp.), brittle naiad (*Najas flexilis*), and sago pondweed (*Potamogeton pectinatus*), some of which are considered aesthetic nuisances at the lake.

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### 3.3.1.2 Wildlife Species

Animal species confirmed through surveys conducted to date include: 142 birds; 6 fish; 2 amphibians; 5 reptiles; and 15 mammals. As regional comparisons, the Lake Mathews area (2,750 acre lake, 6,100 acres of land) supports more than 100 bird species, 24 species of lizards and snakes, 4 amphibian species, and 20 mammal species (Skrove 1995). At least 180 species of birds were documented at Hidden Valley Wildlife Area on the Santa Ana River (70 acres wetlands, 1,500 acres land) (County of Riverside 2003).

#### Birds

Lake Norconian is the primary natural resource feature at Detachment Norco. Waterfowl, herons, hawks, shorebirds, swallows, and songbirds are just some of the types of birds that use the lake and ponds, or forage or nest in the surrounding habitat. The grasslands within Detachment Norco also provide foraging habitat for a variety of raptors.



**Clark's Grebe chick riding on the back of one of its parent on Lake Norconian.**

Formal bird surveys were first conducted within Detachment Norco in 1996 and these noted a remarkably diverse presence of bird species (approximately 114 terrestrial and aquatic bird species during winter and spring). No threatened or endangered species were detected during these surveys with the exception of one peregrine falcon (*Falco peregrinus anatum*) (assumed to be a migrant), which was observed perched on a snag on the island in Lake Norconian (Aigner and Koehier 1996). The peregrine falcon has since been delisted from its federally endangered listing status; however, it continues to be a bird of conservation concern and listed as a state endangered species.

During the winter months, the lake may support thousands of migrating waterfowl. Annual Christmas Bird Counts (CBCs) have been conducted on Lake Norconian by members of the San Bernardino Valley Audubon Society. These CBCs reveal 106 different species of birds within the vicinity of the lake. The most abundant species are mallards (*Anas platyrhynchos*), American widgeons (*A. americana*), northern pintails (*A. acuta*), northern shovelers (*A. clypeata*), cinnamon teals (*A. cyanoptera*), ruddy ducks (*Oxyura jamaicensis*), American coots (*Fulica americana*), and ring-billed gulls (*Larus delawarensis*). Less common visitors include the fulvous whistling duck (*Dendrocygna bicolor*), white-faced ibis (*Plegadis chihi*), and white pelican (*Pelecanus erythrorhynchos*). A variety of raptors noted in flight or perched on large trees or snags surrounding the lake include osprey (*Pandion haliaetus*), northern harrier (*Circus cyaneus*), sharp-shinned hawk (*Accipiter striatus*), Cooper's hawk (*Accipiter cooperii*), red-tailed hawk (*Buteo jamaicensis*), and American kestrel (*Falco sparverius*).

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The most recent bird census within Detachment Norco was conducted between December 14, 2008 and June 25, 2009 (AMEC 2009). All of Detachment Norco was surveyed, with the exception of restricted areas within the central eastern and southeastern portions of Detachment Norco (AMEC 2009). The facility was surveyed five times during winter and five times during spring and early summer during this survey period. These surveys documented 118 species (AMEC 2009). Additional species detected during previous CBCs and the 1995-1996 surveys (Aigner and Koehler 1996) bring the total list of bird species for Detachment Norco to 142.

### **Mammals**

While a number of mammal species are known to occur at Detachment Norco, only 12 native mammals are known to occur on the installation (Phillips 1996). The most common native and non-native species include: California ground squirrels (*Spermophilus beecheyi*); desert cottontail rabbits (*Sylvilagus audubonii*); Botta's pocket gophers (*Thomomys bottae*); western harvest mice (*Reithrodontomys megalotis*); house mice (*Mus musculus*); black rats (*Rattus rattus*); coyote (*Canis latrans*); long-tailed weasel (*Mustela frenata*); striped skunk (*Mephitis mephitis*); raccoon (*Procyon lotor*); and gray fox (*Urocyon cinereoargenteus*). Non-native species including black rats, house mice, and feral cats are known to occur within Detachment Norco.

### **Fish**

Lake Norconian supports fish species typical of warm water lakes and ponds in the region. The once stocked game and forage fish of Lake Norconian include largemouth bass (*Micropterus salmoides*), bluegill (*Lepomis macrochirus*), and other sunfish (*Lepomis* spp.), channel catfish (*Ictalurus punctatus*), mosquito fish (*Gambusia affinis*), and threadfin shad (*Dorosoma petenense*) (Sterner Environmental Consulting 1995; C. Quinn, NSWC Corona, pers. comm.). Due to the nature of the water resources on Detachment Norco, it is unlikely any listed fish species or species of regional special concern would occur and none have been documented.

### **Reptiles and Amphibians**

The most commonly occurring reptiles and amphibians at Detachment Norco are represented by six species: Pacific tree frog (*Pseudacris hypochondriaca*); bullfrog (*Lithobates catesbeianus*); western fence lizard (*Sceloporus occidentalis*); southern alligator lizard (*Elgaria multicarinata*); western blind snake (*Rena humilis*); and gopher snake (*Pituophis catenifer*). Of these, western fence lizards are the most predominant on the installation (Phillips 1996). Although turtles were not found in the 1996 survey, observers and photos have confirmed the presence of pond sliders (*Chrysemys scripta*) in the lake (C. Quinn, NSWC Corona, pers. comm.).

### **Invertebrates**

A survey of terrestrial invertebrates was conducted on the installation during a 14-month period from September 1995 to November 1996. A total of 127 species of invertebrates were caught in malaise traps (tent-like structures used for trapping flying insects) and 51

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species in pitfall traps during the survey. A complete list of all the invertebrates observed can be found in Appendix H of the updated INRMP (Mattoni and Rogers 1998).

### 3.3.1.3 Federally Threatened and Endangered Species

Threatened and endangered species include species listed by the federal government as threatened or endangered. Per the statutory requirements of the Sikes Act (as amended), in coordination with the USFWS and CDFW, Detachment Norco continues to ensure proper consideration of threatened and endangered species as well as their associated federally designated Critical Habitat.

The applicable federal classification system for special-status species is as follows:

- **Endangered (FE)** - Any species that is in danger of extinction throughout all or a significant portion of its range.
- **Threatened (FT)** - Any species that is likely to become an endangered species within foreseeable future through all or a significant portion of its range.

No threatened and endangered species were observed within Detachment Norco during recent surveys. There are some species, however, that have the potential to use or have historically used habitats present within Detachment Norco including the southwestern willow flycatcher, coastal California gnatcatcher, and least Bell's vireo. These species and their status on Detachment Norco are described below and are depicted in Figure 6.

#### **Southwestern Willow Flycatcher (*Empidonax traillii extimus*)**

**Federal Status:** Endangered (1995), Critical Habitat (Final Rule 2005; Revised Critical Habitat Proposed Rule 2011)

**State Status:** Endangered; State Fully Protected (1995)

**Regional Status:** Multiple Species Habitat Conservation Plan (MSHCP) Covered Species (2003)



**Southwestern Willow Flycatcher**  
(*Empidonax traillii extimus*)

Southwestern willow flycatchers were not detected during the 2008-2009 surveys. Marginal nesting habitat for this species occurs at two locations on Detachment Norco: the riparian woodland and scrub near the northwest corner and willow woodland mixed with nonnative trees along the lake margin north of the Lake Norconian Club (Figure 6). Both of these areas contain nonnative trees and shrubs, but are suitable in vegetation structure and density to support this species. The nearest known breeding population of this species occurs approximately 3 miles southwest of Detachment Norco within the Santa Ana River (California Natural Diversity Database [CNDDDB] 2013). Additionally, no federally designated Critical Habitat for this species occurs on Detachment Norco.



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### **Coastal California Gnatcatcher (*Polioptila californica californica*)**

**Federal Status:** Threatened (1993); Critical Habitat (2007)

**State Status:** California Species of Special Concern

**Local Status:** MSHCP Covered Species (2003)

Coastal sage scrub within Detachment Norco is considered marginal to support a gnatcatcher breeding population and is fragmented by grasslands (Figure 5). The nearest sightings of the species are in the Norco Hills, approximately 2.4 miles east of Lake Norconian (CNDDDB 2013). Considering the proximity of known occurrences, it is possible that dispersing juveniles could appear on Detachment Norco, but nesting is unlikely given the marginal habitat structure. Revised designation of Critical Habitat for the gnatcatcher was finalized in 2007. Critical Habitat for gnatcatcher neither occurs nor is proposed for designation at Detachment Norco. The nearest Critical Habitat for this species is approximately 4.8 miles southwest of the installation.



**Coastal California Gnatcatcher**  
(*Polioptila californica californica*)

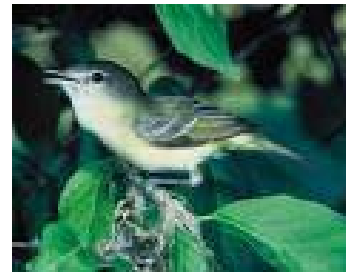
### **Least Bell's Vireo (*Vireo bellii pusillus*)**

**Federal Status:** Endangered (1986), Critical Habitat (1994)

**State Status:** Endangered (1980)

**Regional Status:** MSHCP Covered Species (2003)

Marginal nesting habitat for the least Bell's Vireo occurs at two locations on Detachment Norco: the riparian woodland and scrub near the northwest corner and willow woodland mixed with nonnative trees along the lake margin north of the Lake Norconian Club (Figure 6). Both of these areas contain nonnative trees and shrubs, but are suitable in vegetation structure and density. No least Bell's vireos were detected during the 2008-2009 surveys. However, least Bell's vireo was documented on Detachment Norco in 1996 (believed to be a migrant) (Aigner and Koehler 1996). The species nests commonly along the nearby Santa Ana River and has been pioneering habitats in recent years (AMEC 2009). The closest breeding population of this species occurs approximately 0.75 mile west of the site within the Santa Ana River (CNDDDB 2013).



**Least Bell's Vireo**  
(*Vireo bellii pusillus*)

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**Special-status Species Map**  
**Naval Weapons Station Seal Beach Detachment Norco,**  
**Norco, CA**

**FIGURE**  
**6**



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### **Delhi Sand Flower Loving Fly (*Rhaphiomidia terminates abdominalis*)**

**Federal Status:** Endangered (1993)

**State Status:** None

**Regional Status:** MSHCP Covered Species (2003)



**Delhi Sands Flower-Loving Fly**  
(*Rhaphiomidas terminatus abdominalis*)

The Delhi Sands flower-loving fly is restricted to open habitats underlain by fine, sandy soils associated with the "Delhi" series (USFWS 1993). Habitat conditions are typically relatively intact with open, sparse, native vegetation (desert sand-verbena vegetation series) with less than 50 percent vegetative cover (USFWS 1997). The Delhi Sands flower-loving fly reproductive period generally occurs in August and September, when the adults emerge from pupae and take flight. The current known distribution in Riverside County is fairly well understood and is limited to the northern portion of Riverside County in the vicinity of Mira Loma, Jurupa, and the Agua Mansa area (County of Riverside 2003). A USFWS Recovery Plan was developed for this species in 1997 (USFWS 1997). Detachment Norco is located approximately 0.62 mile from the Ontario Recovery Unit; for a detailed map of the Ontario Recovery Unit, refer to Appendix B - Figures 3 and 6 of the Recovery Plan (USFWS 1997). No Critical Habitat has been designated for this species. Detachment Norco is underlain by approximately 9.29 acres of soils associated with the Delhi series (Delhi fine sand soil type). No presence/absence surveys have been conducted for this species within the installation; however, the installation does not likely support suitable vegetation communities (desert sand-verbena) open sandy microhabitats to sustain this species.

### **3.3.1.4 Migratory Birds**

Many of the birds that use the Detachment Norco site for foraging and breeding habitat are protected by federal law under the MBTA (16 USC §703 et seq.) and EO 13186. The MBTA, enforced by the USFWS, makes it unlawful "by any means or manner, to pursue, hunt, take, capture [or] kill" any migratory bird except as permitted by regulation. The number of bird species covered by the MBTA is extensive, includes listed and non-listed species, and is listed at 50 CFR §10.13. The regulatory definition of "migratory bird" is broad and includes any mutation or hybrid of a listed species and includes any part, egg, or nest of such bird (50 CFR §10.12.).

To provide guidance for conflicts arising between military readiness activities and the MBTA, the USFWS issued the final rule on, "Migratory Bird Permits: Take of Migratory Birds by the Armed Forces" (50 CFR Part 21 in FR 28 February 2007, pages 8931-8950), hereinafter referred to as the Migratory Bird Rule. The Migratory Bird Rule authorizes the military to "take" migratory birds during military readiness activities under the MBTA without a permit. However, if the military determines that the activity will have a "significant adverse effect" on a population of migratory birds, they must work with the USFWS to develop and implement conservation measures to minimize and/or mitigate the

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effects. Currently there are no anticipated takes of migratory birds that would fall under this exemption.

Conservation measures under the Migratory Bird Rule require monitoring and record-keeping for years from the date the Armed Forces commence their conservation action. During INRMP reviews, the Armed Forces must report to the USFWS migratory bird conservation measures implemented and the effectiveness of the conservation measures in avoiding, minimizing, or mitigating take of migratory birds.

Many of the birds that use the Detachment Norco site for foraging and breeding habitat are covered under the MBTA. For a full list of bird species occurring on Detachment Norco please refer to Appendix I of the INRMP.

### 3.3.1.5 Other Species of Special Concern

Other species of special concern include those proposed for listing as threatened and endangered, or candidates for such listing. Also included in this category are species protected by the Bald and Golden Eagle Protection Act of 1940 (16 USC 668-668d, 54 Stat. 250) as amended (Eagle Act). The Eagle Act also includes the golden eagle, an irregular winter visitor. Detachment Norco is obligated to conserve these special-status species under the provisions of the Endangered Species Act as well as the Eagle Act.

Additionally, species of special concern include former candidates for federal listing, state-listed endangered or threatened, species of special concern in the State of California, and species that are regionally rare or of limited distribution. Although protection of non-federally-listed threatened and endangered species or other federally-protected species is not mandatory on federal installations such as Detachment Norco, management of these species contributes to the overall maintenance of their natural populations and reduces the likelihood that these species will be given additional regulatory protection in the future. Ecosystem-based management is a process that considers the environment as a complex system functioning as a whole, not as a collection of parts. Accordingly, managing for keystone species, such as these species, and their habitat also benefits other species. Applicable classifications for these species are as follows:

- **Candidate (C)** - Species for which there is sufficient information on biological vulnerability and threats to support proposals to list them as endangered or threatened.
- **Proposed (PT, PE)** - Any species that has been proposed for listing as threatened or endangered species.

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- **Federal Species of Concern (FSC)** - Species formerly under consideration by the USFWS for status changes (includes Category 1, 2, and 3 taxa). As of February 1996, the USFWS discontinued the use of these designations, but remains concerned about these species and encourage further study into their conservation status.
- **State Endangered (SE)** - Any species that is in danger of extinction throughout all or a significant portion of its California range.
- **State Threatened (ST)** - Any species that is likely to become an endangered species within foreseeable future through all or a significant portion of its California range.
- **State Fully Protected (FP)** – These species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting necessary scientific research and relocation of individuals for the protection of livestock.
- **California Species of Special Concern (SSC)** - Potentially jeopardized taxa (i.e., any taxonomic group such as species, family, or class). The status of these taxa could possibly change to threatened or endangered, or be removed from the list when further data are available. This category includes special animals (those listed in the California Natural Diversity Database) as well as species on the CDFW watch list.
- **Bird of Conservation Concern (BCC)** - All nongame birds, gamebirds without hunting seasons, subsistence-hunted nongame birds in Alaska; and Endangered Species Act candidate, proposed endangered or threatened, and recently delisted species.
- **State Rare (CR)** - A plant species, subspecies, or variety not presently threatened with extinction, but found in such small numbers throughout its California range that it may be endangered if conditions change.

### Special Status Wildlife Species

As described in the sections above, these species include former candidates for federal listing as threatened or endangered, state-endangered or –threatened species, species of special concern to the State of California, and species that are regionally rare or of limited distribution.

Many of the birds that use the Detachment Norco site for foraging and breeding habitat are covered under the MBTA. The MBTA implements conventions between the U.S. and four neighboring countries (Canada, Mexico, Japan, and Russia) for the protection of migratory birds. This act generally prohibits the taking, possession, or destruction of these birds, as well as their nests or eggs. Most native songbirds are also protected by the MBTA. A list

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of birds protected under the MBTA are presented in 50 CFR §10.13 - *List of Migratory Birds*.

Based on DoD policy, neotropical migratory bird programs shall be established in support of and consistent with the military mission. The DoD strategy is to focus on inventory, on-the-ground management practices, education, and long-term monitoring (DoD 2011). Its Partnership in Flight program seeks to conserve and manage these birds and their habitat on military installations.

The following is a description of the birds observed on Detachment Norco (Figure 6).

**Burrowing Owl (*Athene cunicularia*).** The burrowing owl is a federal species of concern covered under the MBTA and listed as a USFWS BCC. Additionally the burrowing owl is a California species of special concern and listed as a MSHCP Criteria Area Species (2003). The burrowing owl was confirmed as a nesting species in 1996 (Aigner and Koehler 1996), but the area containing the active nest is now part of the restricted access area that was not surveyed in 2008-2009 (AMEC 2009) (Figure 6). Anecdotal reports from security personnel on Detachment Norco indicate that there has been recent occupation by burrowing owls within the nonnative grassland habitat behind Buildings 501, 502, and 503, but no owls were observed by survey biologists. At least two burrows in this area contain rodent bones, indicating somewhat recent occupation. An additional area, near the northwest corner of Lake Norconian, is occupied commonly by California ground squirrels, and their burrows and the open habitat at this location is suitable for burrowing owls. Both of these areas are shown on Figure 6.



**Burrowing Owl**  
(*Athene cunicularia*)

**Common Yellowthroat (*Geothlypis trichas*).** The common yellowthroat is a BCC. This small songbird was identified on Detachment Norco during CBC's conducted between 2000 and 2010. The breeding habitats of these birds are marshes and other wet areas with dense low vegetation; it may also be found in other areas with dense shrub.

**Lawrence's Goldfinch (*Spinus lawrencei*).** Lawrence's goldfinch is a BCC that breeds across a small range in the woodlands of California and Baja California. Its highly erratic movements from year to year make assessment of its population trends very difficult. This species was observed on Detachment Norco in 2011.

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**Peregrine Falcon (*Falco peregrines anatum*).** Only one peregrine falcon has been detected on Detachment Norco during the 2001 CBC. In California, peregrine falcons inhabit coastal sage scrub communities that are associated with coastal dunes, perennial grasslands, annual grasslands, croplands, pastures, forests, coastal oak woodlands, montane hardwood woodlands, and chaparral communities.

**Prairie Falcon (*Falco mexicanus*).** The prairie falcon is a BCC and CDFW “watch list” species. This bird of prey was detected on Detachment Norco in 2006 and 2012. In California, it is an uncommon permanent resident that ranges from southeastern deserts northwest throughout the Central Valley and along the inner Coast Ranges and Sierra Nevada that is associated primarily with perennial grasslands, savannahs, rangeland, some agricultural fields, and desert scrub areas

**Song Sparrow (*Melospiza melodia*).** The song sparrow is a BCC that is a year-round resident in many regions. The song sparrow has the greatest number of genetically distinct populations of any bird in North America. This species has been documented on Detachment Norco several times between 1997 and 2012.

**Spotted Towhee (*Pipilo maculates*).** The spotted towhee is a BCC. Their breeding habitat is chaparral, thickets or shrubby areas across western North America. The spotted towhee was detected on Detachment Norco in 1996 and between 2000 and 2002 during CBBs.

**Loggerhead Shrike (*Lanius ludovicianus*).** The loggerhead shrike is a BCC and CDFW SSC and was confirmed as a breeder in 1996, but appears to no longer occur on the installation. A population decline of this species has been noted on the coastal slope of southern California in recent years (Humple 2008).

**Cooper's Hawk (*Accipiter cooperii*).** The Cooper's hawk is a CDFW “watch list” species. It was confirmed as a successful breeder on June 15, 2009, when two fledglings were observed near their nest in a Brazilian pepper tree that occurs in the eastern portion of Detachment Norco (AMEC 2009) (Figure 6). This species is also observed during some winters during CBCs (four of ten years during 1998-2007), and is probably best described as an uncommon winter visitor and migrant, and an occasional breeder.

**Southern California Rufous-crowned Sparrow (*Aimophila ruficeps canescens*).** The southern California rufous-crowned sparrow is a CDFW “watch list” species. This subspecies is a permanent, non-migratory resident of coastal southern California that exhibits a distinct preference for rocky hillsides and steep slopes in open grass and coastal sage scrub habitats (Collins 1999). A singing rufous-crowned sparrow was detected during the 2008-2009 surveys along the central-eastern boundary of Detachment Norco (Figure 6). This bird was frequenting low, planted shrubbery just outside the boundary fence, but undoubtedly ventured onto Detachment Norco during foraging. The date range of the detections suggested that the bird was on a breeding territory, although it was unknown whether the bird had a mate (AMEC 2009).



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**Great Blue Heron (*Ardea herodias*).** The great blue heron is listed as a “special animal” by the CDFW (CDFW 2013). A great blue heron rookery (nesting area) occurs on the island located within Lake Norconian. Six active nests were observed throughout the spring and early summer of 2009, and chicks were visible during May and June. During the CBCs of 1998-2007, a mean of 2.2 birds were observed. If nesting at Detachment Norco is a recent occurrence, winter numbers may increase, as this species may be a year round resident.

**Redhead (*Aythya americana*).** The redhead is a CDFW SSC (nesting) and uncommon winter visitor. This species was observed during 2008-2009 surveys and is known as a locally uncommon nesting bird on the coastal slope of southern California, and future nesting at Lake Norconian is possible.

**Yellow Warbler (*Dendroica petechia brewsteri*).** The yellow warbler is a CDFW SSC that breeds in lowland and foothill riparian woodlands. Three territorial males were present around Lake Norconian in 2009 (Figure 6). Along the nearby Santa Ana River, the yellow warbler is quite common (CNDDB 2013).

**Horned Lark (*Eremophila alpestris*).** The horned lark is a CDFW “watch list” species and was not recorded during the 2008-2009 surveys, but was observed in 1996. This species occurs in very open habitats, including nonnative grasslands, and especially areas with barren ground (such as recently graded areas).

**American White Pelican (*Pelecanus erythrorhynchos*).** The American white pelican is a CDFW SSC (nesting colonies). Based on the present surveys and recent CBCs, the American white pelican is a rare to uncommon winter visitor and migrant. However, this species is somewhat more frequently observed at nearby water bodies such as Lake Mathews and Hidden Valley Wildlife Area. The American white pelican is not believed to nest on Detachment Norco.

**Double-crested Cormorant (*Phalacrocorax auritus*).** The double-crested cormorant is on the CDFW “watch list” (rookery site). During winter, numbers of this species vary widely. The high count was 196 on the CBC of 17 December 2000, but as few as three have been detected on the CBCs (28 December 2003). During surveys in 2009, numbers steadily declined from winter into summer, and none were present on surveys in late May and mid June.

**White-faced Ibis (*Plegadis chihi*).** The white-faced ibis is a CDFW “watch list” (rookery site) species. There is one documented sighting of a flock of 200 at Lake Norconian on 16 December 2007. White-faced Ibis is a fairly common winter resident in the Chino and Prado Basin areas.

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**Black-crowned Night-Heron (*Nycticorax nycticorax*).** The black-crowned night heron is listed as a “special animal” by the CDFW. This species roosts on the island located within Lake Norconian. A maximum of eight were present during the surveys, but as many as 23 have been counted on the CBCs (18 December 2005). They are known to nest in the region, but no breeding has been observed at Lake Norconian.

In addition, a number of other mammalian, reptilian, and amphibian species of regional special concern have been known to occur on base. A detailed discussion of these species can be found in the updated INRMP.

### Rare and Sensitive Plants

A list of rare plants in California is maintained by the California Native Plant Society (CNPS). The CNPS is a private plant conservation organization dedicated to the monitoring and protection of sensitive species in the state. CNPS has compiled an inventory comprised of the information focusing on geographic distribution and qualitative characterization of rare, threatened, or endangered vascular plant species of California. The list serves as the candidate list plant species for listing as threatened and endangered by the CDFW.

CNPS has developed five categories of rarity:

- List 1A: Presumed Extinct;
- List 1B: Rare, threatened, or endangered throughout their range;
- List 2: Rare, threatened, or endangered in California, but more common in other states;
- List 3: Plant species for which additional information is needed before rarity can be determined; and,
- List 4: Species of limited distribution in California (i.e., naturally rare in the wild), but whose existence does not appear to be susceptible to threat.

The most recent plant surveys were conducted in 1996; however, no rare or sensitive plants were identified during these surveys (NAVFAC Southwest 1998). A review of the Norco North United States Geological Survey quadrangle in the CNDDDB and CNPS Online *Inventory of Rare and Endangered Plants* (CNPS 2013) indicates that two rare plants (presented below) are known to occur within the vicinity of Detachment Norco within similar habitats that are present on Detachment Norco.

**Chaparral Sand-verbena (*Abronia villosa* var. *aurita*).** Chaparral sand verbena is a CNPS List 1B species that occurs in sandy soils of chaparral, coastal scrub and dune habitats (CNPS 2013). Although the coastal sage scrub on Detachment Norco is underlain by sandy soils, this habitat has low potential to support this species in its current, disturbed and fragmented state.

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**Smooth Tarplant (*Centromadia pungens* ssp. *laevis*).** Smooth tarplant is a CNPS List 1B species that occurs in a variety of habitat including chenopod scrub, meadows and seeps, playas, riparian woodland and grasslands (CNPS 2013). The grassland and riparian habitat on Detachment Norco have high to moderate potential to support this species.

### 3.3.2 Proposed Action Impacts

Implementation of the Proposed Action would involve implementation of programs outlined in the updated INRMP, including individual projects listed in the Vegetation Management Program, Invasive Species Management Program, Wetland Management Program, Fish and Wildlife Management, Threatened and Endangered Species Management, and Species of Regional Concern Management Program (Appendix A). These individual projects would be intended to monitor, protect, and enhance vegetation communities, wildlife (including MBTA birds), threatened and endangered species, and species of regional concern at Detachment Norco, and would be designed and evaluated for project-specific environmental outcomes so as to fulfill that goal. Therefore, implementation of the Proposed Action would result in an overall beneficial effect to biological resources at Detachment Norco.

### 3.3.3 No-Action Alternative Impacts

Under the No-Action Alternative, management programs proposed within the updated INRMP would not be implemented. The No-Action Alternative would result in maintaining the status quo of ecosystem management at Detachment Norco. Under the No-Action Alternative management strategies which promote sustainable and diverse aquatic and terrestrial communities would be carried forward. The continued implementation of these strategies would benefit biological resources through practices such as invasive species removal, native re-vegetation, and nesting bird habitat protection. Additionally, under the No-Action Alternative biological surveys would continue at Detachment Norco. However, due to the projected degradation of some habitat types (e.g. ponds, see Section 3.2, *Water Resources*), the implementation of the No-Action Alternative would result in an overall less than significant adverse effect to biological resources.

## 3.4 Land Use

Land use can generally be separated into two primary categories: *natural* and *human modified*. *Natural* land uses include undeveloped areas and natural habitats (as described in Section 3.3.1). *Human-modified* land uses include residential, commercial, industrial, communications and utilities, agricultural, institutional, recreational, and generally other areas that are not in a natural land cover condition. Land use is regulated by management plans, policies, regulations, and ordinances (i.e., zoning) that determine the type and extent of land use allowable in specific areas and protect specially designated or environmentally sensitive areas.

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### **3.4.1 Existing Conditions**

Described below are the existing land use conditions at Detachment Norco. The existing conditions are discussed in terms of regional land use and land use on the installation.

#### **3.4.1.1 Regional Land Use**

Detachment Norco is within the limits of the City of Norco (Figure 7) which was incorporated in 1964. The City of Norco is an animal-keeping and equestrian-oriented community known as "Horsetown USA," which is situated along Interstate 15 in western Riverside County. City limits cover an area of approximately 15 square miles, with a population of approximately 27,255 as of 2008 (Southern California Association of Governments 2009). The City of Norco maintains more than 400 acres of parkland and 120 miles of pedestrian/equestrian trails. Norco is also home to the CRC and the Norco College (formerly the Riverside Community College, Norco Campus). The majority of the land that comprises the City of Norco is developed. The land that borders Detachment Norco is made up mostly of commercial, industrial, residential, and agricultural uses.

#### **3.4.1.2 Installation Land Use**

Detachment Norco supports the NSWC Corona mission, which is to "Serve warfighters and program managers as the Navy's independent performance assessment agent throughout systems' lifecycles by gauging the Navy's warfighting capability of weapons and integrated combat systems, from unit to force level, through assessment of those systems' performance, readiness, quality, supportability, and the adequacy of training. Execute other responsibilities as assigned by the Commander, Naval Surface Warfare Center." In order to carry out this mission, NSWC Corona possesses a number of unique capabilities. Among these are the Joint Warfare Assessment Lab, the cornerstone of NSWC Corona's integrated approach to warfare assessment and the focal point of internal and external interconnectivity; the Daugherty Memorial Assessment Center; and the Measurement Science and Technology Lab.

No training or troop activity is conducted on the facility. Detachment Norco research and analysis activity requires only office, laboratory, data processing, and communications facilities including large outdoor satellites and communication towers. Detachment Norco represents one of the Navy's scientific and engineering computer operations and analytical complexes.






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






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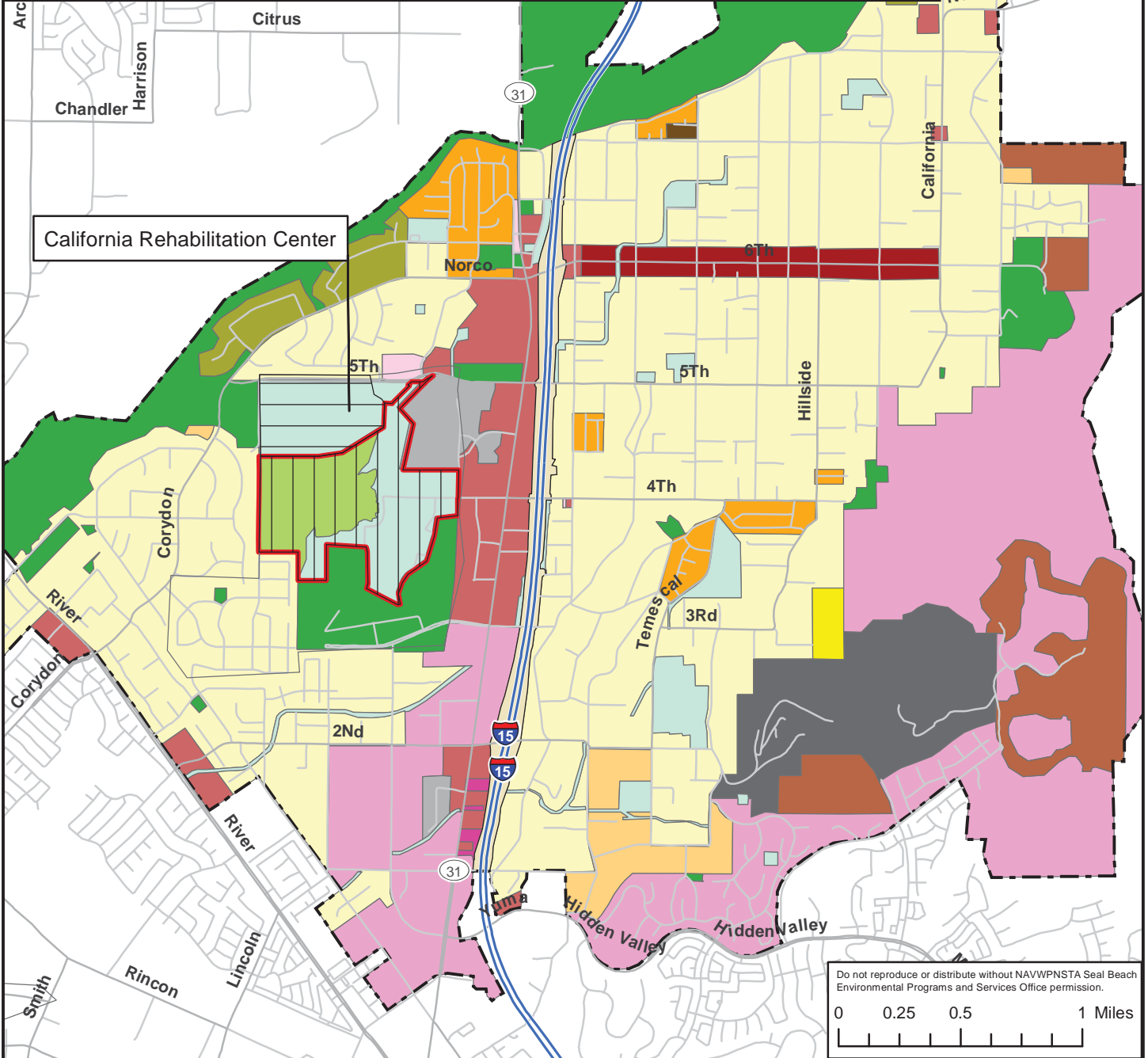
**Legend**

-  Detachment Norco Boundary
-  Norco City Limits
- Owner**
-  Military
-  State Lands--State Lands Commission
-  Unclassified

**Land Use Zones 5/2/2007**

-  Agricultural - Low Density 10 ac.
-  Agricultural - Low Density 20,000 sq. ft.
-  Agricultural - Low Density 40,000 sq. ft.
-  Agricultural Estate
-  Commercial
-  Commercial General
-  Commercial Office
-  General Manufacturing
-  Heavy Commercial/Light Manufacturing
-  Hillside Agricultural - Low Density
-  Interstate
-  Limited Development
-  M-1 (CTO-1) Commercial Transition Overlay
-  Open Space
-  R-1-10 (AKO) Animal-Keeping Overlay
-  Residential - Single Family 10,000 sq. ft.
-  Specific Plan
-  Operational Space

Data Source: City of Norco Zoning Map, May, 2007



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**Land Ownership and Land Use  
 Naval Weapons Station Seal Beach Detachment Norco,  
 Norco, CA**

**FIGURE  
 7**



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### 3.4.2 Proposed Action Impacts

Implementation of the Proposed Action would involve implementation of programs outlined in the updated INRMP. Individual projects included in the Land Use Management Program would help to enhance quality of life at Detachment Norco and foster a sense of community pride among those supporting and participating in activities at Detachment Norco. In addition, individual projects for wildlife and vegetation management would contribute to efforts related to regional species and habitat conservation plans. Further, no projects or programs included in the updated INRMP would result in inconsistencies or non-compliance with applicable land use plans or policies. Therefore, implementation of the Proposed Action would result in an overall beneficial effect on land use.

### 3.4.3 No-Action Alternative Impacts

Under the No-Action Alternative, management programs proposed within the updated INRMP would not be implemented. The No-Action Alternative would result in maintaining the status quo of land use management at Detachment Norco. As the installation currently complies with existing land use plans and policies, there would be no change from present conditions in terms of impacts to land use at Detachment Norco and in the region. Land use would remain as described in Section 3.4, *Land Use*. Under the existing INRMP strategies aimed at protecting and enhancing land at Detachment Norco would continue to be carried out, while also fulfilling the mission requirements. Landscaping would respect the native plant setting and historical architectural design, enhancing the quality of life for those working at the facility. Additionally, base land use and environmental planning would continue to be comprehensive and integrated in order to reduce any potential land use conflicts. Therefore there would be no significant impact to geological resources under the No-Action Alternative.

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### SECTION 4 CUMULATIVE EFFECTS ANALYSIS

#### 4.1 Cumulative Effects

CEQ Regulations (40 CFR 1500-1508) for Implementing the Procedural Provisions of NEPA of 1969, as amended (42 USC §4321 et seq.) define cumulative effects as:

“The impact on the environment which results from the incremental impact 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 §1508.7).

The contribution of a Proposed Action to the overall cumulative impacts in a region of influence is of particular concern. A single project may have individually minor impacts; however, when considered together with other projects, the effects may be collectively significant. A cumulative impact is, therefore, the additive effect of all projects in the same geographic area.

In general, effects of a particular action or group of actions must meet all of the following criteria to be considered cumulative impacts:

- Effects of several actions occur in a common locale or region (i.e., action can contribute to effects of another action in a different location with the same general locale/region).
- Effects on a particular resource are similar in nature (i.e., affects the same specific element of a resource).
- Effects are long-term; short-term impacts dissipate over time and cease to contribute to cumulative impacts.

#### 4.2 Other Past, Present, and Reasonably Foreseeable Future Actions

The Proposed Action, in compliance with the Sikes Act, OUSD Memorandum of 08 August 1994, *Implementation of Ecosystem Management in the Department of Defense*, and OPNAVINST 5090.1C CH-1, would update Detachment Norco’s INRMP. Projects included in the updated INRMP would be intended to manage, conserve, and rehabilitate natural resources of Detachment Norco in accordance with applicable federal, state, and local laws and regulations, while being consistent with the military use of Detachment Norco to ensure military readiness. Table 6 presents a list of past, present, and reasonably foreseeable future actions at Detachment Norco. In general, these projects include infrastructure maintenance activities and facility construction, renovation, and demolition. Facilities proposed for demolition are not listed or eligible for listing by the National Register of Historic Places, and all new facilities construction would be designed to fit in

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with the California Mediterranean Revival style of the existing buildings. In addition, any new facilities would incorporate sustainable principles and Anti-terrorism/Force Protection measures and all construction activities associated with cumulative projects would incorporate standard BMPs to reduce construction related impacts.

**Table 6 – Cumulative Projects at Detachment Norco**

Project Title	Project #	Fiscal Year	Size (sf)
Repair Electrical Substation 546	ST300-07	2007	n/a
Renovation of Building 516	RM1112699	2011	n/a
Building 523 Improvements	RM1112731	2011	n/a
Replace Cast Iron Water Lines	ST09-2671	2012	47,516 linear feet
Test and Training Range Engineering Lab	P009	2016	23,056 sf
Fleet Range Support and Exercise Assessment Lab	P010	2017	43,443 sf
Applied Metrology Lab	P012	2017	20,010 sf
Quality Assessment Integration Lab	P011	2019	38,298 sf

Notes: Some of the projects are conceptual and have not been approved or funded for construction  
sf square feet  
n/a not applicable

Currently, the last substantial development project proposed in the immediate vicinity of Detachment Norco was the Silverlakes Equestrian and Sports Park (S. King, City of Norco, pers. comm.), a 122-acre equestrian center and sports facility near the corner of Hmner Avenue and Citrus Street. No additional projects have been proposed (City of Norco 2008; S. King, City of Norco, pers. comm.).

All activities under the Proposed Action are expected to be confined to Detachment Norco and would have no adverse cumulative impacts on the surrounding area. In addition, natural resource management projects included in the Proposed Action would positively contribute to regional wildlife and habitat conservation and protection efforts. The potential cumulative impacts of the Proposed Action are addressed below in terms of each resource area.

### 4.3 Potential Cumulative Impacts by Environmental Resource Area

Described below are the potential cumulative impacts by environmental resource areas including, geological resources, water resources, biological resources, and land use.

#### 4.3.1 Geological Resources

Both the Proposed Action and No-Action Alternative include soil management efforts that would protect and restore soil productivity and nutrient functioning on the installation. Implementation of these alternatives would involve only minor and short-term disturbance of soils during vegetation clearing and grading but with the use of BMPs, the alternatives would result in overall benefits to geological resources as they would prevent and control erosion. BMPs would also be incorporated into the design and construction of all of the

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cumulative projects detailed in Table 6, which would result in reduced impacts to geological features and prevent soil erosion. Therefore, implementation of the Proposed Action and the No-Action Alternative would not result in significant cumulative impacts to geological resources.

### 4.3.2 Water Resources Including Wetlands

Implementation of the Proposed Action would involve individual projects designed to protect and enhance water resources and wetlands at Detachment Norco. As a result, implementation of the Proposed Action would result in overall positive effects on water resources, including enhancing wetlands. BMPs to control potential erosion and sedimentation would also be implemented during all ground disturbing activities associated with the cumulative projects in Table 6. Therefore, the Proposed Action would not result in significant cumulative impacts to water resources.

The existing water resources at Detachment Norco, particularly the ponds, are currently in a degraded state. The No-Action Alternative involves continuing currently conducted practices to protect these water resources to some degree; however, these efforts have not been sufficient to completely halt the degradation occurring, particularly to the ponds. In addition to the cumulative projects' compliance with local, federal and state water resource protection requirements and use of water protection BMPs, Low-Impact Development would be incorporated into the design and construction of the cumulative projects to further protect water resources. Therefore, the effects of the No-Action Alternative, when added to the effects of the cumulative projects, would not result in significant cumulative impacts to water resources.

### 4.3.3 Biological Resources

The updated INRMP includes individual projects intended to monitor, protect, and enhance vegetation communities, wildlife (including MBTA birds), threatened and endangered species, and species of regional concern at Detachment Norco. Therefore, implementation of the Proposed Action would have an overall beneficial effect on biological resources. Additionally, the cumulative projects outlined in Table 6 include sensitive wildlife and vegetation protection measures to control the potential negative effects of construction activities on biological resources occurring on or frequenting the installation. Therefore, the implementation of the Proposed Action would not result in significant cumulative impacts to biological resources.

The No-Action Alternative consists of the continuation of the sensitive animal and plant protection measures that are currently being conducted on Detachment Norco. Although these measures are benefitting many wildlife and plant species, the degradation of some habitat types continues (e.g. ponds, see Section 3.2, Water Resources). The cumulative projects contain measures that will be implemented to protect biological resources during construction and post-construction activities, resulting in overall beneficial effects to sensitive animals and plants. Therefore, when added to the cumulative projects, the No-



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Action Alternative would have a less than significant cumulative impact on biological resources.

### **4.3.4 Land Use**

No projects or programs included in the updated INRMP would result in inconsistencies or non-compliance with the applicable land use plans or policies at Detachment Norco and within the region. Similarly, the implementation of the cumulative projects in Table 6 would also not result in any inconsistencies or non-compliance with applicable land use plans or policies. Implementation of the Proposed Action; therefore, would not contribute to cumulative impacts to land use.

The No-Action Alternative would result in maintenance of the status quo of land use management at Detachment Norco. As the installation currently complies with applicable land use plans and policies, the implementation of the No-Action Alternative, in combination with the cumulative projects (which are also in compliance with applicable land use plans and policies) would not contribute to cumulative impacts with regard to land use and compatibility.

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### SECTION 5 OTHER NEPA CONSIDERATIONS

#### 5.1 Introduction

This section addresses additional concerns from other NEPA considerations related to implementation of the Proposed Action. These considerations include: possible conflicts between the Proposed Action and objectives of federal, state, regional and local plans, policies, and controls; irreversible and irretrievable commitments of resources; the relationship of short-term uses and the maintenance and enhancement of long-term productivity; and energy requirements and conservation potential of the various alternatives.

#### 5.2 Possible Conflicts Between the Alternative and the Objectives of Federal, Regional, State and Local Plans, Policies and Controls

Implementation of the Proposed Action would comply with existing federal regulations as well as existing state, regional and local policies and programs while maintaining the military mission. The No-Action Alternative also complies with these existing regulations and policies.

#### 5.3 Irreversible and Irretrievable Commitment of Resources

Resources irreversibly and irretrievably committed to a project are used on a long-term or permanent basis. Non-renewable natural and human resources, such as labor, petroleum and metals and cultural resources are examples. If a resource could have been used for other purposes, it is considered irretrievable. The unavoidable destruction of natural resources that could limit the range of potential current and future uses of the site also falls into this category. Examples of irreversible commitments include mining and harvesting old growth forest products.

Implementation of the Proposed Action and the No-Action Alternative would involve the consumption of resources for land management, restoration and land maintenance activities. Such activities would require fuel, chemical products in the form of herbicides and pesticides, and human labor for restoration activities; however, the commitment would be short-term and amounts would not be significant.

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### **5.4 Sustainability and Long-Term Management: Relationship of Short-Term Uses and the Maintenance and Enhancement of Long-term Productivity**

NEPA requires an analysis of the relationship between a project's short-term impacts to the environment and the effects that these impacts may have on the maintenance and enhancement of the long-term productivity of the affected environment. Impacts that narrow the range of beneficial uses of the environment are of particular concern. This refers to the possibility that choosing a single development option reduces future flexibility in pursuing other options, or that giving over a parcel of land or other resource to a certain use eliminates the possibility of other uses performed at that site.

Implementation of the Proposed Action would help to manage, conserve, and rehabilitate natural resources of Detachment Norco. Consequently, these efforts would contribute to the long-term maintenance and enhancement of biological resources. The No-Action Alternative would not result in any impacts that would permanently narrow the range of beneficial uses of the environment.

### **5.5 Energy Requirements and Conservation Potential of Various Alternatives and Mitigation Measures Being Considered**

Consumption of energy for routine maintenance activities and habitat restoration projects would be minimal under the Proposed Action. Mitigation measures would not be required for implementation of the Proposed Action or No-Action Alternative. Therefore, there is not anticipated to be energy conservation potential and mitigation measures for implementation of any of the alternatives.

### **5.6 Any Probable Adverse Environmental Effects that Cannot be Avoided and are not Amenable to Mitigation**

Implementation of either the Proposed Action or the No-Action Alternative is not anticipated to generate adverse environmental effects that are unavoidable or not amenable to mitigation.

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### **SECTION 6 AGENCIES CONSULTED**

The following agencies were consulted during the development of this EA:

- U.S. Fish and Wildlife – Carlsbad, California
- California Department of Fish and Wildlife – Ontario, California
- City of Norco – Norco, California
- Audubon Society
- Lake Norconian Club Foundation– Norco, California
- NSWC Corona – Norco, California

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## **APPENDIX A**

### **MANAGEMENT GOALS, OBJECTIVES, AND STEWARDSHIP STRATEGIES FOR NATURAL RESOURCES AT DETACHMENT NORCO**



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**NAVWPSTA Seal Beach Detachment Norco Implementation Table**

Project or Activity/Objective	EPR Number	ERL Number	INRMP Section	Scheduled Implementation	Prime Legal Driver	Funding Class	Focus Areas	Cost Estimate	Responsible Party
<b>Land Use Management Program</b>									
<b>Goal: Provide a sound basis for management and design of landscaping and grounds, their ability to enhance quality of life and foster a sense of community pride among those supporting and participating in activities at Detachment Norco.</b>									
Perform a formal facility water conservation audit that would evaluate water conservation options for landscaped facilities.	NA	4	5.3.2.2		EO 13423, EO13514	-	Ecosystem Integrity		Public Works
Implement water conservation measures based on the results of a facility water conservation audit.	NA	4	5.3.2.2	Ongoing	EO 13423, EO13514	-	Ecosystem Integrity		Public Works
Identify the design goals and objectives for the developed landscapes of the installation. Incorporate these goals and objectives into a Landscape Management Plan that would present management directives for both natural and developed landscapes of Detachment Norco. Implement the Landscape Management Plan per the Vegetation Management Program detailed below.	NA	4	5.3.2	2012	EO 13423, EO13514	-	Ecosystem Integrity		Environmental Department/ Public Works
<b>Soil Management Program</b>									
<b>Goal: Protect and restore soil productivity, nutrient functioning and wildlife habitat through effective implementation of Best Management Practices (BMPs) to prevent and control soil erosion.</b>									
Develop new or use proven BMPs to prevent and control erosion and protect sensitive resources and habitats. Ensure incorporation of BMPs in the preliminary engineering, design, and construction of facilities involving ground disturbance.	NA	4	5.2	Ongoing	Sikes Act, CWA, EO 13148, OPNAVINST 5090.1C CH-1, Ch. 9	-	Ecosystem Integrity		Environmental Department

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Project or Activity/Objective	EPR Number	ERL Number	INRMP Section	Scheduled Implementation	Prime Legal Driver	Funding Class	Focus Areas	Cost Estimate	Responsible Party
<b>Vegetation Management Program</b>									
<b>Goal 1: Provide for a continued mosaic of natural and managed upland plant communities to promote biodiversity, erosion control, wildlife habitat, and aesthetics.</b>									
Conduct an initial vegetation inventory within the installation. In addition to this inventory, an evaluation of insects or birds that are dependent on specific plant species will be conducted to determine if management of these species is necessary.	61013N R004	4	5.10	2014	Sikes Act, DoD 4715, & 5090, EO13112	1	Ecosystem Integrity		Environmental Department
Monitor vegetation every five years and maintain a comprehensive floristic species list of plant species, including invasives that occur within the entire installation.	TBD	4	5.10	2015	Sikes Act, DoD 4715, & 5090, EO13112	1	Ecosystem Integrity		Environmental Department
Prepare and implement a Landscape Management Plan which would include the management of vegetation within developed and undeveloped areas of the installation. The Landscape Management Plan would include objectives and tasks for the management of wildland fire vegetation, invasive and noxious weed species, and landscaped areas that are part of the Lake Norcomian Historic District."	61013N R009	4	5.3.2	2015	Sikes Act, EO 11990, EO 13112, EO 11987, DoD Instruction 6055.6 NHPA 36 CFR 800; DoD Directive 4710.1	1	Ecosystem Integrity		Environmental Department/Public Works
Conduct habitat restoration activities: 1) Restore and revegetate upland areas that have been significantly disturbed by noxious weed control activities with appropriate native species that are known from the local region; 2) enhance existing coastal sage scrub (CSS) and grassland habitats by removing nonnative grasses and forbs and replanting with appropriate native species that are known from the local region.	61013N R007	4	5.4.1.1 & 5.3.1	2010-2015	Sikes Act, EO 11990, EO 13112, EO 11987	2	Ecosystem Integrity		Environmental Department

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Project or Activity/Objective	EPR Number	ERL Number	INRMP Section	Scheduled Implementation	Prime Legal Driver	Funding Class	Focus Areas	Cost Estimate	Responsible Party
Educate NSWC Corona Division grounds maintenance personnel about sensitive habitat areas (CSS and native grass stands) to be excluded from landscape maintenance activities with the exception of weed control activities. Also, educate personnel on timing of landscape maintenance activities such as only trimming trees from October to December to avoid breeding bird season.	NA	4	5.3	Ongoing	Sikes Act	-	Ecosystem Integrity		Environmental Department
Monitor the condition and trend of vegetation communities. Update the installation's vegetation mapping every five years and maintain a GIS geodatabase for these data per the Geographical Information System Management Program detailed below.	61013N R004	4	5.3.1 and 5.12	2014	Sikes Act, DoD Directive 5090, 4715.03 EO 13112	2	Ecosystem Integrity		Environmental Department
<b>Goal 2: To maintain and enhance historic landscapes registered as NRHP sites.</b>									
Identify goals and management strategies for historic landscapes located within the installation. These goals and management strategies would be incorporated into and implemented per the Landscape Management Plan discussed above (Vegetation Management Program).	61013C R004	4	5.3.2		Sikes Act, NHPA 36 CFR 800; DoD Directive 4710.1	3	Ecosystem Integrity		
<b>Invasive Species Management Program</b>									
<b>Goal: Eradicate invasive plant species that have potential to alter native upland and wetland plant communities.</b>									
Conduct an inventory of noxious weeds; identify and prioritize areas that are dominated by invasive species that are considered high priority by the Cal-IPC. Maintain a comprehensive noxious and invasive plant species list and GIS geodatabase.	TBD	4	5.4.1.1 & 5.1.2	2011/Ongoing	FNWA, OPNAVINST 5090, DoDI 4715.03, EO 11990, EO 13112, EO 11987	1	Ecosystem Integrity		Environmental Department

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Project or Activity/Objective	EPR Number	ERL Number	INRMP Section	Scheduled Implementation	Prime Legal Driver	Funding Class	Focus Areas	Cost Estimate	Responsible Party
Based on the results of the noxious weed inventory, identify management goals and strategies for the control of high priority noxious and invasive plant species. These goals and management strategies would be incorporated into and implemented per the Landscape Management Plan discussed above (Vegetation Management Program).	TBD	4	5.4.1.1	2012	EO 13112, EO 11987	1	Ecosystem Integrity		Environmental Department
Annually eradicate or control the spread and introduction of nonnative and invasive upland plant species (i.e. thistles, mustards, fennel, etc.), with emphasis on those with greatest potential for negative impacts.	6101312106	4	5.4.1.1	2012	EO 13112, EO 11987	1	Ecosystem Integrity		Environmental Department
<b>Goal 2: Control invasive wildlife species that have potential to alter wildlife communities.</b>									
Identify threats that invasive terrestrial and aquatic wildlife species (i.e. European starling, brown-headed cowbird, bullfrog, and African clawed frog) may pose to native songbird and aquatic species (i.e. predation, competition and nest parasitism). Prepare and implement an Invasive Species Control Plan as necessary.	61013NR001 and 61013NR002	4	5.4.1.1	2012-2013	EO 13112, EO 11987	1	Ecosystem Integrity		Environmental Department
<b>Wetland Management Program</b>									
<b>Goal: To protect and enhance wetland resources at Detachment Norco.</b>									
Inventory and map wetland and non-wetland waters of the U.S.	TBD	4	5.5	2013	CWA, EO 13112, EO 11990, OPNAVINST 5090, DoDI 4715.03	1	Ecosystem Integrity		Environmental Department
Enhance wetland habitat by annually eradicating and removing nonnative and invasive wetland plant species (i.e. palms, tamarisk, giant reed, castor bean etc.). Removal activities should be conducted outside of riparian bird breeding season (15 March through 31 August).	6101312106	3	5.5	2010-2015	EO 13112, EO 11990	1	Ecosystem Integrity		Environmental Department

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Project or Activity/Objective	EPR Number	ERL Number	INRMP Section	Scheduled Implementation	Prime Legal Driver	Funding Class	Focus Areas	Cost Estimate	Responsible Party
Restore native wetland/riparian plant habitats that have been significantly disturbed by weed control activities. Revegetate these areas with appropriate native species that are known from the local region.	61013N R006	3	5.5	2010-2015	CWA, EO 11990	1	Ecosystem Integrity		Environmental Department
Monitor wetland community plant species composition and relative cover. Paying particular attention to invasion by noxious weeds and cover aquatic vegetation.	TBD	4	5.5		Sikes Act, EO 11990	1	Ecosystem Integrity		Environmental Department
<b>Water Resources Management Program</b>									
<b>Goal 1: Ensure the maintenance of the water supply to Lake Norconian and its ponds in sufficient amounts to protect their many values, with an emphasis on waterfowl habitat.</b>									
Identify standards for maintaining sufficient lake levels. Prepare and implement a Water Quality Management and Monitoring Plan that would detail lake level and water quality management goals and objectives, including standards for maintaining sufficient lake levels.	NA	4	5.6.1	2013	Sikes Act, NPDES Permit	-			Environmental Department
Monitor lake levels and flows annually to develop information for making decisions to maintain reasonable lake and pond levels and flows. Improve circulation as necessary.	NA	4	5.6.1	Ongoing	Sikes Act, NPDES Permit	-	Ecosystem Integrity		Public Works
Monitor water quality changes at different lake levels and inflows, particularly for temperature, total dissolved solids, and dissolved oxygen in the lake and hydrogen sulfide in the exposed sediments. Water samples are to be taken monthly by a landscape contractor.	NA	4	5.6.1	Ongoing	Sikes Act, NPDES Permit	-	Ecosystem Integrity		Public Works
Reduce the amount of vegetative debris in the lake and ponds that could impede water flows.	6101312 101	4	5.6.1	Ongoing	CWA, Sikes Act	1	Ecosystem Integrity		Environmental Department
Enhance lake and pond margins to provide cover and reduce sediment input while maintaining the historic landscape, where feasible.	6101312 101	4	5.4.1.1	Ongoing	CWA, OPNAVINST 5090, DoDI 4715.03, EO 11990	1	Ecosystem Integrity		Environmental Department

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Project or Activity/Objective	EPR Number	ERL Number	INRMP Section	Scheduled Implementation	Prime Legal Driver	Funding Class	Focus Areas	Cost Estimate	Responsible Party
Install a pond recirculation system that would pump water from Lake Norconian to the uppermost pond in order to maintain water flow and habitat quality.	6101312101	4	5.6.1	2012	CWA, OPNAVINST 5090, DoDI 4715.03, EO 11990	1	Ecosystem Integrity		Environmental Department
<b>Goal 2: Protect the values of Lake Norconian and the ponds through appropriate resource management and enhancement, with an emphasis on maintaining a regional haven for migratory waterfowl.</b>									
Prepare a Lake Management Plan that will identify lake/pond management strategies, goals and objectives that would provide an emphasis on management of the lake for wildlife species. The goals and objectives will also be incorporated into and implemented per the Water Quality Management and Monitoring Plan discussed above which would include water quality sampling design and performance thresholds.	61013NR008	4	5.6.1 and 5.7.1	2012	Sikes Act, NPDES Permit	1	Ecosystem Integrity		Environmental Department/Public Works
Based on water quality monitoring, install an aerator (preferably solar) in Lake Norconian to improve water quality and increase circulation to help with vector control.	61013NR011	4	5.6.1	2012	Sikes Act, FWCA, NPDES Permit	1	Ecosystem Integrity		Environmental Department
Minimizing fertilizer runoff to the lake by efficiently conserving water.	NA	4	5.3.2.2	Ongoing	Sikes Act, CWA	3	Ecosystem Integrity		Public Works
Remove debris and dead vegetation within and surrounding the lake/ponds in order to reduce the amount of nitrogen and phosphorus available to stimulate aquatic plants and nuisance algal blooms and repair pond and channel linings as needed.	6101312101	4	5.6.1	Ongoing	Sikes Act, CWA	1	Ecosystem Integrity		Environmental Department



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Environmental Assessment for Implementation of the Integrated Natural Resources Management Plan  
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Project or Activity/Objective	EPR Number	ERL Number	INRMP Section	Scheduled Implementation	Prime Legal Driver	Funding Class	Focus Areas	Cost Estimate	Responsible Party
<b>Fish and Wildlife Management</b>									
<b>Goal 1: Promote a sustainable and diverse wildlife community for the lands surrounding Lake Norconian through habitat stewardship, population protection and monitoring, invasive species removal, and wildlife damage control compatible with the facility's mission and urban location.</b>									
Conduct a basewide wildlife inventory and maintain a comprehensive list of species that have been identified within the installation. Update basewide wildlife surveys every three to five years. Conduct focused surveys for specific species and monitor (i.e. bats, small mammals, herpofauna etc.) as necessary.	61013N R005	4	5.7	2012, 2015	Sikes Act, ESA, MBTA, FWCA, EO 13186	1	Fish and Wildlife Management and Public Access		Environmental Department
Promote and integrate surveys conducted by local birders and groups such as the Audubon Society.	NA	4	5.13.2	Ongoing	Sikes Act	-	Fish and Wildlife Management and Public Access		Environmental Department
Maintain a bird checklist for migratory and resident species that use the Detachment.	NA	4	5.7	Ongoing	Sikes Act	-	Fish and Wildlife Management and Public Access		Environmental Department
Maintain a fish inventory, from the results of fishing license holder requirements.	NA	4	5.7	2012	Sikes Act	-	Fish and Wildlife Management and Public Access		Environmental Department
Conduct nest surveys prior to conducting construction, landscape maintenance, and pest control activities in areas that have potential to support breeding bird populations. Ensure protection of roosting sites and snags as necessary.	NA	4	5.71	Ongoing	Sikes Act, ESA, MBTA, EO 13186	-	Fish and Wildlife Management and Public Access		Environmental Department
Evaluate the potential for nest enhancement activities such as the installation of nest boxes within and adjacent to the marsh habitats around the lake in order to encourage breeding habitat for species (determined by box placement and size).	NA	4	5.71	2015	Sikes Act	-	Fish and Wildlife Management and Public Access		Environmental Department

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Project or Activity/Objective	EPR Number	ERL Number	INRMP Section	Scheduled Implementation	Prime Legal Driver	Funding Class	Focus Areas	Cost Estimate	Responsible Party
Implement predator control programs, as necessary, in order to benefit native wildlife populations.	TBD	4	5.7.2	Ongoing	Sikes Act, MBTA, EO 13186, DoD Directive 4150.7	1	Fish and Wildlife Management and Public Access		Environmental Department
Maintain records of injured wildlife cases to monitor extent of problem.	NA	4	5.72	Ongoing	Sikes Act	-	Fish and Wildlife Management and Public Access		Environmental Department
Conduct an annual evaluation of the effectiveness of fish and wildlife management activities through the Navy Conservation Website Natural Resource Metrics.	NA	4	5.72	2010-2015	Sikes Act	-	INRMP Project Implementation		Environmental Department
Educate NSWC Corona Division grounds maintenance personnel about sensitive habitat areas (such as riparian and wetland habitats) to be excluded from landscape maintenance activities with the exception of invasive weed removal.	NA	4	5.7.1.1	Ongoing	Sikes Act	-	Fish and Wildlife Management and Public Access		Environmental Department
<b>Goal 2: Use Integrated Pest Management (IPM) methods to control noxious undesirable plants, rodents, and other pests found within Detachment Norco and to reduce the dependence on chemical means of control.</b>									
Update the existing IPMP (1996) according to current pest issues.	NA	4	5.7.2	2011	DoD Directive 1450.7 and OPNAVINST 6250.4B	-	Fish and Wildlife Management and Public Access		Environmental Department
Control identified pest species that pose a nuisance, significant property damage, or potential health hazard to a tolerable level, without jeopardizing the survival of the pest species or any incidental take of non-target wildlife.	NA	4	5.7.2	Ongoing	DoD Directive 4150.7	-	Fish and Wildlife Management and Public Access		Environmental Department

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Project or Activity/Objective	EPR Number	ERL Number	INRMP Section	Scheduled Implementation	Prime Legal Driver	Funding Class	Focus Areas	Cost Estimate	Responsible Party
Monitor pesticide/herbicide applications within Detachment Norco. Ensure pesticide/herbicide applications will not negatively affect terrestrial or aquatic wildlife species by complying with all federal, military, state, and local environment standards and obtain necessary permits (contractors) for pesticide/herbicide application	NA	4	5.7.2	Ongoing	ESA, FWCA, FIFRA, PL 92-516	-	Fish and Wildlife Management and Public Access		Environmental Department
<b>Special-status Species: Threatened and Endangered (T&amp;E) Species and Species of Special Concern Management</b>									
<b>Goal 1: Conserve and maintain riparian habitat within the installation for use by migratory birds, which may potentially include southern willow flycatcher and least Bell's vireo.</b>									
Monitor riparian habitats within the installation every five years for suitability of southern willow flycatcher and least Bell's vireo breeding habitat to determine if protocol surveys are warranted. Perform USFWS protocol survey every 3 to 5 years accordingly.	61013N R003	4	5.8.1.1	2014	Sikes Act, ESA	1	Listed Species and Critical Habitat		Environmental Department
Conserve and maintain willow riparian habitat on the property for migratory birds. This habitat has historically been or has the potential to be used by least Bell's vireos or southwestern willow flycatcher for foraging and/or breeding habitat. The habitat will be conserved and maintained by removing exotic species that may contribute to habitat alteration. Maintenance within these areas shall only occur during non-breeding periods (October - February).	61013N R006	4	5.8.1.1	2014	Sikes Act, ESA	1	Listed Species and Critical Habitat		Environmental Department
<b>Goal 2: Conserve and monitor coastal sage scrub habitat within the installation for coastal California gnatcatcher suitability.</b>									
Conserve disturbed California buckwheat habitats in order to promote CSS biodiversity. Conservation activities may include planting CSS species known to occur in the local region such as California sage scrub, black sage, and California brittlebush and/or removal of nonnative grasses and forbs in order to provide available space for natural CSS recruitment.	61013N R007	4	5.8.1.2	2015	Sikes Act	1	Ecosystem Integrity		Environmental Department
Monitor CSS within the boundaries of the installation every five years in order to evaluate the potential for migratory bird breeding habitat.	TBD	4	5.8.1.2	2015	Sikes Act, ESA	1	Listed Species and Critical Habitat		Environmental Department

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Project or Activity/Objective	EPR Number	ERL Number	INRMP Section	Scheduled Implementation	Prime Legal Driver	Funding Class	Focus Areas	Cost Estimate	Responsible Party
<b>Goal 3: Enhance, conserve and monitor potential burrowing owl habitat within the installation.</b>									
Perform annual protocol-level surveys for burrowing owls using accepted County of Riverside methods if base-wide avian surveys determine that this species is present onsite. All occupied burrows will be monitored and mapped during protocol-level surveys.	61013N R012	4	5.8.1.3	2013	MBTA/ Calif. ESA (Species of Special Concern - Priority 2)	1	Listed Species and Critical Habitat		Environmental Department
If burrowing owls are breeding onsite, management strategies will be implemented to protect them, such as visibly marking active burrows and implementing a mowing buffer of 500 feet during the breeding/nesting season (i.e., February – August).	NA	4	5.8.1.3	Ongoing	MBTA/ Calif. ESA (Species of Special Concern - Priority 2)	-	Listed Species and Critical Habitat		Environmental Department/ Public Works
<b>Goal 4: Enhance, conserve, and monitor MBTA species and associated habitat within the installation.</b>									
Monitor the suitable habitat within the installation every five years for the presence of MBTA species, including southern willow flycatcher, least Bell's vireo and coastal California gnatcatcher. Monitoring will be consistent with PIF guidelines.	61013N R003	4	5.9	2014	MBTA rule, PL 186; EO 13186 ESA	1	Ecosystem Integrity		Environmental Department
Develop and maintain a bird checklist for migratory and resident species that use the Detachment.	NA	4	5.9	Ongoing	Sikes Act	-	Ecosystem Integrity		Environmental Department
Evaluate proposed activities and construction projects for their likelihood to kill, injure, or significantly disturb MBTA birds and mitigate for potential impacts.	NA	4	5.9	Ongoing	MBTA rule, PL 186; EO 13186	-	Ecosystem Integrity		Environmental Department
Perform annual secretive marsh bird surveys utilizing national protocol.	N/A	4	5.9	Ongoing	MBTA and EO 13186	-	Ecosystem Integrity		Environmental Department
Participate in DoD's Partnership in Flight program to conserve and manage neotropical birds and their habitat.	NA	4	5.9	Ongoing		-	Ecosystem Integrity		Environmental Department
<b>Species of Regional Special Concern Management Program</b>									
<b>Goal: To conserve the habitat and populations of sensitive species known to utilize Detachment Norco lands.</b>									
Maintain an inventory and GIS geodatabase of species of regional special concern that have been identified through focused surveys.	NA	4	5.12	Ongoing	Sikes Act	1	Listed Species and Critical Habitat		Environmental Department

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Project or Activity/Objective	EPR Number	ERL Number	INRMP Section	Scheduled Implementation	Prime Legal Driver	Funding Class	Focus Areas	Cost Estimate	Responsible Party
<b>Geographic Information System Management Program</b>									
<b>Goal: Ensure the technically sound, practical, and appropriate use of library and computer technology to manage, analyze, and communicate natural resource information in support of management decisions.</b>									
Store, analyze and maintain data for research and survey projects involving natural resources on Detachment Norco, making the information accessible and readily available to multiple users. All data collected should be incorporated into an installation data management system to support adaptive management of natural resources, INRMP updates/revisions, data calls and environmental planning efforts. All data shall be collected in the most current and approved scientific formats. Data shall be maintained in a Spatial Data Standards for Facilities, Infrastructure, and Environment (SDSFIE) compliant manner.	NA	4	5.12	Ongoing	Sikes Act	1	Ecosystem Integrity		Environmental Department
<b>Outdoor Recreation Management Program</b>									
<b>Goal: Promote compatible, sustainable outdoor recreation opportunities which enhance quality of life for military personnel, while conserving natural resources, and without compromising military readiness</b>									
Encourage wildlife watching for both serious and casual observers by participating in public outreach programs and maintaining partnerships with organization such as the Audubon Society.	NA	4	5.13	Ongoing	Sikes Act OPNAVINST 5090, DoDI 4715.03	-	Fish and Wildlife Management and Public Use		Environmental Department
Provide accessible recreation opportunities for disabled veterans, disabled Americans, and their families.	NA	4	5.13	Ongoing	ADA, Sikes Act OPNAVINST 5090, DoDI 4715.03	3	Fish and Wildlife Management and Public Use		Environmental Department
Create recreational maps that will facilitate quality recreation outings by avoiding conflicts with military facilities and activities while protecting the environment.	NA	4	5.12	Ongoing	Sikes Act	3	Fish and Wildlife Management and Public Use		Environmental Department

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Continue to provide existing fishing programs. Develop Detachment Norco fishing policy	NA	4	5.13.3	Ongoing	Sikes Act OPNAVINST 5090, DoDI 4715.03	3	Fish and Wildlife Management and Public Use		Environmental Department
<b>Cultural Resources Management Measures</b>									
<b>Goal: Preserve the physical and ecological integrity of known sites that contain high to moderate archaeological potential.</b>									
Monitor the presence of historic sites whenever projects involving ground disturbance or development are proposed in areas likely to contain cultural resources.	NA	4	5.14.1	Ongoing	EO 11593; Preservation of Historical Archaeological I Data Act of 1974;NHPA	-	Ecosystem Integrity		Environmental Department
Continue to manage cultural resources in accordance with the priorities set forth by the ICRMP.	NA	4	5.14.1	Ongoing	EO 11593, Preservation of Historical Archaeological I Data Act of 1974;NHPA	-	Ecosystem Integrity I		Environmental Department

**ACRONYMS:**

- ARPA= Archaeological Resources Protection Act
- CWA= Clean Water Act
- DoD= Department of Defense
- DoDI=Department of Defense Instruction EO= Executive Order
- ESA= Endangered Species Act
- FWWA= Federal Noxious Weed Act
- FWCA= Fish and Wildlife Coordination Act
- OPNAVINST=Naval Operations Instruction
- NHPA= National Historic Preservation Act
- Sikes Act= Sikes Act, (as amended)

**Priority/Proponent for funding requests:**

- Class 1= Requirements derived from existing laws, regulations, and EOs.
- Class 2= Requirements derived from DoD and/or Navy policy.
- Class 3= Enhancement Actions beyond Compliance

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**APPENDIX B**

**PUBLIC INVOLVEMENT, INTERAGENCY COORDINATION, AND  
DISTRIBUTION LIST**



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**APPENDIX B**

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**INTERNAL/EXTERNAL STAKEHOLDERS  
FOR  
NAVAL WEAPONS STATION SEAL BEACH  
DETACHMENT NORCO  
ENVIRONMENTAL ASSESSMENT AND INTEGRATED NATURAL  
RESOURCES MANAGEMENT PLAN**

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**APPENDIX O**

**1996 SMALL MAMMAL-HERPETOLOGICAL AND ORNITHOLOGICAL  
SURVEY REPORTS  
(PROVIDED ON CD)**

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## **FINAL REPORT**

**1996 Small Mammal Survey and Herpetological Survey  
Natural Resources Management Plan,  
Naval Warfare Assessment Division Corona, California**

Prepared by:

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20 May 1996

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## INTRODUCTION

Surveys were conducted on the Naval Warfare Assessment Division Corona (NWAD) to develop an inventory of the resident herpetofauna and small mammal fauna. Attention was also directed at determining the status of any California or federally endangered, threatened, or "sensitive" species.

## METHODS

NWAD is located within the city of Norco, Riverside County, California, and covers about 103 ha, of which 20 ha is Lake Norconian (Fig. 1). The base can be characterized by 6 main habitat types: non-native grassland, aquatic/wetland, lake margin, riparian woodland, coastal sage scrub, and managed grounds (Fig. 2). Tierra Data Systems (1997) provide a detailed description of NWAD's habitats and vegetation communities.

I focused on sampling a diverse faunal assemblage, comprising 3 Classes: amphibians, reptiles, and mammals. Life histories, activity patterns, and ecological characteristics associated with such a diverse group required a variety of survey techniques. I sampled amphibians and reptiles using a system of funnel and pit-fall traps connected with drift fences (Vogt and Hine 1982, Corn and Bury 1990), modified visual encounter surveys (VES, Crump and Scott 1994), night-driving counts (Campbell and Christman 1982), and audio strip transect counts (AST, Zimmerman 1994). Small mammals were the focus of the mammalian surveys; however, this category is somewhat ambiguous. Burt and Grossenheider (1980) define small mammals as bats, shrews, moles, mice, and rats. Whereas Jones et al. (1996) consider all mammals weighing <50 g small mammals. I opted to use Burt and Grossenheider's definition, excluding bats, for the purposes of this study.

I sampled small mammals using a combination of live-trapping transects and opportunistic live-trapping on sign (e.g., scat, tracks, and burrows). Pit-fall and funnel traps also provided a passive sampling technique for small mammals, especially Insectivores, which are not readily attracted to baited traps. In addition to the required small mammal sampling, I conducted surveys for medium and large-size mammals, with live-trapping, VES, and spot-lighting (Chapman and Wilner 1986); the latter 2 techniques conducted in conjunction with herpetofauna VES and night-driving counts. Species I observed during non-survey activities, such as pit-fall trap and drift fence installation, were noted, and pertinent data recorded.

NWAD's fragmented, heterogeneous landscape, coupled with its relatively small size, made the use of systematic or randomized study designs cumbersome and inefficient. Instead, I prioritized areas based upon size and quality (i.e., potential to harbor mammals, reptiles and amphibians). Because of their relatively large size and extensive vegetation, I deemed lake margin, riparian, and grassland habitats most important; these areas, therefore, received a disproportional amount of sampling effort. I conducted setup and surveys over 16 consecutive days extending from 6 June 1996 through 21 June 1996.





Figure 1. Naval Weapons Assessment Division Corona, California and surrounding area, June, 1996.

# NWAS Corona Vegetation and Mammal & Herpetofauna Trapping Locations



- Anemopsis Wetland
- Coastal Sage Scrub
- Managed Grounds
- Lake Norconian
- Lake Margin Vegetation
- Lillypads
- Non-native Grassland
- Non-native Grassland (Mowed)
- Riparian Woodland
- Reeds
- Underwater Vegetation
- pond

- x Tomahawk Trap
- Sherman Trap
- ⌘ Mammal Trapping Transect (S1-S8)
- Pitfall/Funnel Trap (P1-P12)
- ⋯ VES Transect

100 0 100 200 300 Meters



## Herpetofauna

Funnel/Pit-fall Trapping - The sampling unit for this system, referred to as a "line," was comprised of a drift fence with 2 pit-fall traps on each end and 2 funnel traps situated on each side in the center of the drift fence (Figs. 3 and 4, Vogt and Hine 1982). Pit-fall and funnel traps were considered sub-units of the system. The fence was constructed of 7.5 m x 50 cm aluminum valley flashing buried about 10 cm in the ground and supported with metal stakes. Pit-fall traps were constructed from 2 #10 tin cans (17.8 x 15.7 cm), with the bottom cut out of one, then duct taped together. Pit-fall traps were buried with tops flush to the ground and abutted the drift fence. A 20 x 20 cm masonite cover was positioned 2-4 cm over each pit-fall to provide shade for trapped animals and prevent predation. Funnel traps were constructed from aluminum window screen and measured 76 x 20 cm (length x diameter), with entry holes measuring 3 cm in diameter (Campbell and Christman 1982). Funnel traps were shaded by an 80 x 53 cm piece of masonite.

I installed 12 lines within the priority habitats (Fig. 2) and opened them 4 consecutive days. I checked traps on day 2 and day 4, except in areas where ant activity was high. In these situations, I checked traps daily to minimize reptile mortality from ant predation. In a few areas where lizards were observed around buildings, I sampled by placing supplementary funnel traps (Fig. 2).

At each trap station I recorded several data: transect number, trap number, trap type, and trap condition (i.e., whether it was visited, unvisited, sprung, or disturbed). For each capture I recorded, species and weight, and when possible, age (adult or juvenile), sex, and reproductive condition. When time allowed, I also recorded standard external measurements (snout-vent length and tail length).

VES & AST- I conducted herpetofauna VES in 2 ways: while in the process of monitoring the small mammal live-trapping transects and as independent VES. When conducted in conjunction with mammal trapping, I began VES about 0545 and usually continued for 3.5 to 5.5 hours. Duration of these VES was dependent upon the number of stops I made to process captured mammals. I conducted trapping related VES on 3 consecutive days. To account for possible temperature related differences in reptile and amphibian diel activity, I conducted 2 independent VES. These occurred on 2 different days, 1 beginning at 1100 and the other at 1330, with both VES lasting about 1 hour.

I walked VES at a comfortable pace (3-4 km/h), recording all reptile and amphibian observations. In addition to visual observations, I recorded all frogs detected aurally while conducting VES, effectively serving as AST counts. Most frog vocalizations are "advertisement calls" given by breeding males, therefore this technique omits at least half of the population. I recorded species identification (when possible), as well as time and location of detection. I monitored weather conditions (e.g., temperature, wind speed, and cloud cover) periodically during each VES/AST. To sample for nocturnal frog species, I conducted a single VES/AST count adjacent to the streams and around the perimeter of the ponds and lake margin. Frogs detected by their calls were identified to species using recordings (Davidson 1995).

# Top View

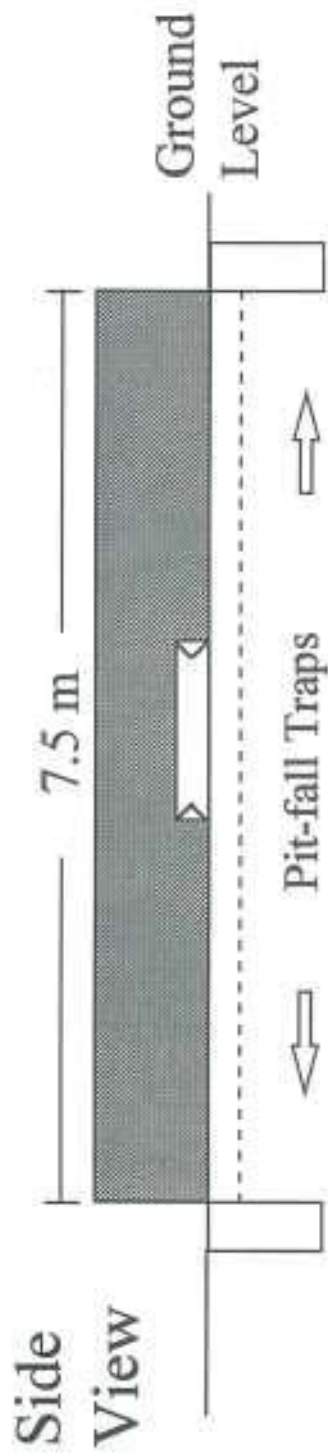
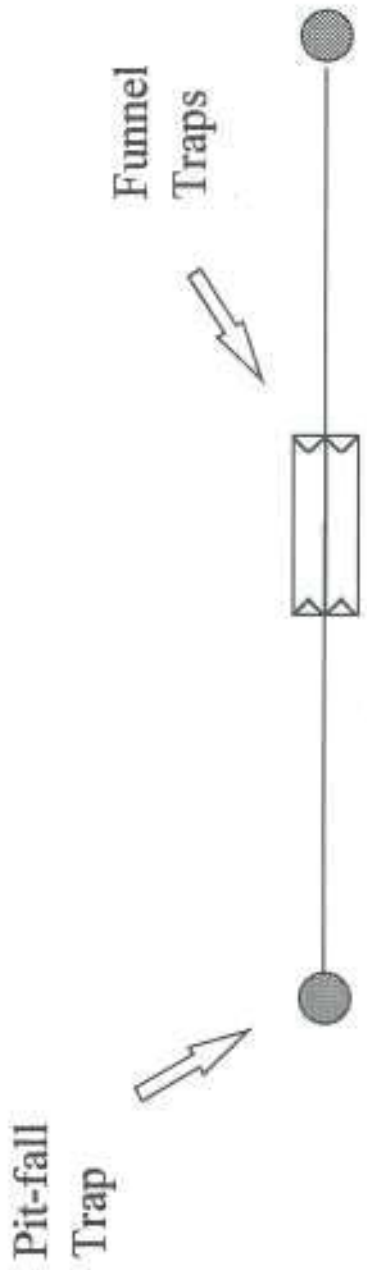


Figure 3. Diagram of a pit-fall/funnel trapping line used to sample the herpetofauna and small mammal fauna on Naval Weapons Assessment Division Corona, California, 1996.



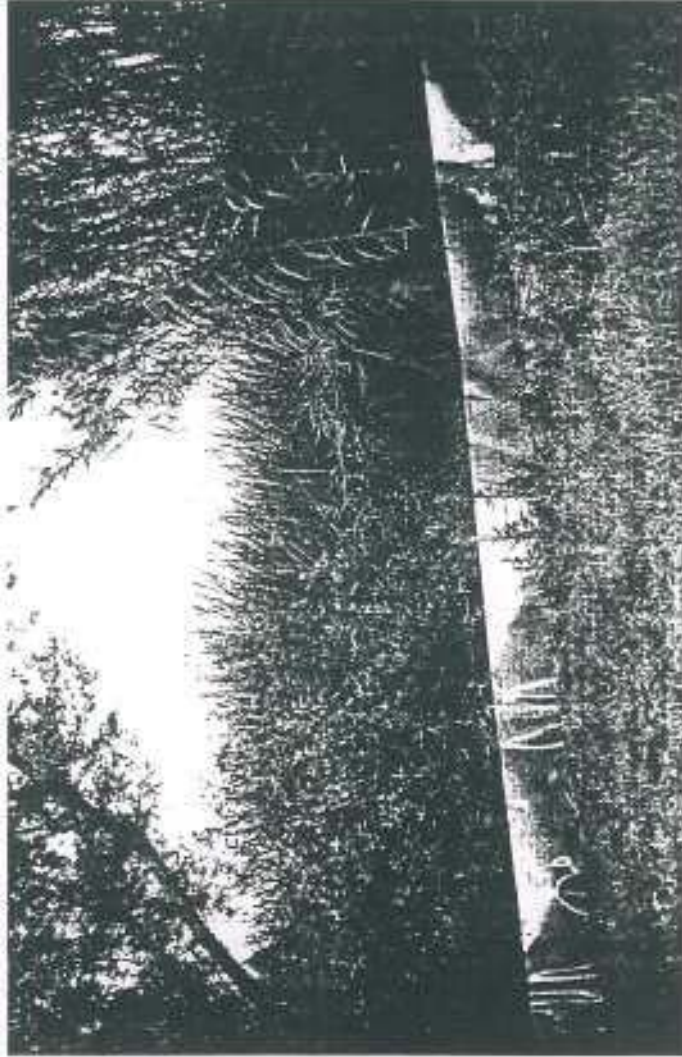


Figure 4. Drift fence used to sample herpetofauna and small mammal fauna on Naval Warfare Assessment Division Corona, California, 1996. Photograph by R. B. Phillips.

**Night Driving Counts-** I conducted counts between the hours of 2000 and 2300, surveying virtually all base roads--paved and dirt. Driving at a speed of 10-15 km/h I scanned road and roadside for snakes and frogs using the vehicles headlights and a 1 million candle-power spotlight. I conducted counts on 2 consecutive nights and followed data collection procedures described for VES.

## **Mammals**

**Live-trapping-** I established 8 225 m trapping transects within the priority habitats (Fig. 2). Along each transect I established 10 trap stations at 25 m intervals and placed 1 Sherman trap (7.6 x 8.9 x 23 cm) within 3 m of each trap station. I placed an additional 20 Sherman traps in secondary habitats (Fig. 2) and on mammal sign. Sherman traps were baited with a peanut butter and oat mixture. I placed 1 to 2 Tomahawk live traps (23 x 23 x 66 cm, Fig. 5) along each of the Sherman trapping transects, with additional traps set in secondary habitats (Fig. 2). Fresh vegetables or canned catfood were used as baits depending on the target species. Both Sherman and Tomahawk traps were shaded to prevent overheating. I monitored traps 3 consecutive days and checked them within 4 to 5 hours of sunrise. I rotated the location of Tomahawk traps to cover a larger area, as such, not all sites were trapped for 3 days. I followed data collection procedures described in the funnel/pit-fall trapping section, except standard external measurements (total length, tail length, hind foot length, and ear notch) differed.

**VES-** I followed methods described in the herpetofauna section to conduct VES for mammals; however, I recorded observations of animal sign, as well as, individuals. In addition to the walking VES, I conducted 1 diurnal driving count, covering most of the base roads.

**Spotlight Counts-** The night driving counts used for herpetofauna also served as spotlight counts for mammals. I used similar procedures for both taxa; however, many nocturnal mammals species produce "eyeshine" when illuminated; therefore, I used the hand-held spotlight to scan a much greater area. When necessary, I made species identification using 10 x 25 binoculars.

## **Data Analysis**

Because I used a variety of techniques to sample the fauna, data are presented in several different ways. Although the focus of the survey was not to determine species quantity, when possible estimates of relative abundance are calculated. Trapping data are reported as capture rates (i.e., the number of individuals of a species captured / 100 trapnights). Capture rates are also calculated for lines allowing a comparison between habitats. Sherman trapping transects were longer than some of the habitats being sampled; therefore, small mammal habitat associations were examined by analyzing the number of traps per habitat type. When feasible or reasonable (i.e., detection rate is high enough to make calculation of relative abundance meaningful) the relative abundance of species detected from VES, AST counts, and spotlight counts are presented as number of animals per unit effort. Unit may be time (hours) or distance (m or km).

Species diversity is usually presented as the Shannon index (1948):  $H' = -\sum p_i \ln p_i$ , where  $p_i = n_i / N$ ; thus,  $p_i$  is the proportion of the total number of individuals occurring in species  $i$ . However, when data are collected in a nonrandom manner (as with this survey)  $H'$  is not an appropriate





Figure 5. Tomahawk trap used to sample mammals on Naval Warfare Assessment Division Corona, California, 1996. Photograph by R. B. Phillips.

measure of diversity. I therefore used Brillouin's (1962) information-theoretic diversity measure:  $H = (\log n! - \sum \log f_i!) / n$ , where  $n!$  = the factorial of  $n$  and  $f_i!$  = the factorial of the frequency of occurrence of species  $i$ . I then presented both diversity measures, providing a means of comparison with other studies.

## RESULTS

### Herpetofauna

Both amphibians and reptiles were found on base; though, neither group was very diverse (Appendix A lists scientific and common name, and species code of all species documented on NWAD.). Amphibians were represented by 2 species of frogs (Table 1), which were detected only by AST counts. Both bullfrogs (*Rana catesbeiana*) and Pacific treefrogs (*Pseudacris regilla*) exhibited strong habitat associations. Treefrogs were found predominantly around the small upper ponds and stream; the greatest concentration of frogs was centered at the uppermost

Table 1. Herpetofauna documented and method of detection at Naval Weapons Assessment Division Coroná, California, June 1996.

Species	Documentation Technique				
	Pit-fall	Funnel	VES	AST	Incidental
Amphibian					
<i>Pseudacris regilla</i>				x	
<i>Rana catesbeiana</i> <sup>a</sup>				x	
Reptile					
<i>Sceloporus occidentalis</i>	x	x	x		
<i>Gerrhonotus multicarinatus</i>	x	x			
<i>Leptotyphlops humilis</i>	x				
<i>Pituophis melanoleucus</i>					x

<sup>a</sup> Exotic species.

pond, where a chorus of 10-20 males were heard calling. One individual was heard during the day in the shrubbery beside the main administrative building. Bullfrogs were also found in the upper ponds and streams, but were represented by only a few individuals in this habitat. Bullfrogs reached their greatest density along the west and north lake margin, averaging 1 individual per 49 m ( $\pm 6.5$  SD) of shoreline. No bullfrogs or treefrogs were detected along the southern and eastern lake margin, possibly due to the sparse vegetative cover, and subsequent increased risk of predation. Surprisingly, no bullfrogs were detected on the island in Lake Norconian.

As with amphibians, the reptile fauna was very depauperate. Only 2 species of snake and 2 species of lizard were documented (Table 1). Five VES, totaling 14 hours 10 minutes, yielded 7 western fence lizards (*Sceloporus occidentalis*, Fig. 6) and 1 possible southern alligator lizard (*Gerrhonotus multicarinatus*, Fig. 7). This equates to 1 lizard per 106 minutes ( $\pm 47$  SD) of survey time. This rate likely underestimates lizard abundance since some VES were conducted during early morning periods when low temperatures would have reduced lizard activity. The results from the VES were supported by observations made during installation of drift-fences and

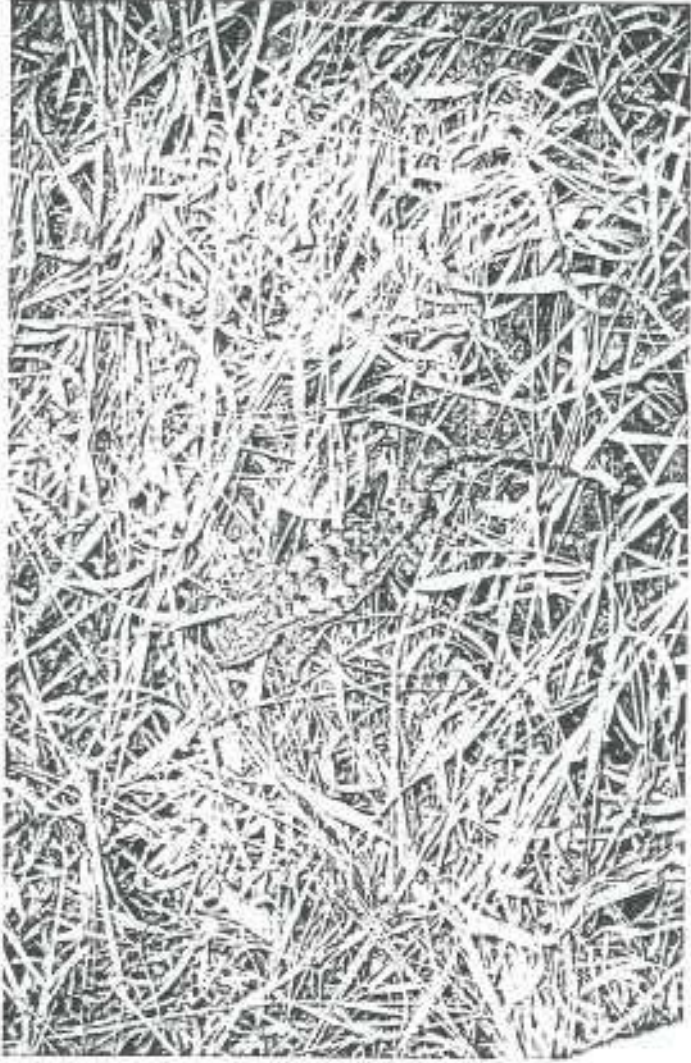


Figure 6. Western fence lizard (*Sceloporus occidentalis*) captured in pit-fall/funnel trap on Naval Warfare Assessment Division Corona, California, 1996. Photograph by R. B. Phillips.



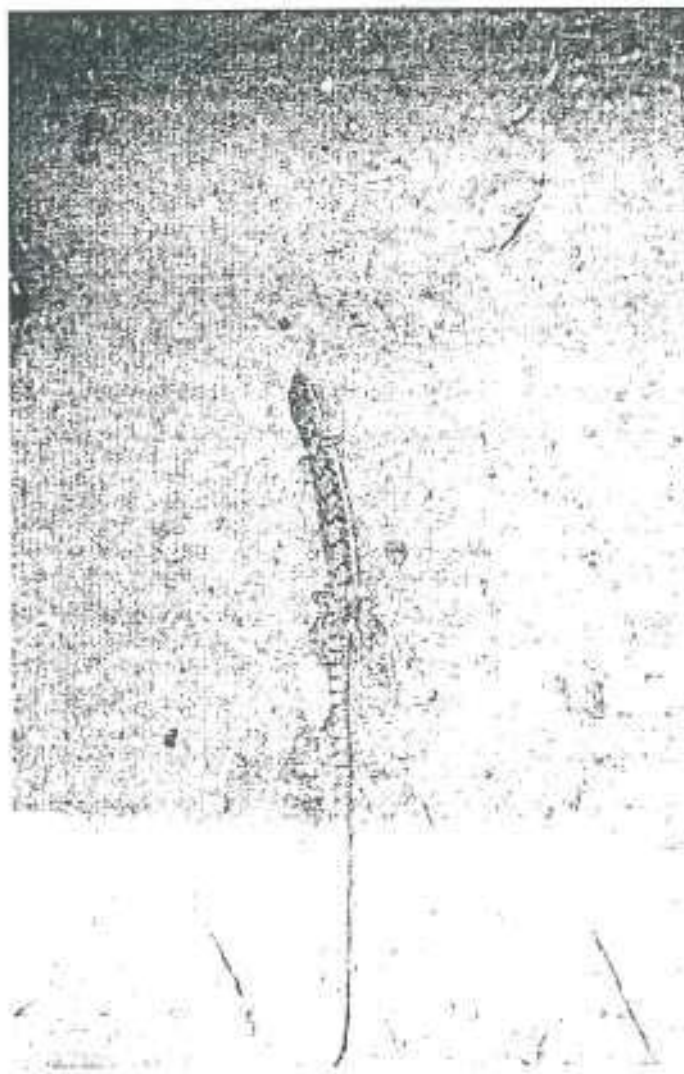


Figure 7. Southern alligator lizard (*Gerrhonotus multicarinatus*) captured in pit-fall/funnel trap on Naval Warfare Assessment Division Corona, California, 1996. Photograph by R. B. Phillips.

pit-fall traps. Setup required 36 hours, involving much digging, scraping and moving of vegetation--essentially "time constrained searches"--and the only reptiles observed were western fence lizards. The other reptile observed while surveying was a 1 m long gopher snake (*Pituophis melanoleucus*) found on the road by the front gate. Base personnel report frequently seeing a large (ca. 2 m) gopher snake near the Quonset huts along the SW lake margin; however, the huts were being demolished during this survey, a disturbance likely to have displaced this snake. During 2 hours of night driving counts, no reptiles or amphibians were observed. Bullfrogs and treefrogs were detected aurally on night driving counts in locations previously recorded from AST counts.

The low reptilian and amphibian diversity revealed from VES, AST counts, and night driving counts was supported by the results from the pit-fall and funnel trapping. In 200 trapnights, only three reptile species were captured in either pit-fall or funnel traps (Table 2), and no amphibians were captured, despite 7 of the lines being located in suitable amphibian habitat: 4 next to the lake margin and another 3 in the riparian woodland. Capture of western fence lizards confirmed species identification made from VES, as well as providing sub-specific classification. The uncertain alligator lizard sighting was supported by multiple captures of this species. A western blind snake (*Leptotyphlops humilis*) was the only new species resulting from pit-fall trapping.

Table 2. Pit-fall and funnel trapping success at Naval Weapons Assessment Division Corona, California, June 1996.

Species	Pit-fall Trapnights (96)		Funnel <sup>a</sup> Trapnights (104)		Total Trapnights (200)	
	No. Captures	Capture Rate (%)	No. Captures	Capture Rate (%)	Total Captures	Total Capture Rate (%)
<i>Sceloporus occidentalis</i>	3	3.1	14 <sup>b</sup>	13.5	17	8.5
<i>Gerrhonotus multicarinatus</i>	3	3.1	2	1.9	5	2.5
<i>Leptotyphlops humilis</i>	1	1.0	0	0	1	0.5
Total Species	7	7.3	16	15.4	23	11.5

<sup>a</sup> Totals include funnel traps placed away from lines.

<sup>b</sup> Includes an individual that escaped before processing.

Table 3. Number of species of reptiles captured per pit-fall/funnel trapping line, at Naval Weapons Assessment Division Corona, California, June 1996. Habitat codes are: CS-coastal sage scrub, GR-grassland, LM-lake margin, and RW-riparian woodland. Captures from isolated funnel trapping are not included.

Line	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12
Habitat	LM	LM	LM	LM	RW/GR	RW	CS/RW	RW	RW/GR	GR	GR	GR
No. Captures	1	1	1	0	0	1	6	0	0	7	1	2

Reptile species diversity calculated from trapping data was  $H = 0.59$  and  $H' = 0.71$ , while lizard diversity was  $H = 0.47$  and  $H' = 0.55$ . Although species diversity was low reptile abundance was high, due primarily to the abundance of western fence lizards. The average number of captures/line was 1.67 ( $\pm 2.35$  SD). There was considerable variation between habitats and lines, with 7 and 10 responsible for 65% of the captures (Table 3). No strong relationship between habitat type and reptile abundance or diversity emerged. There more likely appears to be an association between microhabitat-- cover, either in the form of dense vegetation or downed woody debris--



and reptile diversity and abundance. Unfortunately, no vegetation measures were taken to support my assertion.

## Mammals

Thirteen mammal species were documented on NWAD (Table 4). California ground squirrels (*Spermophilus beecheyi*) and desert cottontail rabbits (*Sylvilagus audubonii*) were ubiquitous and numerically dominant. On a single VES covering most of the base ground squirrels were observed at a rate of 14.7 individuals/km. Cottontail rabbits were also abundant, averaging 4.9 individuals/km. Ground squirrels and cottontails were most numerous in the area north of Lake Norconian, where 42.5 and 19.3 individuals/km were observed, respectively. Based on burrow counts, Botta's pocket gophers (*Thomomys bottae*) were abundant, especially on the managed grounds in the western section of base.

Striped skunks (*Mephitis mephitis*) were observed frequently and in close association with buildings and managed areas on the northwest section of the base. On 2 separate spotlight counts 7 individuals were observed in the area extending from the tennis courts to the upper pond. From VES and spotlight counts it appears coyotes (*Canis latrans*) numbered 3-4 individuals and were most often detected in the southeastern riparian woodland, though they undoubtedly range across most of the base. Each of the remaining species detected by spotlight counts or VES (Table 4) represent either 1 or 2 individuals. Base personnel also report observing a fox on the grounds; however, there was disagreement as to whether it was a red (*Vulpes vulpes*) or gray fox (*Urocyon cinereoargenteus*). It was most likely a gray fox, given they are the most common fox in the region, and known to live in close association with humans.

Table 4. Mammal species recorded at Naval Weapons Assessment Division Corona, California, June 1996 and the method of documentation.

Species	Documentation Technique				
	Sherman	Tomahawk	Pit-fall/Funnel	Spotlight	VES <sup>b</sup>
<i>Didelphis virginiana</i>					SK
<i>Sylvilagus audubonii</i>		x		x	VI
<i>Spermophilus beecheyi</i>		x			VI,SK <sup>c</sup>
<i>Thomomys bottae</i>					BU
<i>Reithrodontomys megalotis</i>	x		x		
<i>Mus musculus</i> <sup>a</sup>	x				
<i>Rattus rattus</i> <sup>a</sup>		x			SK <sup>o</sup>
<i>Canis familiaris</i> <sup>a</sup>					SK
<i>Canis latrans</i>				x	VI,SC
<i>Procyon lotor</i>					TR
<i>Mephitis mephitis</i>				x	VI,CA
<i>Mustela frenata</i>		x			VI
<i>Felis silvestris catus</i> <sup>a</sup>					VI,SK

<sup>a</sup> Exotic species.

<sup>b</sup> Detection Type: BU-burrow, CA-carcass, SC-scat, SK-skull, TR-track, VI-visual.

<sup>c</sup> Skull found in barn owl pellet.

Small mammals were poorly represented, with only 3 species documented: western harvest mice (*Reithrodontomys megalotis*), house mice (*Mus musculus*), and black rats (*Rattus rattus*). In 297 Sherman trapnights, there were 9 captures of 1 house mouse and 7 western harvest mice, 1 harvest mouse being captured twice (Table 5). An additional harvest mouse was captured in a pit-fall trap on line 8, and an unidentified rodent was captured in a funnel trap, also on line 8, but chewed through the wire mesh.

The abundance of ground squirrels and cottontails revealed from VES was supported by the results from Tomahawk trapping. Of the 24 captures recorded in 40 trapnights, ground squirrels and cottontails accounted for 21 captures (Table 5). Two black rats and 1 long-tailed weasel (*Mustela frenata*) accounted for the other 3 captures. Black rats were captured in 2 areas: the center of the western riparian woodland and between the lower and middle pond. The weasel was captured on the extreme western lake margin. A solitary weasel was also observed twice, once on the south lake margin near the Quonset huts and once on the fire station lawn. Small mammal species diversity, calculated solely from Sherman trapping data, was  $H = 0.26$  and  $H' = 0.38$ ; combined with data from Tomahawk trapping was  $H = 0.59$  and  $H' = 0.80$ .

Table 5. Sherman and Tomahawk trapping success at Naval Weapons Assessment Division Corona, California, June 1996.

Species	Sherman Trapnights (297)		Tomahawk Trapnights (40)	
	No. Captures	Capture Rate (%)	No. Captures	Capture Rate (%)
<i>Sylvilagus audubonii</i>	0	0	10	25.0
<i>Spermophilus beecheyi</i>	0	0	11	27.5
<i>Reithrodontomys megalotis</i>	8*	2.7	0	0
<i>Mus musculus</i>	1	0.3	0	0
<i>Rattus rattus</i>	0	0	2	5.0
<i>Mustela frenata</i>	0	0	1	2.5
Total	9	3.0	24	60.0

\* Includes 1 recaptured individual.

The low capture success for small mammals precludes making inferences regarding species and habitat relationships (Table 6); however, there were some interesting results. All small mammal captures, except 1 black rat, were restricted to a very narrow band of vegetation, comprising the western riparian woodland, coastal sage scrub, and the western lake margin (Fig. 2). In fact, all of the 13 mammals documented on NWAD were detected in this area.

Table 6. Trapnights, number of captures, and capture rate (%) from Sherman trapping in the principal terrestrial habitats at Naval Weapons Assessment Division Corona, California, June 1996. Trapnight number is the number of nights traps set in a specific habitat type.

Habitat	Grassland	Lake Margin	Riparian Woodland/ Coastal	
			Sage Scrub	Managed Grounds
No. Trapnights	93	103	77	24
No. Captures	0	2	7	0
Capture Rate (%)	0	1.9	9.1	0



## DISCUSSION

Herpetofaunal diversity was extremely low at NWAD, comprising only 6 species: 2 frogs, 2 lizards, and 2 snakes. Lillywhite (1977), in a similar study of California chaparral, recorded 7 lizard species and a diversity index of 1.09. This value, despite excluding 2 species not captured in pit-fall traps, exceeded that found on NWAD (0.55). The absence from NWAD of common species, such as side-blotched lizards (*Uta stansburiana*), western whiptails, (*Cnemidophorus tigris*), common kingsnakes (*Lampropeltis getulus*), and garter snakes (*Thamnophis* spp.), was very surprising. In a 1987 biological assessment of NWAD (Hamilton 1987), California slender salamanders (*Batrachoseps nigriventris*), side-blotched lizards, and western aquatic garter snakes (*Thamnophis couchi*) were recorded in low numbers; these species appear to no longer occur on base.

The mammal fauna, though richer than the herpetofauna, is much diminished, especially small mammal populations. The absence of California voles (*Microtus californicus*), and *Peromyscus* spp., as well as members of the Heteromyidae, is particularly striking. NWAD's 3 small mammal species (only 1 being native) and diversity index of 0.38 compare poorly to results from other small mammal surveys in coastal California. In a coastal sage scrub community, M'Closkey (1972) captured 9 species of small mammals, with a diversity index of 1.92, while Lillywhite (1977) recorded 8 species and a diversity of 0.65 from a chaparral community. Five mammal species—black-tailed jackrabbits (*Lepus californicus*), California voles, deer mice (*Peromyscus maniculatus*), desert woodrats (*Neotoma lepida*), and badgers (*Taxidea taxus*)—which were present 10 yr ago (Hamilton 1987), are now either absent from NWAD or at undetectable population levels. And while some native mammals are low or declining, others appear to be increasing in abundance. During the Hamilton survey, coyotes, skunks, and cottontails were only detected by scat and tracks, whereas I observed coyotes 7 times, skunks 11 times, and cottontails well over 100 times. And in 1987, ground squirrels were observed at a maximum rate of 27 individuals/day, while I easily observed >27 individuals/hour.

Exotic species are also well represented, accounting for 31% of documented mammals and 17% of herpetofauna species. Black rats and house mice are potential competitors with native small mammals, and feral cats (*Felis silvestris catus*), as well as black rats, are notorious predators of small mammals and birds. Introduced bullfrogs are adaptable predators and take a wide variety of prey, including mice, birds, frogs, and fish. These exotics, together with the 5 native mammalian and avian predators—barn owls (*Tyto alba*) and American kestrels (*Falco sparverius*)—are likely to affect the base's prey populations.

Conclusions concerning species habitat associations are difficult to make from my survey results; however, the biological importance of some areas at NWAD is evident. Within the small strip of land on the western base boundary encompassing riparian woodland, coastal sage scrub, and lake margin habitats (Fig. 2), I found 4 of the 6 frogs and reptiles, and all of the mammals. Conversely, the scarcity of species in certain areas is troubling. The lake margin areas, while visually suitable habitat for *Neotoma* spp., *Peromyscus* spp., and various snakes, was devoid of all but harvest mice. The absence of California voles from the grassland was also surprising, however, only 2 individuals were recorded in 1987 (Hamilton 1987).



The suburban development surrounding NWAD essentially creates an island ecosystem for animals with limited dispersal capabilities (e.g., small mammals, amphibians, and reptiles). The depauperate fauna and apparent high extinction rates are (see below) characteristics of islands (MacArthur and Wilson 1967). Insular populations also often exhibit inflated population densities (MacArthur et al. 1972, Diamond 1978, Crowell 1983), which the superabundance of California ground squirrels, desert cottontail rabbits, and western fence lizards may exemplify. The reptile capture rate (11.5%) at NWAD, due primarily to western fence lizards, greatly exceeded those found in other studies using similar methods. In Wisconsin, Vogt and Hine (1982) reported rates of 4.9%, while in Florida, Campbell and Christman (1982) had rates of only 1.4%.

The low diversity level--and apparent loss of species--I documented at NWAD may simply be seasonal or yearly phenomena, resulting from temporal fluctuations often observed in small mammal and lizard populations (M'Closkey 1972, Whitford 1976, Anderson et al. 1977, Whitford and Creusere 1977, Asher and Thomas 1985). I, however, suspect biogeographical processes are contributing to species loss on NWAD during the last 10 yr. This can be examined by illustrating a few factors. First, in 1987 NWAD was an isolate of coastal sage scrub habitat covering approximately 172 ha of land area. The Hamilton (1987) study was conducted only on the southern portion of the base, an area covering approximately 89 ha. Following the sale of the southern portion, NWAD was reduced to approximately 83 ha. Thus, both my study and the Hamilton study were conducted on areas of approximately equal size; however, there is an important difference: the Hamilton study sampled an effective area twice the size of my study. Second, the 1987 and 1996 study sites possessed similar habitats, with the exception of the present study site having more developed habitat and lakeshore habitat. And finally, the 1987 study site and present study site were contiguous, with no barriers to animal dispersal or movement. Therefore, I make the assumption that many of the species inhabiting the southern portion of the base in 1987 were also inhabiting the northern portion. I also suspect that the absence of 8 species of animal, representing 4 Orders, previously inhabiting NWAD in 1987, but are not present in 1996, is due to local extinctions. This was in fact predicted in the Hamilton biological assessment (1987:10-11). The extinctions, if occurring, are likely the combination of habitat reduction, increased insularization, and increased predation.

Given the paucity of species in general, it was not surprising that I documented no species with, or under consideration for, endangered or threatened status by California or federal agencies.

### **Recommendations**

1. At a minimum, NWAD should maintain the present riparian woodland and coastal sage scrub habitats. Optimally it would be beneficial to allow or promote the expansion of these habitats to support a wider spectrum of the coastal sage scrub fauna. If these areas are reduced or degraded further a significant portion of the base's small mammal and reptile fauna will be lost.



2. Establish a corridor linking NWAD with the Santa Ana River drainage, to provide for small mammal, reptile, and amphibian immigration. It appears the base fauna has experienced several local extinctions; without a corridor to a "source" habitat, or continuous relocations, species with limited dispersal capabilities will continue to decline.
3. The base's natural resource managers should monitor NWAD's feral animal populations and their effect on native populations. Feral cat predation can potentially impact native small mammal, reptile, and avian populations. As long as the base supports a viable coyote population, the feral cat population should remain low; however, with NWAD's permeable boundary and surrounding suburbs, feral cat--and possibly feral dog (*Canis familiaris*)--immigration will continue to be a problem. Black rats can not be eradicated from the base, but rat control in key areas may reduce competition with native small mammals and predation on amphibians, reptiles, and birds.

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Appendix A. Scientific and common name of all species documented on Naval Weapons Assessment Division Corona, California, June, 1996. Species codes were used in data collection.

<u>Scientific Name</u>	<u>Common Name</u>	<u>Species Code</u>
<u>Amphibian</u>		
<i>Pseudacris regilla</i>	Pacific Treefrog	PSRE
<i>Rana calesbeiana</i>	Bullfrog	RACA
<u>Reptile</u>		
<i>Sceloporus occidentalis longipes</i>	Western Fence Lizard	SCOC
<i>Gerrhonotus multicarinatus webbi</i>	Southern Alligator Lizard	GEMU
<i>Leptotyphlops humilis humilis</i>	Western Blind Snake	LEHU
<i>Pituophis melanoleucus</i>	Gopher Snake	PIME
<u>Mammal</u>		
<i>Didelphis virginiana</i>	Virginia Opossum	DIVI
<i>Sylvilagus audubonii</i>	Desert Cottontail	SYAU
<i>Spermophilus beecheyi</i>	California Ground Squirrel	SPBE
<i>Thomomys bottae</i>	Botta's Pocket Gopher	THBO
<i>Reithrodontomys megalotis</i>	Western Harvest Mouse	REME
<i>Mus musculus</i>	House Mouse	MUMU
<i>Rattus rattus</i>	Black Rat	RARA
<i>Canis familiaris</i>	Domestic Dog	CAFA
<i>Canis latrans</i>	Coyote	CALA
<i>Procyon lotor</i>	Raccoon	PRLO
<i>Mephitis mephitis</i>	Striped Skunk	MEME
<i>Mustela frenata</i>	Long-tailed Weasel	MUFR
<i>Felis silvestris catus</i>	Feral Domestic Cat	FESY

FINAL REPORT

ORNITHOLOGICAL SURVEY, NATURAL RESOURCE MANAGEMENT PLAN, NAVAL  
WARFARE ASSESSMENT DIVISION, CORONA

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30 September 1996

## INTRODUCTION

The primary purpose of this survey was to compile a list of bird species regularly occurring at the Naval Warfare Assessment Division, Corona (NWADC), in the city of Norco, Riverside County, California. In addition, we attempted to determine the residency and breeding status of each species detected, develop an index of abundance for each species within a season, and provide a rough description of habitat use. Special emphasis was given to locating four sensitive species: (1) western yellow-billed cuckoo<sup>1</sup> (California endangered), (2) willow flycatcher (California endangered), (3) coastal California gnatcatcher (federal threatened), and (4) least Bell's vireo (California and federal endangered).

## METHODS

### Point Counts

We used an unlimited distance point count technique (Verner 1985) to measure an index of abundance of terrestrial birds at the study area. Thirteen counting stations were established systematically on 11 December 1995 (Figure 1). We placed the count stations to cover the entire base and to sample all vegetation types. Count stations were placed at least 175 m apart to minimize the recounting of individual birds from adjacent stations. Count stations were marked in the field with a wire flag and photographed (Appendix B).

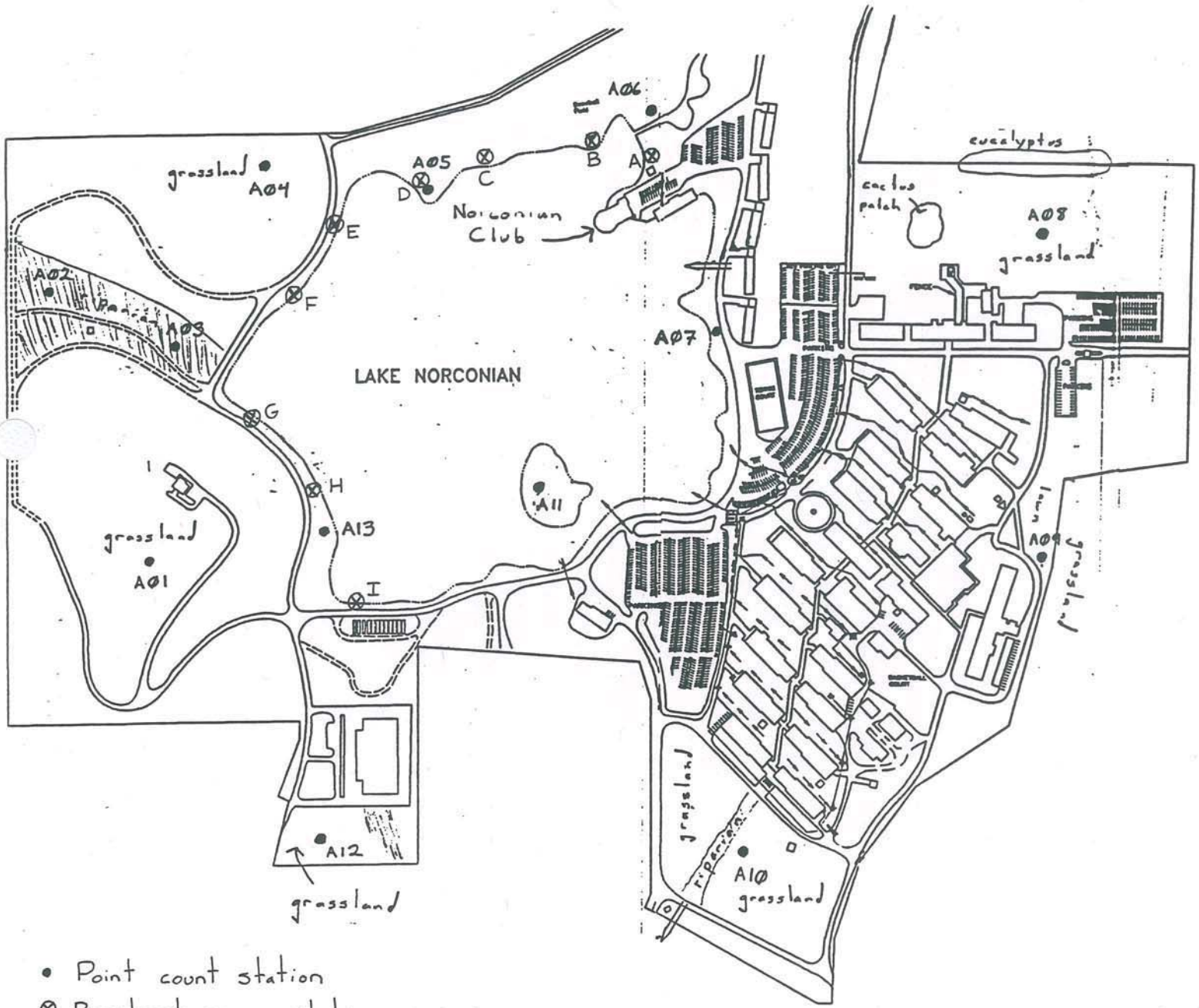
We conducted four counts at approximately 26-day intervals during the winter of 1995/1996 (13 December 1995, 10 January 1996, 3 February 1996, and 29 February 1996) and eight counts at 9 to 11-day intervals during the spring of 1996 (3 April, 14 April, 23 April, 4 May, 14 May, 25 May, 4 June, and 15 June). Counts were not conducted when rain interfered with our ability to detect birds. All counts were conducted by a single observer (Paul Aigner) on foot with 7x, 35 binoculars. Each count began between 15 minutes before and 15 minutes after sunrise and ended about 4 hours after sunrise. Upon reaching a station, the observer hung a thermometer from a branch on the nearest tree or shrub, recorded the station number, and immediately began recording birds. For each bird seen or heard during the next 10 minutes (measured with a countdown timer), the observer recorded the following information: species, distance at which the bird was first detected (estimated to the nearest 1 m for distances from 0 to 20 m, to the nearest 2 m for distances from > 20 to 50 m, to the nearest 5 m for distances from > 50 m to 100 m, and to the nearest 25 m for distances > 100 m), age (adult, juvenile, immature, or unknown), sex (male, female, or unknown), detection means (aural, visual, or aural followed by a visual confirmation), flock membership, whether the bird was only flying over the station, and general vegetation type in which the bird was detected. To allow data to be compared to other point count surveys that use 5 or 8-minute count times, the observer recorded whether each detection

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<sup>1</sup> Scientific names of all species in this report appear in Appendix A.



Figure 1. Location of point count stations and broadcast survey stations at the Naval Warfare Assessment Division, Corona, Riverside County, California.



- Point count station
- ⊗ Broadcast survey station

A-G sampled on 29 Feb. 1996  
 B-F, H, and I sampled on 3 Apr., 23 Apr., and 14 May 1996

occurred during the first 5 minutes, the next 3 minutes, or the final 2 minutes of the count. A flock was defined as a group of more than two birds apparently moving together. A bird was considered to be flying over the count station if it was detected in flight and did not land within sight of the count station.

Vegetation was classified as riparian, disturbed grassland, eucalyptus grove, or landscaped woodland/urban. Riparian vegetation occurred along the margin of Lake Norconian and along perennial drainages. Riparian vegetation included cattail (*Typha* sp.), bullrush (*Scirpus* sp.), rushes (*Juncus* sp.), willow (*Salix* sp.) and other species. Riparian vegetation occurred mostly around the western half of Lake Norconian, below the dam on the west side of the lake, and along a narrow drainage south of building 522. Disturbed grasslands were not irrigated and were dominated by exotic annual grasses. Some disturbed grasslands were cut during the spring. Eucalyptus groves occurred in three places: directly south of building 652, directly east of building 557, and along the base boundary north of building 504. Eucalyptus trees occurred elsewhere, but were considered part of landscaped woodlands. Landscaped woodland/urban vegetation included all irrigated lawns, trees and shrubs planted around buildings, and the planted woodland around the ponds feeding Lake Norconian.

Species normally using the lake (grebes, cormorants, herons, geese, ducks, rails, coots, shorebirds, gulls, terns, and kingfishers) were not recorded on point counts.

After completing a count at a station, the observer retrieved the thermometer, recorded the temperature, and proceeded quickly to the next counting station. If the observer detected species between count stations that he thought would not be recorded from any count station on that visit, he recorded these species on the data sheet as incidental sightings. To reduce potential bias from time of day variation in bird activity (Robbins 1981) counts began from a different station on each successive visit. The starting count station and order of visiting count stations was varied systematically so all points were visited at various times during a particular season.

### Waterfowl Censuses

We attempted to fully census aquatic bird species on or near Lake Norconian using a spotting scope (Bushnell Spacemaster II or Leica APO Televid 77) mounted on a tripod. Censuses occurred on the same dates as point counts, except an additional census was conducted on 4 February 1996. In addition, two partial censuses were conducted on 8 November 1995 and 12 December 1995. During partial censuses, an effort was made to obtain a complete species list, but individuals were not counted. Partial censuses occurred during reconnaissance visits to the base, when count stations and methodologies were being established. Censuses began at various times of day, but usually shortly after the point count was completed. Censuses varied in duration from 15 minutes to 5 hours and 15 minutes depending on the number of birds on the lake. Each census was conducted by a single observer (Paul Aigner) using 2 or more vantage points on the shore depending on light conditions and the number of birds on the lake. Observations generally began from the observation deck of the Norconian Club, as this provided the best overall vantage point for the entire lake. However, from this point, a small portion of



lake is obscured by a small island, and birds near the far shore may be difficult to identify depending on light conditions and the number of birds present. At a minimum, the observer also traveled to a point enabling him to count birds that may have been obscured by the island. If necessary, he also traveled to one or more points on the far shore from the Norconian Club. Birds were classified by species, but not by sex or age. Waterfowl noted on point counts or area searches but not detected on the formal lake census for that day were included in the census total.

#### Area/nest Searches

We conducted area searches for sensitive species and species missed on point counts and conducted nest searches for all species. During area/nest searches, observers systematically walked through selected areas of potential habitat, recording start and end times and their route. Area/nest searches were conducted by two observers (Paul Aigner and/or Catherine Koehler) during the spring on the same schedule as point counts. Area/nest searches were done opportunistically at irregular times on a survey day.

#### Broadcast Surveys

We used broadcasting of prerecorded calls to survey for rails in the marsh vegetation around the perimeter of Lake Norconian. Broadcast surveys were conducted by two observers (Paul Aigner and/or Catherine Koehler) on 29 February 1996 (0700-1000 PST), 3 April 1996 (1245-1430 PST), 23 April 1996 (1800-1910 PDT), and 14 May 1996 (1200-1335 PDT). During each survey, calls were broadcast from 7 points at 75 to 225 m intervals around the western half of Lake Norconian (Figure 1). At each point, an observer played about 90 seconds each of calls of the sora, black rail, and Virginia rail using a portable tape player and a Radio Shack powerhorn at a volume approximating that of a real bird. Calls were recorded from the Peterson Field Guide Series. Western Bird Song compact disc (Cornell Laboratory of Ornithology/Interactive Audio 1992). After calls of one species had been played, the observer waited a least one minute for responses before playing the calls of the next species.

#### Data Analysis

Residency status.--All species detected on surveys, censuses, or incidentally were categorized as resident breeders, local resident breeders, resident non-breeders, breeding migrants, migrants, wintering, or irregular. Resident breeders were present on most or all visits during the winter and spring and showed evidence of breeding on or adjacent to the base. Local resident breeders were present sporadically during the winter and spring, showed no evidence of breeding on or adjacent to the base, but were confirmed breeders in the Santa Ana River drainage or Prado Flood Control Basin. Resident non-breeders were present on most or all visits during winter and spring, showed no evidence of breeding on base, and are not confirmed breeders in nearby areas. Breeding migrants showed evidence of nesting on or adjacent to the base but were not present for most winter visits. Migrants occurred at the base on one or more visits during the spring or late

winter and were considered within their generally accepted migration routes. Wintering species were present on one or more winter or early spring visits and were within their generally accepted wintering range. Irregular species were detected only once and not considered a regular part of the avifauna, either because they were outside their expected range or because suitable habitat was obviously not available on the base.

Breeding species were classified as confirmed breeders or probable breeders. Confirmed breeders were those species for which we found direct evidence of nesting, including nest building, nests themselves, carrying of food for young, or juveniles too young to have dispersed from elsewhere. Probable breeders were species that were present throughout the breeding season and within their generally accepted breeding range, but for which we found no direct evidence of nesting.

Point-counts.--For each species recorded on point counts, and excluding all detections of birds only flying over count stations, we computed four indices of abundance within each season (winter and spring):

*Mean count* -- Initially we calculated the count for each point as the number of individuals of a species detected at that count station averaged over all visits in a season. Then we calculated the mean and standard deviation of these counts over all 13 count stations. The standard deviation is a measure of the spatial variability in occurrence.

*Species frequency* -- the number of visits in a season in which a species was recorded divided by the total number of visits in that season. Species frequency is a measure of temporal variability in occurrence.

*Species incidence* -- the total number of individuals of a species detected at all count stations and within a given season, divided by the total number of visits in which the species was recorded for that season. Species incidence is a measure of how abundant a species was when present. To be meaningful, this index must be considered together with species frequency.

*Relative abundance* -- the mean per-point total count for a species within a season divided by the highest mean per-point total count of all species in that season. This measure assumes that all species were equally detectable.

Calculation of species frequency, species incidence and relative abundance was specifically requested by the U.S. Navy. Mean count provides overlapping information with species frequency and species incidence, essentially combining the two measures. All of our discussion will focus on mean count, because we think this is the single most useful index of abundance.

Auxiliary information recorded on point counts, including temperature, distance at which a bird was detected, age, sex, detection means, etc. was not used for this report, but was retained in the data file (Appendix C) for possible future analyses with other data sets. All analyses were performed with SPSS/PC+ (Norušis 1992).



Waterfowl censuses and broadcast surveys.--Detections of birds on waterfowl censuses and broadcast surveys were simply summarized as total individuals per species per visit.

### Christmas Bird Count Data

We obtained Christmas Bird Count data for Lake Norconian from 1990, 1991, 1993, and 1994. These were the only years in which counts for the lake were kept separate from other areas (Larry LaPré, pers. comm.) These counts focussed primarily on waterfowl, but some terrestrial birds were also recorded. We do not know the observer effort that went into each of these counts, but assume they represent an estimate of the total number of birds on the lake apparent from at least a single vantage point.

## RESULTS

### Terrestrial Birds

We recorded 4819 individuals of 71 species, of which 65 species were recorded during point counts and 6 were detected only incidentally (Table 1). Forty-nine species were recorded during the winter and 62 were recorded during the spring. Of these, 39 were recorded in both seasons. Thirty-five species were confirmed or probable breeders on or adjacent to the base. Of these, 26 were residents and 9 were migrants. Of the 36 species for which we found no evidence of breeding on the base, 13 were local breeders, 11 were migrants, 10 were wintering, and 2 were considered irregular.

Two terrestrial species recorded on past Christmas Bird Counts were not detected on our surveys. Two cedar waxwings were recorded in 1991, and one northern harrier was recorded in 1994. These two species are probably irregular winter visitors at the base. In addition, a golden eagle was regularly reported foraging around the base in the winter of 1995/1996 (Chuck Quinn, pers. comm.), but was not seen during surveys. This species is also probably an irregular winter visitor.

In both the winter and spring, the terrestrial avifauna was dominated by species that typically thrive in urban environments. The mourning dove, American crow, European starling, and house finch were among the most frequently detected species in both seasons. All of these species had a mean count  $>1$  individuals/point/visit. Other species with a mean count  $>1$  included the bushtit, yellow-rumped warbler and white-crowned sparrow during the winter and the cliff swallow and house sparrow during the spring.

Several confirmed or probable breeding species occurred in low densities and may not continue to be a regular part of the avifauna. The red-shouldered hawk, burrowing owl, house wren, blue grosbeak, great-tailed grackle, and hooded oriole each occurred as only a single breeding pair on the base. The red-shouldered hawks probably nested in the California Rehabilitation Center north of the base; the burrowing owls nested in a burrow beneath the fence at the southeast

corner of the base; the house wrens nested in the picnic area across the road from building 804; and the hooded orioles nested in a date palm northwest of building 652. We did not confirm nesting for the blue grosbeak and the great-tailed grackle. Two pairs of red-tailed hawks were present on the base, one pair nested in the eucalyptus grove southeast of building 557, the other pair nested in the eucalyptus grove south of building 652. Greater roadrunners were also scarce; they seemed to be limited to the prickly pear patches east of building 805.

Habitat use by terrestrial birds varied among species (Table 2). The four species most frequently detected in both seasons (mourning dove, American crow, European starling, and house finch) were habitat generalists, occurring in all four habitat types. Other species showed distinct associations with particular habitat types. The marsh wren, common yellowthroat, blue grosbeak, spotted towhee, song sparrow, yellow-headed blackbird, and red-winged blackbird were almost always detected in riparian vegetation. In addition, the bushtit and California towhee were frequently detected in riparian vegetation. Species showing a strong association with lawns, landscaped woodlands and buildings included the rock dove, cliff swallow, and house sparrow. Species detected mostly in disturbed grasslands included the killdeer, turkey vulture, savannah sparrow, lark sparrow, and western meadowlark. Eucalyptus groves represented a small fraction of the total area on the base, but were used particularly by red-tailed hawks, western kingbirds, Cassin's kingbirds, Bullock's orioles, and house finches during the spring for nesting.

Only two species showed clear evidence of seasonal shifts in habitat use (Table 2). The mourning dove primarily was detected in disturbed grasslands during the winter, but was found using all vegetation types during the spring. Conversely, black phoebes used all vegetation types during the winter, but concentrated in riparian areas and landscaped woodlands during the spring.

### Aquatic Birds

We recorded 43 species using Lake Norconian and its associated ponds during waterfowl censuses and broadcast surveys (Table 3). Forty-two species were detected during the winter, and 25 species were detected during the spring. All species detected during the spring also were detected during the winter, except the caspian tern, which was detected only once during the spring. In contrast to the terrestrial avifauna, few aquatic species bred on the base. Confirmed or probable breeders included only 8 species: the Clark's and western grebe, pied-billed grebe, green heron, Canada goose, mallard, wood duck, and belted kingfisher. All breeders were also residents. Also in contrast to the terrestrial avifauna, many (22) aquatic species were wintering. Of the 13 aquatic species that were not resident breeders or wintering, one was a local breeder, 9 were resident non-breeders, and 3 were irregular. We classified the Bonaparte's gull as wintering, because most individuals were recorded in November-January. However, one individual remained on the lake throughout the spring.

Five aquatic species recorded in past Christmas Bird Counts were not detected on our surveys (Table 4). Eight black-necked stilts were recorded in 1991, 1 spotted sandpiper was recorded in 1994, 47 long-billed dowitchers were recorded in 1994, 4 least sandpipers were recorded in 1991,



and 2 Forster's terns were recorded in 1994. All of these species are probably irregular winter visitors.

Absolute numbers of aquatic birds were highest from November to mid-January, when the aquatic avifauna was dominated by wintering species. At least 3000 birds were regularly present on the lake during this period. By contrast, the maximum bird count on the lake during the spring was about 200. The most abundant species during the winter were mallards, American wigeons, northern pintails, northern shovelers, cinnamon teals, ruddy ducks, American coots, and ring-billed gulls. Although mallards, ruddy ducks, and coots were residents on the lake, their numbers were far higher in the winter than in the spring. During the spring, the most abundant species on the lake were Clark's and western grebes, Canada geese, ruddy ducks, and American coots.

Christmas Bird Count data suggest that numbers of wintering waterfowl on Lake Norconian vary substantially among years (Table 4). Although these data are not standardized by observer effort and are not directly comparable with the censuses conducted for this survey, they indicate that aquatic bird numbers were far lower in 1990 and 1991 compared to 1993-1995. Whether this change is due to local conditions on Lake Norconian or continental population trends of migrating waterfowl is unclear.

Two species of rail, the Virginia rail and sora, were detected on broadcast surveys (Table 3). All rail detections were on the northwest shore of Lake Norconian, where the most extensive stands of cattails occurred (points C and D in Figure 1).

## DISCUSSION

Although dominated by a few urban-adapted species, and in particular the exotic European starling, the avifauna of NWADC was remarkably diverse given the small area of the base (250 acres). During this survey, we detected 114 terrestrial and aquatic bird species during the winter and spring. Most of the diversity can be attributed to the presence of Lake Norconian and its use as a wintering site by migrating waterfowl and to the mosaic of grassland, urban, woodland, and riparian vegetation in the areas surrounding the lake.

No threatened or endangered species were detected during surveys with the exception of one peregrine falcon (California and federal endangered), sighted on 12 December 1995. We saw this bird only briefly as it perched on a snag on the island in Lake Norconian, and assume it was a migrant passing through the area. Despite regular searches of the riparian vegetation adjacent to Lake Norconian, on the island, below the dam, and south of building 522, we detected no willow flycatchers, least Bell's vireos or western yellow-billed cuckoos. The vireo and the cuckoo are recorded as breeders, and the flycatcher as a migrant in the nearby Santa Ana river drainage (Anonymous 1995, Calif. Dept. of Fish and Game 1995). To the best of our knowledge, the least Bell's vireo is the only one of these species that has ever been recorded within the boundary of NWADC. Sightings occurred in 1987, 1993, and 1995 (Hamilton 1987?; Frank Narconi, pers. comm.) and breeding was never recorded. The 1987 sighting was in an area south of the current

boundary of the base that has since been sold and developed; the 1993 and 1995 sightings were in the willows at the west end of the lake. Existing stands of willows on the base are sparse and occur in narrow strips around the margin of the lake, below the dam, and south of building 522. These stands almost certainly do not provide adequate breeding habitat for the flycatcher, vireo, or cuckoo, but could potentially be used by all of these species during migration. The coastal California gnatcatcher relies on coastal sage scrub. This plant community does not occur at NWAD Corona, and we would not expect gnatcatchers to occur on the base except as irregular vagrants.

Management efforts for birds at NWAD Corona should focus on maintaining the current diversity of vegetation types. The base is unlikely to support breeding populations of least Bell's vireos or yellow-billed cuckoos without extensive expansion and enhancement of existing riparian vegetation. Most of the unique habitat value of the base is attributable to Lake Norconian, and this resource should be managed to maximize the benefit to migrating waterfowl. In particular, management activities should include monitoring and maintenance of lake water quality, enhancement of stands of cattails and bullrush to provide cover for wintering waterfowl and rails and nest sites for grebes, removal of exotic giant cane, and limiting boat traffic from November through January when wintering waterfowl are most numerous.

Habitat values for some terrestrial birds at NWADC will inevitably decline as development continues on land adjacent to the base. Currently, a large area the east side of the base is undeveloped, and consists of open grasslands with scattered Eucalyptus stands and windbreaks. Development on the properties on the south side of the base was occurring as this survey took place. Turkey vultures, red-tailed hawks, American kestrels, prairie falcons, greater roadrunners, burrowing owls, western and Cassin's kingbirds, loggerhead shrikes, savannah sparrows, lark sparrows, and western meadowlarks were all observed to use these open spaces adjacent to the base. Populations of all of these species are likely to decline when these spaces are developed.

#### ACKNOWLEDGMENTS

We thank Charles Quinn for providing access to the base and logistic support, and he and Frank Narconi for sharing their own bird observations. Larry LaPré compiled and provided all available Christmas Bird Count data. Christmas Bird Count observers were Vernon and Andrew Howe in 1990 and 1991, Larry LaPré in 1993, and Larry LaPré and John Potahl in 1994.



Table 1. Terrestrial birds detected on point counts and incidentally at Naval Warfare Assessment Division, Corona, Riverside County, California, during the winter of 1995/1996 and the spring of 1996. Values in parenthesis indicate absolute numbers of incidental detections. Scientific names appear in Appendix A.

Species	Residency Status <sup>b</sup>	Count <sup>a</sup>						Relative abundance (%) <sup>c</sup>					
		Winter (n = 13)			Spring (n = 13)			Incidence <sup>d</sup>		Frequency <sup>e</sup>		Winter	Spring
		$\bar{x}$	SD	SD	$\bar{x}$	SD	SD	Winter	Spring	Winter	Spring	Winter	Spring
Killdeer	W	0.79	2.47	0.10	0.21	0.21	1.000	0.750	10.25	1.67	13.27	2.70	
Turkey vulture	W	0.23	0.48	0.02	0.07	0.07	0.250	0.125	12.00	2.00	3.88	0.54	
Sharp-shinned hawk	LB	0.02	0.07	0.02	0.05	0.05	0.250	0.250	1.00	1.00	0.32	0.54	
Cooper's hawk	LB	0.04	0.09	0.04	0.08	0.08	0.500	0.375	1.00	1.33	0.65	1.08	
Red-shouldered hawk	RB-P	0.10	0.16	0.07	0.14	0.14	1.000	0.500	1.25	1.75	1.62	1.89	
Red-tailed hawk	RB-C	0.19	0.29	0.11	0.15	0.15	1.000	0.750	2.50	1.83	3.24	2.97	
Osprey	M	(1)		(1)									
American kestrel	RB-C	0.60	0.74	0.70	0.78	0.78	1.000	1.000	7.75	9.13	10.03	19.73	
Prairie falcon	M	(1)											
Peregrine falcon	M	(1)											
Rock dove	RB-C	0.85	2.05	0.19	0.50	0.50	1.000	0.875	11.00	2.86	14.24	5.41	
Mourning dove	RB-C	5.94	12.52	1.07	0.77	0.77	1.000	1.000	77.25	13.88	100.00	30.00	
Greater roadrunner	RB-P			(1)									
Barn owl	RB-P			(1)									
Great-horned owl	RB-P	0.0(1)	0.0	0.02	0.07	0.07	0.0	0.250	1.00	1.00	0.32	0.54	
Burrowing owl	RB-C	0.0	0.0	0.01	0.03	0.03	0.0	0.125	1.00	1.00	0.27	0.27	
Anna's hummingbird	RB-C	0.79	0.38	0.41	0.32	0.32	1.000	1.000	10.25	5.38	13.27	11.62	
Northern flicker	LB	0.48	0.75	0.04	0.08	0.08	1.000	0.250	6.25	2.00	8.09	1.08	
Red-breasted sapsucker	W	0.02	0.07	0.0	0.0	0.0	0.250	0.0	1.00	1.00	0.32	0.32	
Downy woodpecker	LB	0.02	0.07	0.0	0.0	0.0	0.250	0.0	1.00	1.00	0.32	0.32	
Nuttall's woodpecker	LB	0.02	0.07	0.0(1)	0.0	0.0	0.250	0.0	1.00	1.00	0.32	0.32	
Western kingbird	MB-C	0.0	0.0	0.34	0.45	0.45	0.0	1.000	4.38	4.38	9.46	9.46	
Cassin's kingbird	RB-C	0.23	0.37	0.29	0.26	0.26	0.750	1.000	4.00	3.75	3.88	8.11	
Ash-throated flycatcher	LB	0.0	0.0	0.01	0.03	0.03	0.0	0.125	1.00	1.00	0.27	0.27	
Black phoebe	RB-P	0.44	0.29	0.24	0.25	0.25	1.000	1.000	5.75	3.13	7.44	6.76	
Say's phoebe	W	0.13	0.24	0.01	0.03	0.03	1.000	0.125	1.75	1.00	2.27	0.27	

Table 1. Continued.

Species	Residency Status <sup>b</sup>	Count <sup>a</sup>						Relative abundance (%) <sup>c</sup>					
		Winter (n = 13)			Spring (n = 13)			Incidence <sup>d</sup>					
		$\bar{x}$	SD	SD	$\bar{x}$	SD	SD	Winter	Spring	Winter	Spring		
Pacific-slope flycatcher	M	0.0	0.0	0.0	0.05	0.05	0.0	0.125	0.0	0.125	2.00	2.00	0.54
Horned lark	I	0.0	0.0	0.0	0.03	0.03	0.0	0.125	0.0	0.125	1.00	1.00	0.27
Violet-green swallow	M	0.37	0.77	0.0	0.0	0.0	0.250	0.0	0.0	0.0	19.00	19.00	6.15
Northern rough-winged swallow	MB-C	0.0	0.0	0.0	0.15	0.38	0.0	0.625	0.0	0.625	3.20	3.20	4.32
Cliff swallow	MB-C	0.02	0.07	0.07	3.54	10.31	0.250	1.000	1.00	1.000	46.00	46.00	99.46
Barn swallow	MB-A	0.0	0.0	0.0	0.46	0.83	0.0	1.000	0.0	1.000	6.00	6.00	12.97
American crow	RB-C	3.37	5.39	5.39	2.67	1.36	1.000	1.000	43.75	1.000	34.75	34.75	75.14
Common raven	LB	0.0	0.0	0.0	0.01	0.03	0.0	0.125	0.0	0.125	1.00	1.00	0.27
Bush-tit	RB-C	1.52	2.25	2.25	0.86	0.97	1.000	1.000	19.75	1.000	11.13	11.13	24.05
House wren	RB-C	0.08	0.19	0.19	0.03	0.05	0.500	0.375	2.00	0.375	2.00	2.00	0.81
Marsh wren	LB	0.15	0.28	0.28	0.05	0.12	0.750	0.375	2.67	0.375	2.67	2.67	1.35
Ruby-crowned kinglet	W	0.17	0.30	0.30	0.0	0.0	1.000	0.0	2.25	0.0	2.25	2.25	2.91
Western bluebird	LB	0.04	0.09	0.09	0.0(1)	0.0	0.500	0.0	1.00	0.0	1.00	1.00	0.65
Loggerhead shrike	RB-C	0.50	0.61	0.61	0.42	0.68	1.000	1.000	6.50	1.000	5.50	5.50	11.89
Northern mockingbird	RB-C	0.71	0.43	0.43	0.99	0.80	1.000	1.000	9.25	1.000	12.88	12.88	27.84
American pipit	W	0.52	1.87	1.87	0.0	0.0	0.250	0.0	27.00	0.0	27.00	27.00	8.74
European starling	RB-C	3.10	4.06	4.06	3.56	3.37	1.000	1.000	40.25	1.000	46.25	46.25	100.00
Orange-crowned warbler	M	0.0	0.0	0.0	0.01	0.03	0.0	0.125	0.0	0.125	1.00	1.00	0.27
Yellow-rumped warbler	W	2.67	1.92	1.92	0.22	0.40	1.000	0.125	34.75	0.125	23.00	23.00	6.22
Yellow warbler	M	0.0	0.0	0.0	0.04	0.08	0.0	0.250	0.0	0.250	2.00	2.00	1.08
Wilson's warbler	M	0.0	0.0	0.0	0.01	0.03	0.0	0.125	0.0	0.125	1.00	1.00	0.27
Common yellowthroat	RB-P	0.52	0.57	0.57	0.50	0.67	1.000	1.000	6.75	1.000	6.50	6.50	14.05
Blue grosbeak	MB-P	0.0	0.0	0.0	0.05	0.06	0.0	0.250	0.0	0.250	2.50	2.50	1.35
Green-tailed towhee	I	(1)											
Spotted towhee	LB	0.06	0.15	0.15	0.04	0.08	0.500	0.250	1.50	0.250	2.00	2.00	1.08

Table 1. Continued.

Species	Residency Status <sup>b</sup>	Count <sup>a</sup>						Relative abundance (%) <sup>e</sup>			
		Winter (n = 13)			Spring (n = 13)			Incidence <sup>d</sup>			
		$\bar{x}$	SD	$\bar{x}$	SD	Winter	Spring	Winter	Spring		
California towhee	RB-C	0.25	0.41	0.49	0.51	1.000	1.000	3.25	6.38	4.21	13.78
Savannah sparrow	M	0.0	0.0	0.17	0.46	0.0	0.250	0.0	9.00	0.0	4.86
Song sparrow	RB-C	0.27	0.39	0.35	0.49	1.000	1.000	3.50	4.50	4.53	9.73
Lark sparrow	W	0.17	0.55	0.0	0.0	0.750	0.0	3.00	0.0	2.91	0.0
Chipping sparrow	M	0.0	0.0	0.01	0.03	0.0	0.125	0.0	1.00	0.0	0.27
Dark-eyed junco	W	0.06	0.21	0.0	0.0	0.250	0.0	3.00	0.0	0.97	0.0
White-crowned sparrow	W	1.19	1.43	0.07	0.16	1.000	0.250	15.50	3.50	20.06	1.89
Lincoln's sparrow	W	0.04	0.09	0.01	0.03	0.250	0.125	2.00	1.00	0.65	0.27
Western meadowlark	RB-P	0.58	0.88	0.31	0.37	1.000	1.000	7.50	4.00	9.71	8.65
Yellow-headed blackbird	LB?	0.0(5)	0.0	0.02	0.07	0.0	0.125	1.00	2.00	0.32	0.54
Red-winged blackbird	LB	0.02	0.07	0.97	3.46	0.250	0.250	1.00	50.50	0.0	27.30
Brewer's blackbird	LB?	0.0	0.0	0.06	0.14	0.0	0.125	0.0	6.00	0.0	1.62
Brown-headed cowbird	MB-P	0.0	0.0	0.24	0.30	0.0	0.875	0.0	3.57	0.0	6.76
Great-tailed grackle	MB-P	0.0	0.0	0.11	0.20	0.0	0.625	0.0	2.20	0.0	2.97
Bullock's oriole	MB-C	0.0	0.0	0.36	0.46	0.0	1.000	0.0	4.63	0.0	10.00
Hooded oriole	MB-C	0.0	0.0	0.07	0.21	0.0	0.500	0.0	1.75	0.0	1.89
Western tanager	M	0.0	0.0	0.03	0.05	0.0	0.250	0.0	1.50	0.0	0.81
House sparrow	RB-C	0.46	0.75	1.55	2.08	0.750	1.000	8.00	20.13	7.77	43.51
Lesser goldfinch	RB-C	0.29	0.32	0.45	0.38	0.750	1.000	5.00	5.88	4.85	12.70
House finch	RB-C	3.98	4.73	1.03	1.08	1.000	1.000	51.75	13.38	66.99	28.92
Unidentified hummingbird		0.08	0.12	0.06	0.08	0.0	0.0	0.0	0.0	0.0	0.0
Unidentified kingbird		0.0	0.0	0.05	0.06	0.0	0.0	0.0	0.0	0.0	0.0
Unidentified swallow		0.08	0.28	0.01	0.03	0.0	0.0	0.0	0.0	0.0	0.0
Unidentified warbler		0.0	0.0	0.02	0.05	0.0	0.0	0.0	0.0	0.0	0.0
Unidentified sparrow		0.06	0.21	0.07	0.24	0.0	0.0	0.0	0.0	0.0	0.0

Table 1. Continued.

Species	Residency	Count <sup>a</sup>				SD	Frequency <sup>c</sup>	Incidence <sup>d</sup>		Relative abundance	
		Winter (n = 13)	$\bar{x}$	Spring (n = 13)	$\bar{x}$			Winter	Spring	Winter	Spring
Unidentified blackbird		0.04	0.14	0.0	0.0						
Unidentified passerine		0.02	0.07	0.01	0.03						

<sup>a</sup>Units on  $\bar{x}$  and SD are no. individuals detected/point/visit.

<sup>b</sup>Residency status codes: RB-C = resident, breeding confirmed; RB-A = resident, breeding assumed; LR = local resident, no evidence of breeding at the base; MB-C = migrant breeder, breeding confirmed; MB-A = migrant breeder, breeding assumed; M = migrant; W = wintering; I = irregular. A question mark following residency status indicates particular uncertainty about that classification.

<sup>c</sup>Species frequency = the number of visits in which a species was recorded / the total number of visits.

<sup>d</sup>Species incidence = the total number of individuals of a species recorded at all count stations / the total number of visits in which the species was recorded.

<sup>e</sup>Relative abundance = 100% x (the mean per-point total count for a species / the highest mean per-point total count of all species).



Table 2. Habitat use by terrestrial birds at Naval Warfare Assessment Division, Corona, Riverside County, California, in the winter of 1995/1996 and the spring of 1996. Column header abbreviations are as follows: *n* = number of individuals observed (not necessarily statistically independent); L/U = landscaped woodland/urban; GR = disturbed grassland; RIP = riparian; EUC = eucalyptus grove. Not all rows total 100% because of round off error.

Species	Winter					Spring				
	<i>n</i>	Percent use				<i>n</i>	Percent use			
		L/U	GR	RIP	EUC		L/U	GR	RIP	EUC
Killdeer	41		100			10	40	60		
Turkey vulture	12	17	83			2		100		
Sharp-shinned hawk	2	50		50		3		33	67	
Cooper's hawk	2		50	50		3	33		33	33
Red-shouldered hawk	5	60		40		6	83	17		
Red-tailed hawk	10	30	50	10	10	10	30	60		10
Osprey	1			100		1			100	
American kestrel	30	13	73	7	7	65	23	66	8	3
Prairie falcon	1		100							
Peregrine falcon	1			100						
Rock dove	44	96	4			20	95	5		
Mourning dove	307	2	91	7		108	35	43	18	4
Greater roadrunner						1		100		
Barn owl						1			100	
Great-horned owl	1			100		2			100	
Burrowing owl						5		100		
Anna's hummingbird	41	15	29	54	2	43	7	19	70	5
Northern flicker	21	33	43	24		2			100	
Red-breasted sapsucker	1	100								
Downy woodpecker	1			100						
Nuttall's woodpecker	1			100		1	100			
Western kingbird						32	28	38	9	25
Cassin's kingbird	12	25	33	17	25	29	45	28	7	21
Black phoebe	19	26	16	53	5	21	29		71	
Say's phoebe	7		100			1		100		
Pacific-slope flycatcher						2			50	50
Horned lark						3	33	67		
Violet-green swallow	19		47	53						
Northern rough-winged swallow						16	25	25	50	
Cliff swallow	1		100			363	86	10	4	
Barn swallow						48	71	29		
American crow	175	44	45	8	3	265	45	32	22	2
Common raven						1	100			
Bushtit	79	30		70		88	11	2	87	

Table 2. Continued.

Species	Winter					Spring				
	n	L/D	Percent use			n	L/D	Percent use		
			GR	RIP	EUC			GR	RIP	EUC
House wren	4		50	50		3	33		67	
Marsh wren	8			100		5			100	
Ruby-crowned kinglet	9	11	11	78						
Western bluebird	2	100				1	100			
Loggerhead shrike	23	17	74		9	40	58	35	2	5
Northern mockingbird	31	26	23	45	7	83	47	17	35	1
American pipit	39	13	87							
European starling	161	73	11	12	3	365	50	41	8	1
Orange-crowned warbler						1			100	
Yellow-rumped warbler	139	25	15	43	15	23	39		61	
Yellow warbler						4	50		50	
Wilson's warbler						1			100	
Common yellowthroat	27	7		93		52	2		98	
Blue grosbeak						5			100	
Green-tailed towhee	1		100							
Spotted towhee	3			100		4			100	
California towhee	13		15	77	8	44	2	9	80	9
Savannah sparrow						18		100		
Song sparrow	14			100		37			100	
Lark sparrow	9	11	89							
Chipping sparrow						1	100			
Dark-eyed junco	3			100						
White-crowned sparrow	60	3	27	70		8			100	
Lincoln's sparrow	2		50	50		1			100	
Western meadowlark	26	4	96			28	4	89	7	
Yellow-headed blackbird	5			100		17			100	
Red-winged blackbird	1		100			115			100	
Brewer's blackbird						8	100			
Brown-headed cowbird						22	23	5	68	5
Great-tailed grackle						9	56		44	
Bullock's oriole						35	20	17	14	49
Hooded oriole						9	78	22		
Western tanager						4	25		50	25
House sparrow	24	100				152	88	2	9	1
Lesser goldfinch	12	42	8	42	8	43	21	19	61	
House finch	198	41	21	19	19	101	38	5	31	27



Table 3. Numbers of aquatic birds detected during censuses and broadcast surveys at Lake Norconian, Naval Weapons Assessment Division Corona, Riverside County, California, during the winter of 1995/1996 and the spring of 1996. The surveys on 8 Nov and 12 Dec 1995 were incomplete counts and should not be taken as estimates of the total number of birds on the lake, but only as indicators of presence/absence.

Species	Status	Winter 1995/1996										Spring 1996				
		8 Nov	12 Dec	13 Dec	10 Jan	3 Feb	4 Feb	29 Feb	3 Apr	14 Apr	23 Apr	4 May	14 May	25 May	4 Jun	15 Jun
Clark's grebe	RB-C <sup>a</sup>		1	3	8	11	8	11	12	15	15	16	8	2	9	6
Western grebe	RB-C	7	1	2	4	6	6	9	12	14	17	16	8	2	9	7
Eared grebe	W		1	2		15	22	10								
Pied-billed grebe	RB-P	1	2	2	9	10	10	9	3	4	3	5	5	3	3	4
Double-crested cormorant	R	9		54	92	122	5	23	1	3	1	3	2	1		5
Black-crowned night heron	R		2		3	2		3	6	4	2	2		1		2
Green heron	RB-P?			4	1	2		1	2	2	2	3	2	1	2	1
Cattle egret	W			1	69	1		2								
Snowy egret	R		1		1			1	2	1	2	2				
Great egret	R	3		1	6	1		1	4	2	3	8	2	1	1	2
Great blue heron	R	2	1	1	2			1	2	3	3	1	1	3	1	2
Canada goose	RB-C	25		18	23		40	22	21	15	13	14	15	17	15	14
Mallard	RB-C	300	3	95	460	51	20	12	9	7	3	6	5	5	21	26
Gadwall	W	4		43	167	23	7									
Green-winged teal	W			2	11	15	6									
American wigeon	W	100	4	240	463	464	2	2								
Eurasian wigeon	W					1										
Northern pintail	W	100	43	327	512	101	2	4								
Northern shoveler	W	300	6	249	192	81	14	6								
Blue-winged teal	W				18		2									
Cinnamon teal	LB	9	7	33	165	102	231	52	4		2					
Ruddy duck	R	200	23	121	157	249	306	123	23	34	40	41	26	22	13	21
Fulvous whistling duck	I	2														
Wood duck	RB-C			1		1			1	1	1		1	1	13	4

Table 3. Continued.

Species	Status	Winter 1995/1996										Spring 1996				
		8 Nov	12 Dec	13 Dec	10 Jan	3 Feb	4 Feb	29 Feb	3 Apr	14 Apr	23 Apr	4 May	14 May	25 May	4 Jun	15 Jun
Canvasback	W				3											
Redhead	W	2	1	5										7		
Ring-necked duck	W		3	1	6	20	2									
Lesser scaup	W				2		5									
Surf scoter	I			3												
Bufflehead	W					2										
Common merganser	W					1										
Hooded merganser	W				1											
Domestic/hybrid																
duck	R	4			6	2	2	2	8	6	7	7	7	12		6
Virginia rail	W	<sup>a</sup>	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Sora	W	-	-	-	-	-	-	1	3	-	-	-	-	-	-	-
Common moorhen	R	8	2	8	1	6	2	6	2	2	3	1	1	1	1	1
American coot	R	400	10	559	191	100	91	195	91	77	34	19	34	32	21	25
Common snipe	W				2	4										
Bonaparte's gull	W	8	50	34	29				1	2	1	1	1	1	1	1
Ring-billed gull	W	24	217	155	409	14	3	3	2	2	2			14		
California gull	W				2				1							
Caspian tern	I															2
Belted kingfisher	RB-A			2	2	1	1	1	1	2	1					4
Unidentified scaup	I															

<sup>a</sup>Residency status codes: RB-C = resident, breeding confirmed; RB-P = resident, breeding probable; LB = local breeder, no evidence of breeding at the base; R = resident non-breeder; W = wintering; I = irregular. A question mark following residency status indicates particularly uncertainty about that classification.

<sup>b</sup>Hyphens indicate no broadcast survey was conducted on this date.

Table 4. Numbers of aquatic birds detected during Christmas Bird Counts at Lake Norconian, Naval Warfare Assessment Division Corona, Riverside County, California, in 1990, 1991, 1993, and 1994.

Species	1990	1991	1993	1994
	16 Dec	14 Dec	19 Dec	18 Dec
Clark's grebe	1			
Western grebe			8	7
Eared grebe				3
Pied-billed grebe		2	5	7
Double-crested cormorant	5	3	16	131
Black-crowned night heron				1
Cattle egret	7	3		11
Snowy egret			1	4
Great egret			1	3
Great blue heron		4	2	3
Canada goose		5	130	47
Mallard	5	4	37	316
Gadwall	1		50	18
Green-winged teal	4	2	50	18
American wigeon	6	5	129	133
Northern pintail	4		251	324
Northern shoveler		2	367	154
Blue-winged teal	4	4	20	
Cinnamon teal		2	176	99
Ruddy duck	2	8	10	22
Canvasback	5	5	5	2
Redhead		2		
Ring-necked duck	9		6	12
Common moorhen	5		1	4
American coot	9	4	60	71
Black-necked stilt		8		
Spotted sandpiper				1
Long-billed dowitcher				47
Common snipe	5	2		
Least sandpiper		4		
Bonaparte's gull	1	4		34
Ring-billed gull		6	890	240
California gull	1	3		
Forster's tern				2
Belted kingfisher				2
Unidentified dowitcher	1	5		

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Appendix A. Scientific names and data file abbreviations (where applicable) of animals named in this report or appearing in the point-count data file.

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Common name	Scientific name	Abbreviation
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Birds

Clark's grebe	<i>Aechmophorus clarkii</i>	
Western grebe	<i>Aechmophorus occidentalis</i>	
Eared grebe	<i>Podiceps nigricollis</i>	
Pied-billed grebe	<i>Podilymbus podiceps</i>	
Double-crested cormorant	<i>Phalacrocorax auritus</i>	DCCO
Black-crowned night heron	<i>Nycticorax nycticorax</i>	BCNH
Green heron	<i>Butorides virescens</i> ←	GRHE
Cattle egret	<i>Bubulcus ibis</i>	CAEG
Snowy egret	<i>Egretta thula</i>	SNEG
Great egret	<i>Casmerodius albus</i>	GREG
Great blue heron	<i>Ardea herodias</i>	GBHE
Canada goose	<i>Branta canadensis</i>	CAGO
Mallard	<i>Anas platyrhynchos</i>	MALL
Gadwall	<i>Anas strepera</i>	
Green-winged teal	<i>Anas crecca</i>	
American wigeon	<i>Anas americana</i>	
Eurasian wigeon	<i>Anas penelope</i>	
Northern pintail	<i>Anas acuta</i>	
Northern shoveler	<i>Anas clypeata</i>	
Blue-winged teal	<i>Anas discors</i>	
Cinnamon teal	<i>Anas cyanoptera</i>	
Ruddy duck	<i>Oxyura jamaicensis</i>	
Fulvous whistling duck	<i>Dendrocygna bicolor</i>	
Wood duck	<i>Aix sponsa</i>	WODU
Canvasback	<i>Aythya valisineria</i>	
Redhead	<i>Aythya americana</i>	
Ring-necked duck	<i>Aythya collaris</i>	
Lesser scaup	<i>Aythya affinis</i>	LESC
Surf scoter	<i>Melanitta perspicillata</i>	
Bufflehead	<i>Bucephala albeola</i>	BUFF
Common merganser	<i>Mergus merganser</i>	
Hooded merganser	<i>Lophodytes cucullatus</i>	
Domestic/hybrid duck		DODU
Virginia rail	<i>Rallus limicola</i>	
Sora	<i>Porzana carolina</i>	
Black rail	<i>Laterallus jamaicensis</i>	



Appendix A. Continued.

Common name	Scientific name	Abbreviation
Birds (continued)		
Common moorhen	<i>Gallinula chloropus</i>	COMO
American coot	<i>Fulica americana</i>	AMCO
Black-necked stilt	<i>Himantopus mexicanus</i>	
Killdeer	<i>Charadrius vociferus</i>	KILL
Spotted sandpiper	<i>Actitis macularia</i>	
Long-billed dowitcher	<i>Limnodromus scolopaceus</i>	
Common snipe	<i>Gallinago gallinago</i>	COSN
Least sandpiper	<i>Calidris minutilla</i>	
Bonaparte's gull	<i>Larus philadelphia</i>	BOGU
Ring-billed gull	<i>Larus delawarensis</i>	RBGU
California gull	<i>Larus californicus</i>	CAGU
Forster's tern	<i>Sterna forsteri</i>	
Caspian tern	<i>Sterna caspia</i>	
Turkey vulture	<i>Cathartes aura</i>	TUVU
Golden eagle	<i>Aquila chrysaetos</i>	
Northern harrier	<i>Circus cyaneus</i>	
Sharp-shinned hawk	<i>Accipiter striatus</i>	SSHA
Cooper's hawk	<i>Accipiter cooperii</i>	COHA
Red-shouldered hawk	<i>Buteo lineatus</i>	RSHA
Red-tailed Hawk	<i>Buteo jamaicensis</i>	RTHA
Osprey	<i>Pandion haliaetus</i>	OSPR
American kestrel	<i>Falco sparverius</i>	AMKE
Prairie falcon	<i>Falco mexicanus</i>	PRFA
Peregrine falcon	<i>Falco peregrinus</i>	PEFA
Rock dove	<i>Columba livia</i>	RODO
Mourning dove	<i>Zenaida macroura</i>	MODO
Western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	
Greater roadrunner	<i>Geococcyx californianus</i>	GRRO
Barn owl	<i>Tyto alba</i>	BAOW
Great-horned owl	<i>Bubo virginianus</i>	GHOW
Burrowing owl	<i>Athene cunicularia</i>	BUOW
Anna's hummingbird	<i>Calypte anna</i>	ANHU
Belted kingfisher	<i>Ceryle alcyon</i>	BEKI
Northern flicker	<i>Colaptes auratus</i>	NOFL
Red-breasted sapsucker	<i>Sphyrapicus ruber</i>	RBSA
Downy woodpecker	<i>Picoides pubescens</i>	DOWO
Nuttall's woodpecker	<i>Picoides nuttallii</i>	NUWO



Appendix A. Continued.

Common name	Scientific name	Abbreviation
Birds (continued)		
Western kingbird	<i>Tyrannus verticalis</i>	WEKI
Cassin's kingbird	<i>Tyrannus vociferans</i>	CAKI
Ash-throated flycatcher	<i>Myiarchus cinerascens</i>	ATFL
Black phoebe	<i>Sayornis nigricans</i>	BLPH
Say's phoebe	<i>Sayornis saya</i>	SAPH
Willow flycatcher	<i>Empidonax traillii</i>	
Pacific-slope flycatcher	<i>Empidonax difficilis</i>	PSFL
Horned lark	<i>Eremophila alpestris</i>	HOLA
Violet-green swallow	<i>Tachycineta thalassina</i>	VGSW
Northern rough-winged swallow	<i>Stelgidopteryx serripennis</i>	NRWS
Cliff swallow	<i>Hirundo pyrrhonota</i>	CLSW
Barn swallow	<i>Hirundo rustica</i>	BARS
American crow	<i>Corvus brachyrhynchos</i>	AMCR
Common raven	<i>Corvus corax</i>	CORA
Bushtit	<i>Psaltriparus minimus</i>	BUSH
House wren	<i>Troglodytes aedon</i>	HOWR
Marsh wren	<i>Cistothorus palustris</i>	MAWR
Ruby-crowned kinglet	<i>Regulus calendula</i>	RCKI
Coastal California gnatcatcher	<i>Polioptila californica californica</i>	
Western bluebird	<i>Sialia mexicana</i>	WEBL
Loggerhead shrike	<i>Lanius ludovicianus</i>	LOSH
Northern mockingbird	<i>Mimus polyglottos</i>	NOMO
American pipit	<i>Anthus rubescens</i>	AMPI
European starling	<i>Sturnus vulgaris</i>	EUST
Cedar waxwing	<i>Bombycilla cedrorum</i>	
Least Bell's vireo	<i>Vireo bellii pusillus</i>	
Orange-crowned warbler	<i>Vermivora celata</i>	OCWA
Yellow-rumped warbler	<i>Dendroica coronata</i>	YRWA
Yellow warbler	<i>Dendroica petechia</i>	YEWA
Wilson's warbler	<i>Wilsonia canadensis</i>	WIWA
Common yellowthroat	<i>Geothlypis trichas</i>	COYE
Blue grosbeak	<i>Guiraca caerulea</i>	BLGR
Green-tailed towhee	<i>Pipilo chlorurus</i>	GTTO
Spotted towhee	<i>Pipilo maculatus</i>	RSTO
California towhee	<i>Pipilo crissalis</i>	CATO
Savannah sparrow	<i>Passerculus sandwichensis</i>	SAVS
Song sparrow	<i>Melospiza melodia</i>	SOSP

Appendix A. Continued.

Common name	Scientific name	Abbreviation
Birds (continued)		
Lark sparrow	<i>Chondestes grammacus</i>	LASP
Chipping sparrow	<i>Spizella passerina</i>	CHSP
Dark-eyed junco	<i>Junco hyemalis</i>	DEJU
White-crowned sparrow	<i>Zonotrichia leucophrys</i>	WCSP
Lincoln's sparrow	<i>Melospiza lincolni</i>	LISP
Western meadowlark	<i>Sturnella neglecta</i>	WEME
Yellow-headed black	<i>Xanthocephalus xanthocephalus</i>	YHBL
Red-winged blackbird	<i>Agelaius phoeniceus</i>	RWBL
Brewer's blackbird	<i>Euphagus cyanocephalus</i>	BRBL
Brown-headed cowbird	<i>Molothrus ater</i>	BHCO
Great-tailed grackle	<i>Quiscalus mexicanus</i>	GTGR
Bullock's oriole	<i>Icterus bullockii</i>	NOOR
Hooded oriole	<i>Icterus cucullatus</i>	HOOR
Western tanager	<i>Piranga ludoviciana</i>	WETA
House sparrow	<i>Passer domesticus</i>	HOSP
Lesser goldfinch	<i>Carduelis psaltria</i>	LEGO
House finch	<i>Carpodacus mexicanus</i>	HOFI
Unidentified blackbird		UNBL
Unidentified egret		UNEG
Unidentified hummingbird		UNHU
Unidentified kingbird		UNKI
Unidentified passerine		UNPA
Unidentified sparrow		UNSP
Unidentified swallow		UNSW
Unidentified warbler		UNWA
Mammals		
Black-tailed jackrabbit	<i>Lepus californicus</i>	BTJR
California ground squirrel	<i>Spermophilus beecheyi</i>	CAGS
Cottontail	<i>Sylvilagus sp.</i>	COTT
Coyote	<i>Canis latrans</i>	COYO
Striped skunk	<i>Mephitis mephitis</i>	STSK

**APPENDIX P**

**NATURAL RESOURCE MANAGER LETTER OF DESIGNATION**

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DEPARTMENT OF THE NAVY

NAVAL WEAPONS STATION SEAL BEACH  
800 SEAL BEACH BOULEVARD  
SEAL BEACH, CA 90740-5000

Canc frp: Sep 12  
IN REPLY REFER TO:  
NAVWPNSTASBNOTE 1301  
N00  
8 Mar 12

NAVWPNSTA SEAL BEACH CA NOTICE 1301

Subj: ASSIGNMENT OF PERSONNEL TO PRIMARY COLLATERAL DUTIES

Ref: (a) OPNAVINST 3120.32C  
(b) U. S. Navy Regulations, 1990

Encl: (1) List of Duty Assignments  
(2) Collateral Duty Assignments

1. Purpose. To publish the assignment of Naval Weapons Station Seal Beach personnel primary and collateral duties.

2. Cancellation. NAVWPNSTASBNOTE 1301 of 22 Feb 12.

3. Background. Reference (a) is the basis for assignments of primary and collateral duties. Reference (b) vests in the Commanding Officer (CO) the authority to assign personnel under his or her command primary duties based on the individual's capabilities and command manpower requirements. For positions requiring designation in writing, this notice fulfills that requirement. Enclosures (1) and (2) constitutes official notification of primary duties, collateral duties, and assignments to boards, councils, and committees.

4. Responsibility. All initial assignments and subsequent changes must originate from the Executive Officer in consonance with the desires of the CO. Installation Program Directors (IPDs) submit recommended changes to enclosures (1) and (2) to the Command Admin IPD. IPDs will review turnover files in instances where officers in their departments are relieved. The Executive Officer will review the files for relief's involving IPDs or senior board members.

5. Action. The primary and collateral duties contained in enclosures (1) and (2) are effective this date. No additional directives will be issued unless specifically required for the duty assigned. It is the responsibility of each person assigned duties by this notice to review applicable references, maintain required records, files, and submit required reports to the Commanding Officer and Executive Officer. Periodic review (i.e., three monthly collateral duty programs) of collateral duties will be conducted and an internal command self-assessment audit completed. A memorandum of internal audit completion will be routed to the Commanding Officer via the Executive Officer and Command Admin IPD for review.

NAVWPNSTASBNOTE 1301  
8 Mar 12

6. Cancellation Contingency. This notice will remain in effect until superseded by another notice of the same subject matter.



T. W. ABBERRY

Distribution:  
Electronic only, via NAVWPNSTA Seal Beach Web site



COLLATERAL DUTY ASSIGNMENTS

Collateral Duty

Governing Instruction

Name

PRD

Loc

Lead Program

OPNAVINST 5100.23G

Mr. Hector Romera

SB/FB/NOR

\*Legal Program/Non Judicial Punishment

JAG 5800.7C

YNI Kiona Gilbert

Mar-15 SB

Military Whistleblower Reprisal Coordinator

SECNAVINST 5370.7C

Ms. Karen Burrows

SB

Military Volunteer Coordinator

SECNAVINST 5720.44B

MCI Eli Medellin

Oct-15 SB

Mishap Investigations, Reporting and Records Keeping

OPNAVINST 5100.23G

Mr. James Olinger

SB

Motor Accident Investigation Crime Prevention

OPNAVINST 5102.1D

MA2 Christopher Hauser

Apr-13 SB

\*Motorcycle Safety Representative

OPNAVINST 5100.12H

MA2 Christopher Hauser

Apr-13 SB/FB/NOR

National Environmental Policy Act Program

OPNAVINST 5090.1C

Ms. Lisa Bosalet

SB/FB/NOR/SP

Natural Resources Manager

OPNAVINST 5090.1C

Ms. Christy Wolf

FB

Mr. Robert Schallmann

SB/NOR/SP

NAVOSH Councils and Committees Programs

OPNAVINST 5100.23G

Mr. James Olinger

SB

\*Navy Family Ombudsman Program

OPNAVINST 1750.1G

Mrs. Suzanne Cleveland

SB

OPNAVINST 1740.4D

Enclosure (2)



**APPENDIX Q**

**2000-2010 BIRD COUNTS AND 2009 BIRD SURVEY REPORT  
(PROVIDED ON CD)**

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Appendix Q- 2000-2010 Christmas Bird Count Data

Species	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Common loon				1							
Pied-billed grebe	8	14	7	4	16	12	5	12	6	15	8
Horned grebe	1										
Eared grebe	6	12	19	12	18	14	23	23	4	3	3
Western grebe	10	4	21	4	20	26	4	6	7	24	9
Clark's grebe	14	3	9	14	19	10	11	17	14	16	12
American white pelican			1	4							
White-faced ibis								200			
Double-crested cormorant	196	88	8	3	20	40	5	18	13	10	8
Great blue heron	3	3	2	3	1	1	1	4	5	6	5
Great egret	2	2	2	1	2	2	2	3	3	3	1
Snowy egret	2		2	2	3	3	1	12	1	3	3
Cattle egret	86	50									
Green heron	1						1	2	2		
Black-crowned night heron	12	3	5	7	3	3	4	7	6		4
Northern harrier								1			
Turkey vulture	2	4	1	2	2	2	5	17	3	1	3
Greater white-fronted goose			1								
Canada goose	26	65	79	216	12	620	200	26	58	10	50
Ross's goose						6					
Gadwall	24	32	10	32	8	8		18	27		40
Eurasian wigeon		1								105	
American wigeon	200	160	285	97	83	83	12	61	215	477	8
Mallard	188	52	95	76	30	30	17	68	58	102	13
Blue-winged teal	50		10	4	6	6	2	15	6	5	

Appendix Q- 2000-2010 Christmas Bird Count Data

Species	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Cinnamon teal	350	137	51	120	30	30	44	63	12	12	11
Northern shoveler	40	53	12	82	87	87	10	78	588	690	219
Northern pintail	570	5	106	39	195	195	2	51	78	2868	20
Green-winged teal	40	6	3	10					2		3
Canvasback	26	3	10	1	26	26	6	22	127	63	39
Redhead	5	5	1	8	15	15		2	14	14	18
Ring-necked duck	39	25	10	155	7	7		17	418	385	136
Common merganser	2										
Lesser scaup				1				12	4		
Bufflehead		5		2	11	11	2	10	5	12	10
Ruddy duck	305	343	73	105	318	318	40	380	690	376	100
Cooper's hawk					1	1					1
Sharp-shinned hawk				1	1	1					
Red-shouldered hawk	3	1									
Red-tailed hawk	3	1	1	2	5	5	3	5	1	3	2
American kestrel	2	4	2	2	5	5	4		4	4	4
Peregrine falcon							1				
Sora		1		1	3	3					
Spotted sandpiper					1	1					
Common moorhen	2	6	9	3	3	3	2	2	4	2	5
American coot	70	470	171	62	125	125	211	290	600	404	312
Long-billed dowitcher	600										
Black-necked stilt	180										
Wilson's snipe			4	1	19	19		12			
Bonaparte's gull	4	14	13	6	50	50	2	290	87	228	



Appendix Q- 2000-2010 Christmas Bird Count Data

Species	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Ring-billed gull	200	510	47	1034	70	70		200	90	530	8
California gull	530	2070	60	200	650	650	110	400	39	117	5
Herring gull								1			
Gull sp.					300	300					
Rock dove		20									
Mourning dove	74	14	23	3	23	23	26	19	51	3	43
Common ground dove				8							
Eurasian collared dove											1
Anna's hummingbird	3	2	1	1	4	4		1	10	10	2
Belted kingfisher	1	1	2		1	1	1	1	1	2	1
Downy woodpecker	1										
Northern flicker	3				1	1	4	3	1	7	1
Nuttall's woodpecker		3	2						6	1	2
Black phoebe	5	6	1	3	5	5	1	4	13	11	9
Say's phoebe	2			2	3	3	2	2	4	6	2
Cassin's kingbird	2	4	2	1	3	3	3	5		9	1
American crow	120	113	30	5	7	7		250	42	485	
Common raven				1	1	1	4	2	1	2	1
White-throated swift							6	60	50		120
Barn swallow				5							
Tree swallow		1									
Northern rough-winged swallow							4				
Bewick's wren	1	1		1	2	2		1	3	3	
House wren	1				1	1			1	1	1

Appendix Q- 2000-2010 Christmas Bird Count Data

Species	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Marsh wren	1				2	2			3	3	1
Rock wren									1	2	
Bushtit	35	10	22		5	5	14		17	28	38
Western bluebird			4				6				
Ruby-crowned kinglet	2	3		3	5	5	1	11	6	6	3
Blue-gray gnatcatcher		1							1	1	
Northern mockingbird	3	3	3	1	2	2	3	3	9	8	6
Phainopepla	1										
European starling	20	11	14		38	38	110	3	17	28	30
American pipit				1				2			
Cedar waxwing				5					5	30	100
Orange-crowned warbler					1	1			2	1	
Yellow-rumped warbler (Audubon's)	105	62	11	6	32	32	5	80	136	124	139
Yellow-rumped warbler (Myrtle's)											1
Common yellowthroat	17	9		2	12	12	1	17	12	33	21
Spotted towhee	1	2	1								
California towhee	1	5		1	4	4		1	5	10	1
House sparrow									8	10	20
Rufous-crowned sparrow										6	
Savannah sparrow	5	1	20					12	4		8
Song sparrow	1	5		1	7	7		4	14	27	13
Lincoln's sparrow	2	4		2			1	2			1
White-crowned sparrow	24	105	5	18	40	40	8	17	121	221	50

Appendix Q- 2000-2010 Christmas Bird Count Data

Species	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Golden-crowned sparrow			2		1	1			1		
Lark sparrow					17	17		12	12		1
Western meadowlark				7							1
Red-winged blackbird	100				4	4					270
Yellow-headed blackbird	270	150		6	14	14	70				6
Brewer's blackbird	130										
House finch		7	6	1	5	5		1	29	38	24
Lesser goldfinch	1	1							9	12	1
American goldfinch		1									
<i>Accipiter sp.</i>										1	
Virginia rail											
Killdeer								2		2	
Rock pigeon					13	13		2	10	35	12
Western bluebird									3	8	
Hermit thrush									1	2	
California thrasher										1	
Dark-eyed junco									10	15	

**The Avifauna of Lake Norconian and the Seal Beach  
Naval Weapons Station Corona Detachment**

**A Report Prepared for the Seal Beach  
Naval Weapons Station Corona Detachment  
Integrated Natural Resources Management Plan**



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Wildlife Biologist/Ornithologist  
14 August 2009

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## **1.0 INTRODUCTION**

This report was prepared in support of the Integrated Natural Resources Management Plan for the Seal Beach Naval Weapons Station, Corona Detachment. Lake Norconian, built in the late 1920s (Lake Norconian Club 2009), is an important regional refuge for wintering waterfowl in western Riverside County. Most of the habitats of Lake Norconian are nonnative, but the open water of the lake, along with its margins of freshwater marsh vegetation, supports large numbers of ducks, geese, gulls, grebes, and other water birds during the winter.

AMEC Earth and Environmental (AMEC) conducted bird surveys of the lake and other habitats of the installation during the first half of 2009. In addition, Lake Norconian is within the count circle of the National Audubon Society's Santa Ana River Valley Christmas Bird Count (CBC), which has been conducted since 1976. A separate tally of CBC birds for Lake Norconian began in 1998. Those data (1998 through 2007), along with survey results from Aigner and Koehler (1996), are also incorporated into this report. This report includes a complete annotated list of the installation's avifauna.

## **2.0 METHODS**

### **2.1 Limitations of Point Count and Spot Mapping Methods**

Lake Norconian is not an ideal location for the point count censusing method, for the following reasons:

- The overall area at Lake Norconian is small. The recommended spacing for point count stations is a minimum of 250 meters apart (Ralph et al. 1993). At Lake Norconian, this requirement would greatly reduce the number of possible counting stations.
- Most habitat patches at Lake Norconian are quite small.
- Waterfowl is not well sampled using the point count method (Ralph et al. 1993). Waterfowl is a very significant part of Lake Norconian's avifauna, at least during the winter.

Spot mapping is also not a suitable method, because many visits are necessary. This method is also primarily used to map breeding territories (Ralph and Scott 1981), which is not an objective in the documentation of the facility's avifauna for use in the management plan.

### **2.2 Recommended Avian Survey Methods**

Since point counts will not work well at the installation, it was determined that the method known as "Area Search" (Ralph et al. 1993) would be used. "Saturation birding" is another term used for this method. Using area search, the facility was surveyed five times during winter and five times during spring and early summer. During each survey, two AMEC ornithologists censused land birds beginning within one hour of sunrise (to maximize detections due to increased activity and vocalizations by land birds during morning hours), followed by counting waterfowl and other water birds on the lake and in the marsh vegetation surrounding the lake. All of the installation was censused, with the exception of the compound on the central eastern and southeastern portions; this compound contains buildings, manicured lawns, and widely scattered, planted landscaping trees, and undoubtedly supports few native birds. At its southern tip, the restricted area contains nonnative grassland and a small strip of riparian vegetation. All species, along with numbers of individuals, were recorded in field notes. Care was taken to avoid double counting of birds by the two observers (through communication via cellular telephones and later



discussions of specific sightings). Visual and aural detections were included. Representative species were also photographed with digital cameras and telephoto lenses. Locations of sensitive species were captured on hand held GPS units, or plotted on maps and/or aerial photographs.

Additionally, surveys for owls and other nocturnal species were conducted three times during early summer. The nocturnal surveys were conducted starting approximately 30 minutes after sunset. Playback of owl calls (of species expected to occur in the region), as well as the calls of Common Poorwills (*Phalaenoptilus nuttallii*), were played at strategic calling locations throughout the installation.

**Table 1. Avian Surveys Conducted From December 2008 through June 2009.**

Date	Types of Surveys	Observers	Weather Variables
14 Dec 2008	Area Search Survey	CM, SJM	39°-55°, 20-40% cloud cover, wind 0-6 mph
15 Jan 2009	Area Search Survey	CM, SJM	64°-84°, clear, wind 0-10
30 Jan 2009	Area Search Survey	JFG, SJM	64°-81°, 20-60%, wind 0-2
20 Feb 2009	Area Search Survey	CM, SJM	48°-73°, 0-20%, calm
13 Mar 2009	Area Search Survey	JFG, CM	47°-74°, clear, calm
10 Apr 2009	Area Search Survey	JFG, CM	56°-57°, 100%, calm
24 Apr 2009	Area Search Survey	JFG, CM	60°-70°, clear, 0-1
8 May 2009	Area Search Survey	JFG, SJM	68°-82°, clear, 0-2
29 May 2009	Area Search Survey	JFG, CM	62°-67°, 100%, calm
15 Jun 2009	Area Search Survey	CM, SJM	60°-66°, 90-70%, calm
23 Jun 2009	Nocturnal Calling Survey	JT, MT	67°-72°, clear, calm
24 Jun 2009	Nocturnal Calling Survey	JT, MT	67°-72°, clear, calm
25 Jun 2009	Nocturnal Calling Survey	JT, MT	68°-74°, clear, calm

Key to Observers: JFG = John F. Green, CM = Chet McGaugh, SJM = Stephen J. Myers, JT = Jennifer Tobin, MT = Michelle Tobin.

### 2.3 Compilation of Existing Data

AMEC reviewed the previous avian survey report (Aigner and Keohler 1996), incorporating its data into this report. Additionally, birds at Lake Norconian have been censused for many years as part of the National Audubon Society's "Christmas Bird Count" (CBC) program. The installation is within the Santa Ana River Valley count circle. Aigner and Keohler (1996) include CBC data for the years 1990, 1991, 1993, and 1994, for water birds only. Lawrence F. LaPré, the compiler of the Santa Ana River Valley CBC, has provided data for Lake Norconian for the years 1998-2007. Stephen J. Myers has been a CBC observer at Lake Norconian for much of that 10 year period, and consulted his personal field notes for additional data. During the CBC counts, the focus is on counting water birds. Land birds are also counted, but a systematic census is not possible due to time constraints, and the resulting tallies of land birds are therefore not comprehensive. For other years of the CBC, data for Lake Norconian were not kept separately from data from other areas of the CBC count circle.

### 3.0 RESULTS

#### 3.1 Survey Results

One hundred eighteen species were detected during AMEC’s surveys in 2008-2009. Additional species detected during previous CBCs and Aigner and Koehler’s 1995-1996 surveys bring the total list of bird species for the installation to 142 (see Appendix 1). The results of AMEC’s surveys are shown in Table 4.

Overall mean counts of birds throughout the survey period of 14 December 2008 through 15 June 2009 is somewhat misleading, due to the seasonal occurrence of many species (especially waterfowl). The most numerous species (Ring-necked Duck, *Aythya collaris*) for example, averaged 194.1 birds per survey overall, but 612.7 birds during surveys conducted during the “peak” of the wintering period (14 December – 30 January). Mean counts of regularly occurring waterfowl made during the peak wintering season are shown in Table 2.

**Table 2. Numbers of regularly occurring waterfowl during surveys from 14 December 2008 to 15 January 2009.**

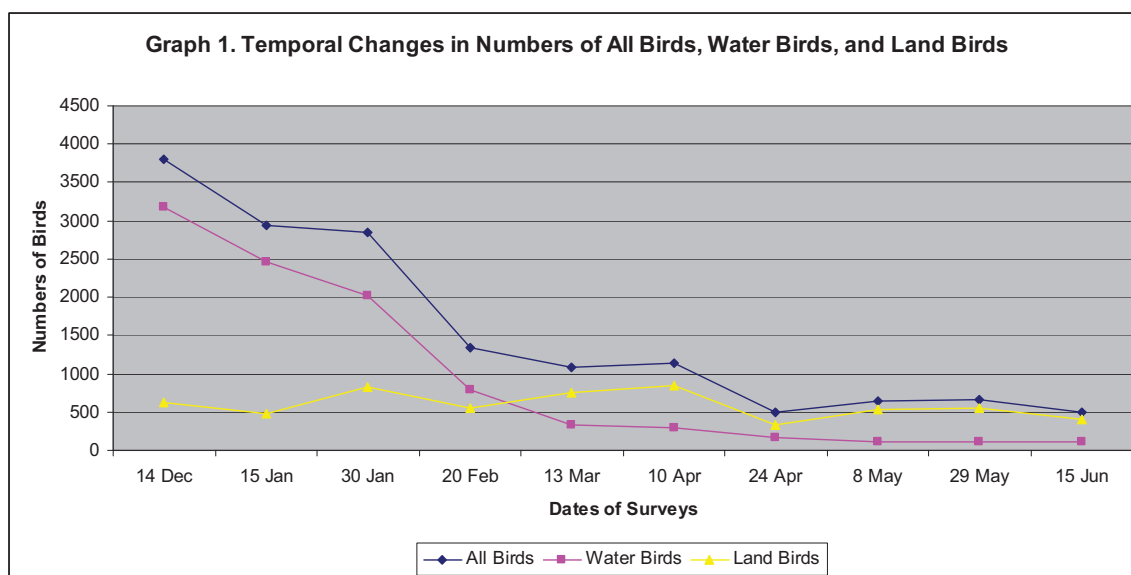
Species	Survey Dates			Mean/survey	SD
	14 Dec	15 Jan	30 Jan		
Canada Goose	58	45	44	49.0	7.8
Gadwall	27	2	1	10.0	14.7
American Wigeon	215	4	0	73.0	123.0
Mallard	58	85	20	54.3	32.7
Blue-winged Teal	6	3	5	4.7	1.5
Cinnamon Teal	12	14	6	10.7	4.2
Northern Shoveler	588	160	498	415.3	225.7
Northern Pintail	78	650	85	271.0	328.2
Green-winged Teal	2	1	2	1.7	0.6
Canvasback	127	132	32	97.0	56.3
Redhead	14	5	4	7.7	5.5
Ring-necked Duck	418	690	730	612.7	169.8
Lesser Scaup	4	1	0	1.7	2.1
Bufflehead	5	8	4	5.7	2.1
Ruddy Duck	690	225	260	391.7	259.0

It is obvious from these data that there is a wide variation in the numbers of waterfowl using Lake Norconian from survey to survey, which suggests a high degree of movement in the region’s waterfowl. Additional waterfowl habitat occurs nearby at Lake Mathews, Prado Regional Park, Hidden Valley Wildlife Area, and other locales, and birds no doubt shift between locales from day to day, week to week, or even within a day. Our results, showing the wide swing in numbers from survey to survey, are consistent with the results of Aigner and Koehler (1996). The CBC results from 1998 to 2007 indicate wide variation among numbers of waterfowl from year to year (see Table 6).

The highest count of total birds during the surveys was 3,811 on 14 December 2008. The presence of large numbers of waterfowl affected the temporal distribution of birds on the installation significantly. As wintering waterfowl departed for their breeding grounds in late winter and early spring, a dramatic shift in the ratio of water birds to land birds can be seen, as indicated by Table 3 and Graph 1. Land bird numbers remained much more consistent during the surveys, but proportions of land birds by species changed as wintering species departed and summer residents arrived.

**Table 3. Comparison of water bird and land bird numbers, by survey date.**

	14 Dec	15 Jan	30 Jan	20 Feb	13 Mar	10 Apr	24 Apr	8 May	29 May	15 Jun
Water Birds	3183	2455	2016	797	329	303	171	114	103	107
Land Birds	628	486	834	549	747	836	322	535	560	395
Total Birds	3811	2941	2850	1345	1076	1139	493	649	663	502



The Great Blue Heron rookery on the island is significant due to the fact that such rookeries are rare in inland southern California away from the Salton Sea.

### 3.2 Sensitive Species

Several species listed as threatened or endangered potentially occur on the installation. Species that may occasionally occur as transients (no breeding habitat present) include the California Brown Pelican (*Pelecanus occidentalis californicus*, federal endangered but proposed for delisting), American Peregrine Falcon (*Falco peregrinus anatum*, state endangered but a candidate for delisting), Western Snowy Plover (*Charadrius alexandrinus nivosus*, federal threatened), California Least Tern (*Sterna antillarum browni*, state and federal endangered), Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*, state threatened), and Bank Swallow (*Riparia riparia*, state threatened). Migrant Peregrine Falcons have been documented at the installation: one during winter surveys in 1995-96, and on 17 December 2006.

Marginal nesting habitat for the Least Bell's Vireo (*Vireo bellii pusillus*, state and federal endangered) occurs at two locations on the installation: the riparian woodland and scrub near the northwest corner, and willow woodland mixed with nonnative trees along the lake margin north of the Lake Norconian Club. Both of these areas contain nonnative trees and shrubs, but are suitable in vegetation structure and density. No Least Bell's Vireos were detected during the surveys. The species nests commonly along the nearby Santa Ana River, and has been pioneering habitats in recent years.

The Southwestern Willow Flycatcher (*Empidonax traillii extimus*, state and federal endangered) is much rarer in southern California than the Least Bell's Vireo, and is probably much less likely to occur at Lake Norconian. The areas mentioned above as being suitable for the Least Bell's Vireo are also suitable for Southwestern Willow Flycatchers.

Although small patches of (Riversidean) Coastal Sage Scrub occur on the installation (*contra* Aigner and Koehler 1996), they are not extensive enough to support the Coastal California Gnatcatcher (*Polioptila californica californica*, federal threatened). The nearest sightings of the species are in the Norco Hills, approximately 2.4 miles east of Lake Norconian (California Department of Fish and Game 2009). Considering the proximity of known occurrences, it is possible that dispersing juveniles could appear on the installation, but nesting is unlikely.

The Burrowing Owl (*Athene cunicularia*, CDFG Bird Species of Special Concern) was confirmed as a nesting species in 1996 (Aigner and Koehler 1996), but the area containing the active nest is now part of the restricted access area that was not surveyed in 2008-2009 (see Map 1). Anecdotal reports from security personnel on the installation indicate that there has been recent occupation by Burrowing Owls within the nonnative grassland habitat behind buildings 501, 502, and 503, but no owls were observed by AMEC biologists. At least two burrows in this area contain rodent bones, indicating somewhat recent occupation. An additional area, near the northwest corner of Lake Norconian, is occupied commonly by California Ground Squirrels (*Spermophilus beecheyi*), and their burrows and the open habitat at this location is suitable for Burrowing Owls. Both of these areas are shown on Map 1. The Burrowing Owl is a California Department of Fish and Game Bird Species of Special Concern (Gervais et al. 2008).





**Legend**

- Detachment Corona Boundary
- Bird Sighting locations**
- 1996 Sighting Burrowing Owl
- Cooper's Hawk Nest
- Rufous-crowned Sparrow
- Yellow-breasted Warbler
- Great Blue Heron Rookery Site
- Suitable Least Bell's Vireo and Southwestern Willow Flycatcher Habitat
- Potential Burrowing Owl Burrows

The map shown here has been created with all due and reasonable care and is strictly for use with AMEC Project Number 6151001905. This map has not been certified by a licensed land surveyor and any third party use of this map comes without warranties of any kind as AMEC assumes no liability, direct or indirect, whatsoever for any such third party or unintended use.



**Sensitive Birds**  
**NAVWPNSTA Seal Beach Detachment Corona,**  
**Norco, CA**

**Table 4. Results of Diurnal Bird Surveys, 14 December 2008 to 15 June 2009.**

Species	Dates of Surveys														Totals	Mean per survey	SD
	14 Dec 2008	15 Jan 2009	30 Jan 2009	20 Feb 2009	13 Mar 2009	10 Apr 2009	24 Apr 2009	8 May 2009	29 May 2009	15 Jun 2009							
Cackling Goose	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0.1	0.32
Canada Goose	58	45	44	40	14	24	8	15	7	7	262	26.2	18.91				
Gadwall	27	2	1	0	19	2	0	0	0	0	51	5.1	10.06				
American Wigeon	215	4	0	1	2	0	0	0	0	2	224	22.4	67.69				
Mallard	58	85	20	35	10	7	17	8	8	13	261	26.1	26.11				
Blue-winged Teal	6	3	5	4	3	0	4	0	0	0	25	2.5	2.32				
Cinnamon Teal	12	14	6	30	5	6	0	0	1	0	74	7.4	9.62				
Northern Shoveler	588	160	498	56	28	1	0	0	0	0	1331	133.1	222.64				
Northern Pintail	78	650	85	0	0	0	0	0	0	0	813	81.3	202.68				
Green-winged Teal	2	1	2	0	0	0	0	0	0	0	5	0.5	0.85				
Canvasback	127	132	32	7	11	0	0	0	0	0	309	30.9	52.91				
Redhead	14	5	4	0	0	0	0	0	0	0	23	2.3	4.52				
Ring-necked Duck	418	690	730	78	22	1	2	0	0	0	1941	194.1	300.66				
Lesser Scaup	4	1	0	0	0	0	0	0	0	0	5	0.5	1.27				
Bufflehead	5	8	4	4	12	7	0	0	0	0	40	4	4.14				
Common Merganser	0	0	0	10	0	0	0	0	0	0	10	1	3.16				
Ruddy Duck	690	225	260	221	37	95	73	23	19	16	1659	165.9	206.78				
Pied-billed Grebe	6	10	8	12	10	4	3	3	2	3	61	6.1	3.63				
Eared Grebe	4	3	0	2	0	0	0	0	0	0	9	0.9	1.52				
Western Grebe	7	15	13	7	10	10	9	8	4	11	94	9.4	3.17				
Clark's Grebe	14	8	12	7	19	10	11	10	7	9	107	10.7	3.65				
American White Pelican	0	0	0	4	0	1	0	0	0	0	5	0.5	1.27				
Double-crested Cormorant	13	66	9	14	6	3	3	1	0	0	115	11.5	19.82				
Great Blue Heron	5	5	6	7	5	6	8	12	10	7	71	7.1	2.33				
Great Egret	3	2	2	2	4	1	3	0	1	0	18	1.8	1.32				



**Table 4. Results of Diurnal Bird Surveys, 14 December 2008 to 15 June 2009 (Continued).**

Species	Dates of Surveys														Totals	Mean per survey	SD
	14 Dec 2008	15 Jan 2009	30 Jan 2009	20 Feb 2009	13 Mar 2009	10 Apr 2009	24 Apr 2009	8 May 2009	29 May 2009	15 Jun 2009							
Snowy Egret	1	3	4	2	5	3	2	1	0	0	21	2.1	1.66				
Green Heron	2	0	2	3	1	3	3	0	1	1	16	1.6	1.09				
Black-crowned Night-Heron	6	3	1	5	8	3	3	0	0	0	29	2.9	2.77				
Turkey Vulture	3	2	2	5	1	11	2	3	2	1	32	3.2	2.97				
Osprey	0	0	1	0	1	0	0	1	0	0	3	0.3	0.48				
Sharp-shinned Hawk	0	0	0	0	1	0	0	0	0	0	1	0.1	0.32				
Cooper's Hawk	0	1	1	2	2	2	1	2	2	4	17	1.7	1.06				
Red-shouldered Hawk	0	0	0	1	0	0	0	0	0	0	1	0.1	0.32				
Red-tailed Hawk	1	3	5	1	1	4	2	2	5	2	26	2.6	1.58				
American Kestrel	4	6	11	6	3	5	3	2	5	6	51	5.1	2.51				
Merlin	0	0	1	0	0	0	0	0	0	0	1	0.1	0.32				
Virginia Rail	0	1	0	0	0	0	0	0	0	0	1	0.1	0.32				
Sora	0	0	2	0	0	0	0	0	0	0	2	0.2	0.63				
Common Moorhen	4	4	2	3	12	4	2	3	1	4	39	3.9	3.03				
American Coot	600	133	92	90	81	73	18	24	28	27	1166	116.6	174.04				
Killdeer	0	2	3	2	0	2	2	2	11	4	28	2.8	3.12				
Spotted Sandpiper	0	0	0	0	0	0	0	1	0	0	1	0.1	0.32				
Bonaparte's Gull	87	2	0	0	0	0	0	0	0	0	89	8.9	27.45				
Ring-billed Gull	90	160	161	105	0	2	0	0	0	0	518	51.8	69.78				
California Gull	39	10	8	45	5	0	0	0	1	0	108	10.8	16.90				
Herring Gull	0	1	0	0	0	0	0	0	0	0	1	0.1	0.32				
Thayer's Gull	0	1	0	0	0	0	0	0	0	0	1	0.1	0.32				
Glaucous-winged Gull	0	1	0	0	0	0	0	0	0	0	1	0.1	0.32				
unidentified gull	0	0	0	0	0	35	0	1	0	0	36	3.6	11.04				

**Table 4. Results of Diurnal Bird Surveys, 14 December 2008 to 15 June 2009 (Continued).**

Species	Dates of Surveys															Totals	Mean per survey	SD
	14 Dec 2008	15 Jan 2009	30 Jan 2009	20 Feb 2009	13 Mar 2009	10 Apr 2009	24 Apr 2009	8 May 2009	29 May 2009	15 Jun 2009								
Caspian Tern	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.2	0.63	
Forster's Tern	0	0	0	0	0	0	0	0	0	0	0	0	2	2	5	0.5	0.85	
Rock Pigeon	10	38	28	58	55	74	7	37	148	108	563	2.4	56.3	44.07				
Eurasian Collared-Dove	0	0	0	3	12	1	1	2	4	1	24	2.4	2.4	3.63				
Mourning Dove	51	53	37	47	22	44	27	26	17	14	338	33.8	33.8	14.43				
Barn Owl	0	0	0	0	0	0	0	1	0	0	1	0.1	0.1	0.32				
White-throated Swift	50	0	0	0	0	0	0	0	0	0	50	5	5	15.81				
unidentified swift	0	0	0	0	0	4	0	0	0	0	4	0.4	0.4	1.26				
Black-chinned Hummingbird	0	0	0	0	0	0	0	1	2	0	3	0.3	0.3	0.67				
Anna's Hummingbird	10	8	23	6	10	9	3	5	7	6	87	8.7	8.7	5.50				
unidentified Selasphorus	0	0	0	0	0	1	0	0	0	0	1	0.1	0.1	0.32				
unidentified hummingbird	0	0	0	0	0	0	3	0	0	0	3	0.3	0.3	0.95				
Belted Kingfisher	1	1	0	1	3	0	0	0	0	0	6	0.6	0.6	0.97				
Nuttall's Woodpecker	6	1	3	2	1	0	0	1	0	3	17	1.7	1.7	1.89				
Northern Flicker	1	1	4	4	2	0	2	0	1	3	18	1.8	1.8	1.48				
Gray Flycatcher	0	0	0	0	0	0	1	0	0	0	1	0.1	0.1	0.32				
Black Phoebe	13	16	11	10	6	8	11	14	17	17	123	12.3	12.3	3.77				
Say's Phoebe	4	7	6	4	6	2	3	2	4	9	47	4.7	4.7	2.26				
Cassin's Kingbird	0	6	8	6	11	10	6	6	9	5	67	6.7	6.7	3.09				
Western Kingbird	0	0	0	0	0	8	0	8	2	2	20	2	2	3.38				
American Crow	42	7	7	10	13	10	5	8	7	6	115	11.5	11.5	10.97				
Common Raven	1	2	3	3	0	3	4	2	0	4	22	2.2	2.2	1.48				
Tree Swallow	0	0	0	5	32	1	0	0	0	0	38	3.8	3.8	10.03				
Northern Rough-winged Swallow	0	0	0	0	2	7	6	0	5	2	22	2.2	2.2	2.83				

**Table 4. Results of Diurnal Bird Surveys, 14 December 2008 to 15 June 2009 (Continued).**

Species	Dates of Surveys														Totals	Mean per survey	SD
	14 Dec 2008	15 Jan 2009	30 Jan 2009	20 Feb 2009	13 Mar 2009	10 Apr 2009	24 Apr 2009	8 May 2009	29 May 2009	15 Jun 2009							
Cliff Swallow	0	0	0	0	75	27	50	70	55	55	332	33.2	31.24				
Barn Swallow	0	0	0	0	25	41	25	33	20	16	160	16	15.33				
unidentified swallow	0	0	0	0	0	200	0	0	0	0	200	20	63.25				
Bushtit	17	13	23	2	6	3	4	35	15	22	140	14	10.68				
Rock Wren	1	0	1	0	0	0	0	0	0	0	2	0.2	0.42				
Bewick's Wren	3	3	2	1	1	0	0	1	0	1	12	1.2	1.14				
House Wren	1	0	1	0	1	0	0	1	0	0	4	0.4	0.52				
Marsh Wren	3	4	5	1	7	1	2	1	1	1	26	2.6	2.12				
Ruby-crowned Kinglet	6	4	4	1	1	0	0	0	0	0	16	1.6	2.22				
Blue-gray Gnatcatcher	1	0	0	0	0	0	0	0	0	0	1	0.1	0.32				
Western Bluebird	3	0	12	1	4	4	2	0	0	0	26	2.6	3.79				
Swainson's Thrush	0	0	0	0	0	0	0	2	0	0	2	0.2	0.63				
Hermit Thrush	1	0	0	0	0	0	0	0	0	0	1	0.1	0.32				
Northern Mockingbird	9	9	12	8	12	15	4	12	5	4	90	9	3.80				
European Starling	17	9	43	11	35	61	21	46	30	2	275	27.5	18.81				
American Pipit	0	0	0	7	51	0	0	0	0	0	58	5.8	16.03				
Cedar Waxwing	5	2	0	0	0	0	0	6	0	0	13	1.3	2.40				
Phainopepla	0	0	0	0	0	0	0	0	2	0	2	0.2	0.63				
Orange-crowned Warbler	2	2	3	1	0	1	0	1	0	0	10	1	1.05				
Yellow-rumped Warbler	136	97	207	126	145	0	0	0	0	0	711	71.1	79.65				
Yellow Warbler	0	0	0	0	0	0	0	3	4	2	9	0.9	1.52				
Common Yellowthroat	12	14	24	14	26	22	20	16	19	20	187	18.7	4.62				
Wilson's Warbler	0	0	0	0	0	0	1	1	0	0	2	0.2	0.42				
California Towhee	5	2	2	3	4	3	1	5	3	9	37	3.7	2.26				
Rufous-crowned Sparrow	0	0	0	0	0	0	0	0	1	1	2	0.2	0.42				

**Table 4. Results of Diurnal Bird Surveys, 14 December 2008 to 15 June 2009 (Continued).**

Species	Dates of Surveys														Totals	Mean per survey	SD
	14 Dec 2008	15 Jan 2009	30 Jan 2009	20 Feb 2009	13 Mar 2009	10 Apr 2009	24 Apr 2009	8 May 2009	29 May 2009	15 Jun 2009							
Lark Sparrow	12	7	9	0	0	1	0	0	0	0	0	0	0	0	29	2.9	4.61
Savannah Sparrow	4	4	7	2	9	6	0	0	0	0	0	0	0	0	32	3.2	3.33
Fox Sparrow	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0.1	0.32
Song Sparrow	14	28	19	26	26	13	23	25	16	8	198	19.8	6.80				
Lincoln's Sparrow	0	1	0	0	0	0	0	0	0	0	1	0.1	0.32				
White-crowned Sparrow	121	64	119	56	37	33	0	0	0	0	430	43	47.14				
Golden-crowned Sparrow	1	0	0	0	0	0	0	0	0	0	1	0.1	0.32				
Dark-eyed Junco	10	3	9	2	8	0	0	0	0	0	32	3.2	4.16				
Western Tanager	0	0	0	0	0	0	0	7	1	0	8	0.8	2.20				
Black-headed Grosbeak	0	0	0	0	0	0	1	2	0	1	4	0.4	0.70				
Lazuli Bunting	0	0	0	0	0	0	0	3	0	0	3	0.3	0.95				
Red-winged Blackbird	0	0	0	0	0	1	3	1	0	0	5	0.5	0.97				
Tricolored Blackbird	0	0	0	0	0	0	0	2	0	0	2	0.2	0.63				
Western Meadowlark	0	0	0	1	0	0	0	0	0	0	1	0.1	0.32				
Brewer's Blackbird	0	0	16	1	0	0	0	0	0	0	17	1.7	5.03				
Great-tailed Grackle	1	6	18	23	16	23	5	2	0	1	95	9.5	9.44				
Brown-headed Cowbird	0	0	0	0	0	18	1	1	1	0	21	2.1	5.61				
Hooded Oriole	0	0	0	0	0	11	3	22	19	4	59	5.9	8.45				
Bullock's Oriole	0	0	0	0	0	5	6	3	6	2	22	2.2	2.62				
House Finch	29	38	88	61	39	52	29	48	58	10	452	45.2	21.48				
Lesser Goldfinch	9	13	38	19	29	24	23	29	58	34	276	27.6	13.92				
American Goldfinch	0	0	0	0	0	0	0	0	3	6	9	0.9	2.02				
House Sparrow	8	11	21	7	6	67	11	34	6	3	174	17.4	19.70				
<b>TOTAL</b>	3811	2941	2850	1345	1076	1139	493	649	663	502	15469	1546.9	1201.23				

**Table 5. Results of Nocturnal Bird Surveys in 2009.**

Species	Dates of Surveys				
	23 June 2009	24 June 2009	25 June 2009	26 June 2009	27 June 2009
Barn Owl	5	5	2	2	2
Western Screech-Owl	2	1	0	0	0
Great Horned Owl	2	2	2	2	2

**Table 6. Christmas Bird Count Results, 1998-2007.**

Species	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Annual Mean
	Date: 20 Dec	19 Dec	17 Dec	16 Dec	15 Dec	28 Dec	19 Dec	18 Dec	17 Dec	16 Dec	
Greater White-fronted Goose	0	0	0	0	1	0	0	0	0	0	0.1
Ross's Goose	0	0	0	0	0	0	0	6	0	0	0.6
Canada Goose	0	79	26	65	79	216	0	20	200	26	71.1
Gadwall	0	20	24	32	10	32	8	5	0	18	14.9
Eurasian Wigeon	0	0	0	1	0	0	0	0	0	0	0.1
American Wigeon	202	41	200	160	285	97	83	27	12	61	116.8
Mallard	156	120	188	52	95	76	30	48	17	68	85.0
Blue-winged Teal	0	0	50	0	10	4	6	0	2	15	8.7
Cinnamon Teal	133	570	350	137	51	120	30	66	44	63	156.4
Northern Shoveler	25	52	40	53	12	82	87	21	10	78	46.0
Northern Pintail	367	430	570	5	106	39	195	14	2	51	177.9
Green-winged Teal	40	28	40	6	3	10	20	0	0	0	14.7
Canvasback	6	22	26	3	10	1	26	14	6	22	13.6
Redhead	0	0	5	5	1	8	15	2	0	2	3.8
Ring-necked Duck	4	78	39	24	10	155	23	12	0	17	36.2
Lesser Scaup	0	2	0	0	0	1	0	15	0	12	3.0

**Table 6. Christmas Bird Count Results, 1998-2007 (Continued).**

Date:	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Annual Mean
	20 Dec	19 Dec	17 Dec	16 Dec	15 Dec	28 Dec	19 Dec	18 Dec	17 Dec	16 Dec	
<b>Species</b>											
Bufflehead	0	3	0	5	0	2	11	1	2	10	3.4
Common Merganser	0	0	2	0	0	0	0	0	0	0	0.2
Ruddy Duck	18	110	305	343	73	105	318	88	40	380	178.0
Common Loon	0	0	0	0	0	1	0	0	0	0	0.1
Pied-billed Grebe	4	5	8	14	7	4	16	12	5	12	8.7
Horned Grebe	0	0	1	0	0	0	0	0	0	0	0.1
Eared Grebe	1	18	6	12	19	12	18	14	23	23	14.6
Western Grebe	24	3	10	4	21	4	20	26	4	6	12.2
Clark's Grebe	0	14	14	3	9	14	19	10	11	17	11.1
American White Pelican	0	0	0	0	1	4	0	1	0	0	0.6
Double-crested Cormorant	6	170	196	88	8	3	20	40	5	18	55.4
Great Blue Heron	1	0	3	3	2	3	1	4	1	4	2.2
Great Egret	1	8	2	2	2	1	2	3	2	3	2.6
Snowy Egret	0	7	2		2	2	3	6	1	12	3.5
Cattle Egret	0	13	86	50	0	0	0	0	0	0	14.9
Green Heron	1	0	1	0	0	0	1	2	1	2	0.8
Black-crowned Night-Heron	0	7	12	3	5	7	3	23	4	7	7.1
White-faced Ibis	0	0	0	0	0	0	0	0	0	200	20.0
Turkey Vulture	1	4	2	4	1	2	2	6	5	17	4.4
Northern Harrier	0	0	0	0	0	0	0	0	0	1	0.1
Sharp-shinned Hawk	0	0	0	0	0	1	1	0	0	0	0.2
Cooper's Hawk	1	1	0	0	0	0	1	1	0	0	0.4
Red-shouldered Hawk	1	0	3	1	0	0	0	0	0	0	0.5
Red-tailed Hawk	3	4	3	1	1	2	5	2	3	5	2.9



**Table 6. Christmas Bird Count Results, 1998-2007 (Continued).**

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
American Kestrel	0	1	2	4	2	2	5	2	4	0
Peregrine Falcon	0	0	0	0	0	0	0	0	1	0
Sora	0	0	0	1	0	1	3	0	0	0
Common Moorhen	2	4	2	6	9	3	3	8	2	2
American Coot	167	230	70	470	171	62	124	184	211	290
Killdeer	0	2	0	0	0	0	0	1	0	2
Black-necked Stilt	0	2	180	0	0	0	0	0	0	0
Spotted Sandpiper	1	1	0	0	0	0	1	0	0	0
Least Sandpiper	0	7	0	0	0	0	0	0	0	0
Long-billed Dowitcher	0	236	600	0	0	0	0	0	0	0
Wilson's Snipe	0	4	0	0	4	1	19	0	0	12
Bonaparte's Gull	0	58	4	14	13	6	50	70	2	290
Ring-billed Gull	170	100	200	510	47	1034	70	280	0	200
California Gull	0	3000	530	2070	60	200	650	600	110	400
Herring Gull	0	1	0	0	0	0	0	0	0	1
Rock Pigeon	0	5	0	20	0	0	13	75	0	2
Mourning Dove	5	62	74	14	23	3	23	22	26	19
Common Ground-Dove	0	8	0	0	0	8	0	0	0	0
White-throated Swift	4	1	0	0	0	0	0	0	6	60
Anna's Hummingbird	0	0	3	2	1	1	4	2	0	1
Belted Kingfisher	2	1	1	1	2	0	1	1	1	1
Nuttall's Woodpecker	0	1	0	3	2	0	0	1	0	0
Downy Woodpecker	0	0	1	0	0	0	0	0	0	0
Northern Flicker	5	0	3	0	0	0	1	0	4	3
Black Phoebe	3	4	5	6	1	3	5	1	1	4
Say's Phoebe	0	0	2	0	0	2	3	2	2	2

**Table 6. Christmas Bird Count Results, 1998-2007 (Continued).**

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	
Cassin's Kingbird	0	1	1	4	2	1	3	5	3	5	2.5
Loggerhead Shrike	0	1	0	0	0	0	0	0	0	0	0.1
American Crow	0	218	120	113	30	5	0	0	0	250	73.6
Common Raven	0	0	0	0	0	1	1	0	4	2	0.8
Tree Swallow	0	0	0	1	0	0	0	0	0	0	0.1
Northern Rough-winged Swallow	0	0	0	0	0	0	0	0	4	0	0.4
Barn Swallow	0	0	0	0	0	5	0	0	0	0	0.5
Bushtit	5	7	35	10	22	0	5	29	14	0	12.7
Bewick's Wren	0	1	1	1	0	1	2	0	0	1	0.7
House Wren	0	1	1	0	0	0	1	0	0	0	0.3
Marsh Wren	0	0	1	0	0	0	2	3	0	0	0.6
Ruby-crowned Kinglet	1	4	2	3	0	3	5	1	1	11	3.1
Blue-gray Gnatcatcher	0	0	0	1	0	0	0	0	0	0	0.1
Western Bluebird	0	0	0	0	4	0	0	4	6	0	1.4
Northern Mockingbird	1	2	3	3	3	1	2	7	3	3	2.8
European Starling	225	1	28	11	14	0	38	0	110	3	43.0
American Pipit	0	1	0	0	0	1	0	0	0	2	0.4
Cedar Waxwing	0	0	0	0	0	5	0	36	0	0	4.1
Phainopepla	0	0	1	0	0	0	0	0	0	0	0.1
Orange-crowned Warbler	0	1	0	0	0	0	1	1	0	0	0.3
Yellow-rumped Warbler	4	13	105	62	11	6	32	67	5	70	37.5
Common Yellowthroat	1	3	17	9	0	2	12	11	1	17	7.3
Spotted Towhee	0	0	1	2	1	0	0	0	0	0	0.4
California Towhee	0	1	1	5	0	1	4	3	0	1	1.6
Lark Sparrow	0	1	0	0	0	0	17	0	0	12	3.0
Savannah Sparrow	0	0	5	1	20	0	0	0	0	12	3.8

**Table 6. Christmas Bird Count Results, 1998-2007 (Continued).**

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	
Fox Sparrow	0	0	0	2	0	0	0	0	0	0	0.2
Song Sparrow	0	3	1	5	0	1	7	6	0	4	2.7
Lincoln's Sparrow	0	3	2	4	0	2	0	4	1	2	1.8
White-crowned Sparrow	0	32	24	105	5	18	40	70	8	17	31.9
Golden-crowned Sparrow	0	1	0	0	2	0	1	0	0	0	0.4
Dark-eyed Junco	0	0	0	0	0	0	1	0	0	0	0.1
Red-winged Blackbird	0	0	100	0	0	0	4	0	0	0	10.4
Western Meadowlark	4	0	0	0	0	7	0	0	0	0	1.1
Yellow-headed Blackbird	0	0	270	150	0	6	14	180	70	0	69.0
Brewer's Blackbird	0	0	130	0	0	0	0	0	0	0	13.0
Great-tailed Grackle	0	0	0	0	0	0	0	0	4	2	0.6
House Finch	0	8	0	7	6	1	5	7	0	1	3.5
Lesser Goldfinch	0	0	1	1	0	0	0	0	0	0	0.2
American Goldfinch	0	0	0	2	0	0	0	0	0	0	0.2
<b>TOTALS</b>	1595	5840	4741	4699	1278	2401	2136	2166	1004	2854	2871.4

### 3.3 Annotated List of the Birds

**[Fulvous Whistling Duck (*Dendrocygna bicolor*).** Aigner and Koehler (1996) observed this species on 8 November 1995. It formerly nested in coastal southern California, but sightings in this area since the 1950s are considered to likely be birds escaped from zoos or private waterfowl collections (Garret and Dunn 1981, Hamilton 2008).]

**Greater White-fronted Goose (*Anser albifrons*).** One winter record on Lake Norconian: 15 December 2002. In southern California, small numbers of Greater White-fronted Geese sometimes associate with wintering Canada Goose flocks, and should be expected to again occur at the installation.

**Ross's Goose (*Chen rossii*).** A flock of six were present on 18 December 2005. Ross's Geese sometimes find small ponds and remain over long periods, even becoming tame and associating with domestic waterfowl. The same is true for Snow Geese (*Chen caerulescens*), and that species is expected to occur at Lake Norconian sometime in the future.

**Cackling Goose (*Branta hutchinsii*).** One was on Lake Norconian on 20 February 2009. It was the small, dark-breasted "Cackling" race (*B.h. minima*), which is rare in southern California (Garrett and Dunn 1981, Unitt 2004).



**Figure 1.**  
**Cackling Goose (foreground) at Lake Norconian on 20 February 2009.**  
Note the larger size of the Canada Goose. Photo by S. Myers

**Canada Goose (*Branta canadensis*).** Small numbers of Canada Geese nest at the installation. In 2009, two pairs with young were observed. These birds are most likely year round residents, and are joined by additional birds during winter. The largest wintering flock was 216, in 2003-2004. Numbers recorded each winter have varied widely (from 20 to 216). This is likely due to the fact that the geese use multiple sites in the region each winter. Therefore, on the scheduled day and time of a Christmas Bird Count census, the flock may be at another location, such as Hidden Valley Wildlife Area.

**Wood Duck (*Aix sponsa*).** In 1996 Wood Ducks nested at the installation (Aigner and Koehler 1996), but they have not been recorded there since 1998. At nearby Hidden Valley Wildlife Area, nesting boxes for Wood Ducks have been installed for many years, but water has been inconsistently provided to the ponds there in recent years. During the 1990s, several pairs successfully nested each year when the ponds were kept full. Nest boxes installed at Lake Norconian could encourage future nesting by this species.

**Gadwall (*Anas strepera*).** Winter visitor on Lake Norconian, with a ten year mean of 14.9 birds. The Gadwall is an uncommon to locally fairly common nesting species in southern California (Garrett and Dunn 1981); nesting has not been observed at the installation, but suitable habitat is present.

**Eurasian Wigeon (*Anas penelope*).** There is winter record for Lake Norconian: 16 December 2001.

**American Wigeon (*Anas americana*).** A fairly common winter visitor. On the CBC, the high count was 285 on 15 December 2002, and the ten year annual mean is 116.8.

**Mallard (*Anas platyrhynchos*).** The Mallard is a year round resident, with its numbers augmented during winter. Its ten year CBC mean is 85.0. Several pairs likely nest each year; a female with ducklings was observed on 24 April 2009.

**Blue-winged Teal (*Anas discors*).** Lake Norconian is one of the most reliable locations to find this species during winter in inland southern California. The annual mean over the ten year period (1998-2007) was 8.7 birds, and the high count was 50, on 17 December 2000.

**Cinnamon Teal (*Anas cyanoptera*).** The ten year CBC mean was 156.4, but numbers vary widely by year. Since 2004, there has been a decline in numbers; the mean during that four year period is 50 birds. Although nesting was not noted during the 2008-2009 surveys, the Cinnamon Teal is a fairly common breeder in the region (Garrett and Dunn 1981), and suitable nesting habitat is present.

**Northern Shoveler (*Anas clypeata*).** A fairly common winter visitor, with a 10-year CBC mean of 46.0. Northern Shovelers were very numerous at Lake Norconian during the winter of 2008-2009. The high count was 588 on 14 December, and the mean for the three counts between 14 December and 30 January was 415. In contrast, the highest count on the CBCs of 1998-2007 was 87, in 2004.

**Northern Pintail (*Anas acuta*).** The Northern Pintail was one of the most numerous ducks during the winter surveys. On 15 January 2009, 650 pintails were present on Lake Norconian.

During CBCs from 1998-2007, the mean count was 177.9, with the tallies varying from 2 to 570.



**Green-winged Teal (*Anas cecca*).** Small numbers of Green-winged Teal occur during winter. Up to 40 have been counted during recent CBCs (1998 and 2000), but no more than 2 per day were noted during the 2008-2009 counts. Green-winged Teal prefer to be near cover, and are one of the duck species typically seen in or near marsh vegetation.

**Canvasback (*Aythya valisineria*).** The Canvasback is an uncommon to fairly common winter visitor. No more than 26 Canvasbacks were counted during CBCs in 1998-2007. During 2008-2009, however, up to 132 were present (on 15 January 2009).

**Redhead (*Aythya americana*).** The Redhead is an uncommon winter visitor. This species is also known as a locally uncommon nesting bird on the coastal slope of southern California, and future nesting at Lake Norconian is possible.

**Ring-necked Duck (*Aythya collaris*).** The Ring-necked Duck is an uncommon to common winter visitor. During winter 2008-2009, it was the most numerous duck on Lake Norconian, with a three count mean (between 14 December and 30 January) of 613. Numbers between 1998 and 2007 have varied greatly, from no birds in 2006 to 155 in 2003, and a 10 year mean of 36.

**Lesser Scaup (*Aythya affinis*).** The Lesser Scaup is a rare to uncommon winter visitor to Lake Norconian. It was recorded on only four of the ten CBCs from 1998-2007, with a high count of 15, in 2005. The high count in 2008-2009 was 4, on 14 December.

**Surf Scoter (*Melanitta perspicillata*).** One record: three on 13 December 1995 (Aigner and Koehler 1996). Surf Scoters are very rare in inland southern California away from the Salton Sea.

**Bufflehead (*Bucephala albeola*).** A small number of Bufflehead winter at Lake Norconian. The high count was 12, on 13 March 2009. The CBC results show that some years this species is absent (no birds in 3 of 10 years).

**Hooded Merganser (*Lophodytes cucullatus*).** One was present on 10 January 1996 (Aigner and Koehler 1996).

**Common Merganser (*Mergus merganser*).** Two records: two on 17 December 2000, and 10 on 20 February 2009.

**Ruddy Duck (*Oxyura jamaicensis*).** The Ruddy Duck is a common winter visitor, and an uncommon summer resident. Evidence of nesting was not observed during 2009, and Aigner and Koehler (1996) considered the species a non-breeding resident.

**Common Loon (*Gavia immer*).** One winter record on Lake Norconian: 28 December 2003.

**Pied-billed Grebe (*Podilymbus podiceps*).** An uncommon winter visitor and summer resident. Pied-billed Grebes probably breed at Lake Norconian, but there was no evidence during the surveys of 1996 nor the present study. As many as 16 have been observed during winter (19 December 2004).

**Horned Grebe (*Podiceps auritus*).** One winter record on Lake Norconian: 17 December 2000.

**Eared Grebe (*Podiceps nigricollis*).** An uncommon to fairly common winter visitor. The high count was 23, on 17 December 2006 and 16 December 2007.



**Western Grebe (*Aechmophorus occidentalis*).** The Western Grebe is a confirmed breeder (nest construction noted on 20 February 2009). Numbers during recent CBCs, compared to the number of birds present during spring and early summer 2009, suggest that most birds on the lake may be year round residents.

**Clark's Grebe (*Aechmophorus clarkii*).** Clark's Grebe nests at Lake Norconian. A downy chick was observed with its parents on 20 February 2009 (see Figure 2). Numbers during recent CBCs, compared to the number of birds present during spring and early summer 2009, suggest that most birds on the lake may be year round residents.



**Figure 2. Clark's Grebe chick riding on the back of one of its parents, 20 February 2009. Photo by S. Myers**

**American White Pelican (*Pelecanus erythrorhynchos*).** Based on the present surveys and recent CBCs, the American White Pelican is a rare to uncommon winter visitor and migrant. However, this species is somewhat more frequently observed at nearby water bodies such as Lake Mathews and Hidden Valley Wildlife Area (S. Myers pers. obs.), and is likely more common at Lake Norconian than our surveys have indicated.

**Double-crested Cormorant (*Phalacrocorax auritus*).** During winter numbers of this species vary widely: the high count was 196 on the CBC of 17 December 2000, but as few as three

have been detected on the CBCs (28 December 2003). During surveys in 2009, numbers steadily declined from winter into summer, and none were present on surveys in late May and mid June.

**Great Blue Heron (*Ardea herodias*).** The Great Blue Heron nests on the island. Six active nests were observed throughout the spring and early summer of 2009, and chicks were visible during May and June. During the CBCs of 1998-2007, a mean of 2.2 birds were observed. If nesting at the installation is a recent occurrence, winter numbers may increase, as this species may be a year round resident.

**Great Egret (*Ardea alba*).** This species is an uncommon winter visitor, with small numbers remaining through spring and summer. Birds present during spring and summer are apparently non-breeding birds.

**Snowy Egret (*Egretta thula*).** This species is an uncommon winter visitor, with small numbers remaining through spring and summer. Birds present during spring and summer are apparently non-breeding birds.

**Cattle Egret (*Bubulcus ibis*).** Flocks of Cattle Egrets occasionally visit Lake Norconian during winter. The high count was 86, on 17 December 2000. Flocks are fairly common during winter in agricultural fields in the Chino area.

**Green Heron (*Butorides virescens*).** The Green Heron is an uncommon resident. No evidence of breeding was obtained, but suitable habitat is present, especially near the Lake Norconian Club and on the island.

**Black-crowned Night-Heron (*Nycticorax nycticorax*).** This species roosts on the island. A maximum of eight were present during the surveys, but as many as 23 have been counted on the CBCs (18 December 2005). They are known to nest in the region, but no breeding has been observed at Lake Norconian.

**White-faced Ibis (*Plegadis chihii*).** One record: a flock of 200 were at Lake Norconian on 16 December 2007. White-faced Ibis is a fairly common winter resident in the Chino and Prado Basin areas.

**Turkey Vulture (*Cathartes aura*).** The Turkey Vulture is present in small numbers from winter through early summer. Sightings are primarily of birds flying over, but roosting is possible in the larger trees of the installation.

**Osprey (*Pandion haliaetus*).** An occasional migrant; three records in 2009 (30 January, 13 March, and 8 May), and it was also observed twice in 1996 (Aigner and Koehler 1996).

**Northern Harrier (*Circus cyaneus*).** One record: 16 December 2007, but harriers are not uncommon in migration, and undoubtedly occur at other times.

**Sharp-shinned Hawk (*Accipiter striatus*).** Uncommon winter visitor and migrant. During CBCs of 1998-2007, Sharp-shinned Hawks were observed during 2 years. They were also observed during surveys in 1995-1996 (Aigner and Koehler 1996), in during one survey during the present study (13 March 2009). It is a "taxa to watch" in the California Department of Fish and Game Species of Special Concern list (Shuford and Gardali 2008).

**Cooper's Hawk (*Accipiter cooperii*).** The Cooper's Hawk was confirmed as a successful breeder on 15 June 2009, when two fledglings were observed near their nest in a Peruvian Pepper Tree (*Schinus molle*) (see Map 1). This species is also observed during some winters on CBCs (four of ten years during 1998-2007), and is probably best described as an uncommon winter visitor and migrant, and an occasional breeder. It is a "taxa to watch" in the California Department of Fish and Game Species of Special Concern list (Shuford and Gardali 2008).

**Red-shouldered Hawk (*Buteo lineatus*).** The Red-shouldered Hawk has been recorded on occasion during surveys, but most detections have been of birds heard calling from outside the installation. It may forage for small mammals or birds on the installation on occasion. Nesting by this species was confirmed on the installation in 1996 (Aigner and Koehler 1996).

**Red-tailed Hawk (*Buteo jamaicensis*).** This species was confirmed as a breeder in 1996 (Aigner and Koehler 1996), but did not nest on the installation in 2009. The Red-tailed Hawk is a common year round resident of the region, and can frequently be seen

**American Kestrel (*Falco sparverius*).** Breeding by the American Kestrel was confirmed on the installation in 1996 (Aigner and Koehler 1996), and was considered a probably breeder during the present study. At least two pairs were suspected of nesting in 2009 on or near the installation, but nest sites were not found. During winter, additional kestrels are present in the region; the high count was 11 on 30 January 2009.

**Merlin (*Falco columbarius*).** One record: 30 January 2009. The Merlin is a rare to uncommon winter visitor in the region. It is a "taxa to watch" in the California Department of Fish and Game Species of Special Concern list (Shuford and Gardali 2008).

**Peregrine Falcon (*Falco peregrinus*).** Two records: 17 December 2006 and one during winter surveys in 1996.

**Prairie Falcon (*Falco mexicanus*).** One was observed during winter surveys in 1996.

**Virginia Rail (*Rallus limicola*).** Two records: one on 29 February 1996, and one on 15 January 2009. The Virginia Rail is not uncommon in the region, and it likely occurs more frequently than the two records suggest. Nesting is possible in the freshwater marsh habitat on the installation.

**Sora (*Porzana carolina*).** The Sora is an uncommon winter visitor, and could remain to nest in the marsh habitat.

**Common Moorhen (*Gallinula chloropus*).** The Common Moorhen is an uncommon breeder that is probably a year round resident. Successful breeding was noted when two downy chicks were observed with their parents on 15 June 2009. Several are observed on Lake Norconian each winter.

**American Coot (*Fulica americana*).** This species is common on Lake Norconian during winter (maximum count of 600 on 14 December 2008). Some (20-30 birds) remain throughout the spring and summer, but neither the 1996 study or the present study documented breeding. Suitable breeding habitat is present, and the species probably nests during some years.

**Killdeer (*Charadrius vociferus*).** Although the 1996 study considered the Killdeer a winter visitor, it was also present throughout the spring and early summer of 2009, and almost certainly nests on the installation during some years.

**Black-necked Stilt (*Himantopus mexicanus*).** The Black-necked Stilt is occasionally observed during winter at Lake Norconian. A high count of 180 was made on 17 December 2000.

**Spotted Sandpiper (*Actitis macularius*).** The Spotted Sandpiper is an uncommon winter visitor and migrant. It was observed on three of ten CBCs from 1998-2007, and during spring migration on 8 May 2009.

**Least Sandpiper (*Calidris minutilla*).** Least Sandpipers are rarely observed during CBCs at Lake Norconian. They were observed in 1991 and 1999. It is likely that they occur occasionally during migration. Shorebird habitat is very limited at Lake Norconian. Sightings have been restricted to open stretches of shoreline, where a narrow strip of suitable muddy habitat is available.

**Long-billed Dowitcher (*Limnodromus scolopaceus*).** Long-billed Dowitchers have been observed on three CBCs: 1994, 1999, and 2000. A flock of 600 was observed in 2000. It is likely that they occasionally occur during migration. See discussion of shorebird habitat, above.

**Wilson's Snipe (*Gallinago delicata*).** This species prefers short marshy habitats and wet meadows, and are occasionally seen in open habitats such as along pond and lake shorelines. They have been observed at Lake Norconian during eight CBCs.

**Bonaparte's Gull (*Chroicocephalus philadelphia*).** The Bonaparte's Gull is usually observed during CBCs, with a high count of 290 in 2007. The high count during winter of 2008-2009 was 87, on 14 December 2008.

**Ring-billed Gull (*Larus delawarensis*).** Along with the California Gull, this species often occurs in large flocks that loaf on Lake Norconian during the winter. These flocks sometimes exceed 3,000 birds, as in 1999. The high count of Ring-billed Gull is 1,034, in 2003. The ratio of Ring-billed Gull to California Gull is highly variable; some winters Ring-bills predominate, while in others Californias predominate. In 2008-2009, gull numbers on Lake Norconian were relatively low, with a high of 161 Ring-bills being observed on 30 January.

**California Gull (*Larus californicus*).** The high count is 3000, on 19 December 1999. The high count in 2009 was 45, on 20 February.

**Herring Gull (*Larus argentatus*).** Three records: 19 December 1999, 16 December 2007, and 15 January 2009.

**Thayer's Gull (*Larus thayeri*).** One record: a first cycle bird on 15 January 2009.

**Glaucous-winged Gull (*Larus glaucescens*).** One record: a first cycle bird on 15 January 2009.

**Caspian Tern (*Sterna caspia*).** An uncommon migrant.

**Forster's Tern (*Sterna forsteri*).** An uncommon migrant and rare winter visitor. The winter record was two birds observed on 18 December 1994.

**Rock Pigeon (*Columba livia*).** A common nonnative species in the region. Flocks are regularly observed flying over, and small numbers perch on buildings within the installation. Nest sites are typically on ledges under cover; buildings often provide such conditions.



**Eurasian Collared-Dove (*Streptopelia decaocto*).** The Eurasian Collared-Dove is a recent arrival in southern California. They are now locally common in various locations in western Riverside County. The species was not observed at the installation until 20 February 2009, and a high count of 12 was made on 13 March 2009.

**Mourning Dove (*Zenaida macroura*).** The Mourning Dove is a year round resident, and undoubtedly breeds on the installation, though no nests were found during the surveys. The one day high count was 53, on 15 January 2009.

**Barn Owl (*Tyto alba*).** The Barn Owl is a year round resident, and is known to forage regularly in nonnative grasslands, which are common around Lake Norconian. Nests have not been observed on the installation, but this species nests in cavities, which can include spaces within buildings, natural tree cavities, spaces within palm tree fronds, and spaces within bridges or other structures.

**Western Screech-Owl (*Megascops kennicottii*).** This species was recorded during nocturnal surveys in 2009 (see Table 3), and is likely a year round resident. This small owl is a cavity nester, using former woodpecker cavities or natural tree cavities (as well as nesting boxes).

**Great Horned Owl (*Bubo virginianus*).** The Great Horned Owl is a year round resident. It nests in large platform nests. Most often their nests were originally built by other species, such as hawks, crows, ravens, or woodrats. They also use natural and artificial ledges.

**Burrowing Owl (*Athene cunicularia*).** The Burrowing Owl was confirmed as a nesting species in 1996 (Aigner and Koehler 1996), but the area containing the active nest is now part of the restricted access area that was not surveyed in 2008-2009 (see Map 1). Anecdotal reports from security personnel on the installation indicate that there has been recent occupation by Burrowing Owls within the nonnative grassland habitat behind buildings 501, 502, and 503, but no owls were observed by AMEC biologists. At least two burrows in this area contain rodent bones, indicating somewhat recent occupation. An additional area, near the northwest corner of Lake Norconian, is occupied commonly by California Ground Squirrels (*Spermophilus beecheyi*), and their burrows and the open habitat at this location is suitable for Burrowing Owls. Both of these areas are shown on Map 1. The Burrowing Owl is a California Department of Fish and Game Bird Species of Special Concern (Gervais et al. 2008).

**White-throated Swift (*Aeronautes saxatalis*).** This aerial species is occasionally seen foraging over the installation. Fifty were observed on 14 December 2008, and it was recorded on four of ten CBCs between 1998-2007, with a high count of 60 on 16 December 2007. No nesting habitat (crevices on cliffs or openings in highway bridges) is present on the installation.

**Black-chinned Hummingbird (*Archilochus alexandri*).** This species is an uncommon summer resident at the installation. It was recorded during surveys conducted in May, and likely nests.

**Anna's Hummingbird (*Calypte anna*).** The Anna's Hummingbird is common, with a mean of 8.7 birds being recorded during the 2008-2009 surveys. The single day high was 23, on 30 January 2009. An occupied nest was found during the survey of 8 May 2009. This species was also confirmed as a breeder in 1996.

**Rufous Hummingbird (*Selasphorus rufus*)/Allen's Hummingbird (*Selasphorus sasin*).** These species are difficult or impossible to distinguish from one another in the field. One

*Selasphorus* hummingbird was observed on 10 April 2009. Rufous Hummingbirds breed no farther south than the northwestern corner of California. Southern California's resident subspecies of Allen's Hummingbird (*S. s. sedentarius*) has in recent years been expanding its breeding range inland from the coastal counties, and is now known to nest in Corona and in Chino Hills. Migrant Rufous Hummingbirds and Allen's Hummingbirds likely occur more frequently on the installation than our single record would suggest.

**Belted Kingfisher (*Ceryle alcyon*).** The Belted Kingfisher occurs regularly at Lake Norconian in winter, spring, and early summer. Aigner and Koehler (1996) assumed breeding by this species, but AMEC considers this unlikely, as it is a very rare breeder in southern California and suitable nesting substrate is minimal or lacking at the installation.

**Red-breasted Sapsucker (*Sphyrapicus ruber*).** The Red-breasted Sapsucker was observed on one occasion during winter 1995-1996 (Aigner and Koehler 1996). AMEC biologists noted a few "sap wells" in trees during the 2008-2009 surveys, indicating past presence, but did not find the species. The species is "generally uncommon" in the coastal lowlands of southern California during winter (Garrett and Dunn 1981).

**Nuttall's Woodpecker (*Picoides nuttallii*).** The Nuttall's Woodpecker is an uncommon year round resident. No evidence of breeding was obtained during the surveys, but their continued presence throughout spring and summer suggests breeding on or near the installation.

**Downy Woodpecker (*Picoides pubescens*).** The Downy Woodpecker was recorded during the 1996 bird surveys (and may have been breeding), and on the CBC of 17 December 2000. The present survey did not reveal its presence, and it appears to no longer occur at the installation. It breeds along the nearby Santa Ana River, and occasional birds may wander onto the installation.

**Northern Flicker (*Colaptes auratus*).** Northern Flickers were recorded on 8 of 10 surveys in 2008-2009. It is an uncommon winter visitor, and small numbers occur in spring and early summer, suggesting breeding on or near the installation.

**Gray Flycatcher (*Empidonax wrightii*).** A Gray Flycatcher was observed on 24 April 2009. This species is a rare but regular migrant in the region. It is also rare during winter, and a Gray Flycatcher (most likely winter) was found at nearby Neal Snipes Park (at Hamner Avenue and 5<sup>th</sup> Street, 0.25 mile east-northeast of the installation) on 18 December 2005 (S. Myers pers. obs.).

**Black Phoebe (*Sayornis nigricans*).** The Black Phoebe is a fairly common year round resident. Several fledglings and juveniles were observed during surveys in May 2009. A reasonable estimation is that about five pairs nest yearly.

**Say's Phoebe (*Sayornis saya*).** This is another breeding species of the installation. At least three fledglings were being fed by their parents on 15 June 2009, near the installation's northwest corner.

**Ash-throated Flycatcher (*Myiarchus cinerascens*).** This species was observed during surveys in 1996, but interestingly was not seen during 2009 surveys. In the region it is a common summer resident, and occurs in a wide variety of habitats. It is common during summer along the Santa Ana River.



**Cassin's Kingbird (*Tyrannus vociferans*).** The Cassin's Kingbird is a fairly common resident. Breeding was confirmed in 1996, and a reasonable estimation is that about three pairs nest on the installation. Cassin's Kingbirds nest in tall trees or on power poles.

**Western Kingbird (*Tyrannus verticalis*).** The Western Kingbird is a fairly common summer resident in the region.

**Loggerhead Shrike (*Lanius ludovicianus*).** The Loggerhead Shrike was confirmed as a breeder in 1996, but appears to no longer occur on the installation. A population decline of this species has been noted on the coastal slope of southern California in recent years (Humble 2008).

**American Crow (*Corvus brachyrhynchos*).** The American Crow is a fairly common (formerly abundant) resident of the Santa Ana River valley, but significant declines have occurred since the arrival of West Nile Virus in the region (Myers 2005). At Lake Norconian, breeding was confirmed in 1996, but not in 2009.

**Common Raven (*Corvus corax*).** A pair of Common Ravens successfully nested at the installation in 2009. The nest was high in a *Eucalyptus* tree near the southernmost portion of the base.

**Horned Lark (*Eremophila alpestris*).** The Horned Lark was not recorded during the 2008-2009 surveys, but was observed in 1996. This species occurs in very open habitats, including nonnative grasslands, and especially areas with barren ground (such as recently graded areas).

**Tree Swallow (*Tachycineta bicolor*).** Migrating Tree Swallows were seen during the surveys of 20 February, 13 March, and 10 April 2009.

**Violet-green Swallow (*Tachycineta thalassina*).** The Violet-green Swallow is a fairly common migrant in the region. It was recorded during surveys in 1996.

**Northern Rough-winged Swallow (*Stelgidopteryx serripennis*).** The Northern Rough-winged Swallow was present throughout the spring and early summer of 2009, and likely breeds on or near the installation.

**Cliff Swallow (*Petrochelidon pyrrhonota*).** The Cliff Swallow, which is a colonial breeder, nests commonly on the installation. Approximately 75 birds were observed flying into the nest colony under the observation deck of the Lake Norconian Club on 13 March. This number of adults suggests 30-40 nests present.

**Barn Swallow (*Hirundo rustica*).** The Barn Swallow also nested under the observation deck of the Lake Norconian Club in 2009. The maximum count was 41 adults on 10 April, but this was a time when some migrating Barn Swallows could have been present. Counts of from 16 to 33 birds on subsequent counts suggest about 10-15 nests.

**Bushtit (*Psaltriparus minimus*).** A few pairs of Bushtits nested on the installation in 2009. By 8 May, family groups were actively foraging.

**Rock Wren (*Salpinctes obsoletus*).** An uncommon winter visitor: a single Rock Wren was observed on 14 December and again on 30 January among small rock outcrops on the hill west of Lake Norconian.

**Bewick's Wren (*Thryomanes bewickii*).** Unrecorded during the 1996 surveys, the present study indicated that one or two pairs are resident.

**House Wren (*Troglodytes aedon*).** The House Wren was recorded on four of ten surveys, and there was no indication that the species was breeding. The 1996 study reported it as a confirmed breeder.

**Marsh Wren (*Cistothorus palustris*).** Small numbers of Marsh Wrens appear to be resident in the freshwater marsh on the northern and western sides of Lake Norconian. Breeding was not confirmed, but is highly probable.

**Ruby-crowned Kinglet (*Regulus calendula*).** The Ruby-crowned Kinglet is a fairly common winter visitor.

**Blue-gray Gnatcatcher (*Polioptila caerulea*).** Two winter records: one on 16 December 2001, and another on 14 December 2008.

**Western Bluebird (*Sialia mexicana*).** A few (from 1-12) Western Bluebirds were found during surveys between 14 December 2008 and 24 April 2009, but none were observed after that period. Therefore, they are apparently winter visitors, even though suitable nesting habitat is present.

**Swainson's Thrush (*Catharus ustulatus*).** Two Swainson's Thrushes were detected during the survey of 8 May 2009, which is in the peak period of spring migration through southern California.

**Hermit Thrush (*Catharus guttatus*).** The Hermit Thrush is and uncommon to common winter visitor on southern California's coastal slope (Garrett and Dunn 1981). One was detected during the survey of 14 December 2008, but the species was not detected during the 1996 surveys (Aigner and Loehler 1996). Wintering Hermit Thrushes rely on dense understory, especially in areas with plants bearing berries. This habitat is scarce on the installation, thereby limiting the potential for significant numbers of this species.



**Figure 3. The Northern Mockingbird is resident, primarily in developed portions of the installation. Photo by S. Myers.**

**Northern Mockingbird (*Mimus polyglottos*).** A fairly common year round resident. The high count was 15, on 10 April 2009.

**European Starling (*Sturnus vulgaris*).** Breeding was confirmed in several instances, with adults seen entering nest cavities and carrying food, and fledglings observed. Counts of European Starlings varied widely: the high count was 61 on 10 April, and the low was two, on 15 June. It appears that following breeding, this species moves into more appropriate foraging habitat, such as nearby agricultural areas.

**Phainopepla (*Phainopepla nitens*).** Two records: one on 17 December 2000, and two on 29 March 2009.

**Orange-crowned Warbler (*Vermivora celata*).** A few Orange-crowned Warblers winter at the installation. The high count in 2009 was three, on 30 January. One migrant was observed on 8 May 2009, and it is a fairly common migrant in the region.

**Yellow Warbler (*Dendroica petechia*).** Three territorial males were present around Lake Norconian in 2009 (see Map 1). Along the nearby Santa Ana River, the Yellow Warbler is quite common. The Yellow Warbler is a California Species of Special Concern (Heath 2008).

**Common Yellowthroat (*Geothlypis trichas*).** The Common Yellowthroat is a fairly common resident. It is most numerous in the freshwater marsh habitats around Lake Norconian, but also occurs in riparian woodland and nonnative woodland. Breeding was confirmed when adults were observed carrying food on 8 May 2009.

**Green-tailed Towhee (*Pipilo chlorurus*).** One record: a winter sighting (date unknown) during the winter of 1995-1996.

**Spotted Towhee (*Pipilo maculatus*).** The Spotted Towhee has been recorded irregularly on the CBCs, and was present during winter and spring of 1995-1996 (Aigner and Koehler 1996). It was not found during the present surveys. Sightings during recent CBCs may have been of wintering birds. The species is a fairly common breeder along the Santa Ana River.

**California Towhee (*Pipilo crissalis*).** Breeding was confirmed on 15 June, when fledglings were observed. This species is a year round resident.

**Rufous-crowned Sparrow (*Aimophila ruficeps*).** A singing Rufous-crowned Sparrow was detected during the surveys of 29 May and 15 June 2009 along the central-eastern boundary of the installation (see Map X). This bird was frequenting low, planted shrubbery just outside the boundary fence, but undoubtedly ventured onto the installation during foraging. The date range of the detections suggested that the bird was on a breeding territory, although it was unknown whether the bird had a mate. The Southern California Rufous-crowned Sparrow (*A.r. canescens*) is a California Department of Fish and Game "taxa to watch" in the list of Bird Species of Special Concern (Shuford and Gardali 2008).

**Chipping Sparrow (*Spizella passerina*).** Small numbers were observed during winter and spring of 1995-1996 (Aigner and Koehler 1996).

**Lark Sparrow (*Chondestes grammacus*).** Aigner and Koehler (1996) indicated that the Lark Sparrow was a winter visitor, but the present surveys documented their presence into late April, and John F. Green had an additional incidental sighting on 30 July 2009. If this species does not breed on the installation, it is likely it breeds nearby.

**Savannah Sparrow (*Passerculus sandwichensis*).** The Savannah Sparrow is an uncommon winter visitor (high count of 9, 13 March 2009).

**Song Sparrow (*Melospiza melodia*).** This species is a fairly common breeder around the margin of Lake Norconian. Fledglings were observed on 8 May and 15 June 2009.

**Lincoln's Sparrow (*Melospiza lincolni*).** Lincoln's Sparrow is a rare to uncommon winter visitor.

**White-crowned Sparrow (*Zonotrichia leucophrys*).** The White-crowned Sparrow is a common winter visitor, occurring in flocks in shrub and grassland habitats. The high count is 121, on 14 December 2008.

**Golden-crowned Sparrow (*Zonotrichia atricapilla*).** The Golden-crowned Sparrow is occasionally seen during winter, usually in the company of White-crowned Sparrows. It has been observed four times over the past 11 winters.

**Dark-eyed Junco (*Junco hyemalis*).** The Dark-eyed Junco has been recorded during two recent winters: one on 19 December 2004 and during five of the surveys in 2008-2009 (a maximum of 10 on 14 December 2008).

**Western Tanager (*Piranga ludoviciana*).** The Western Tanager has been recorded during spring migration, with a maximum of seven present on 8 May 2009.

**Black-headed Grosbeak (*Pheucticus melanocephalus*).** The Black-headed Grosbeak was detected during three surveys: 24 April, 8 May, and 15 June. The latter date suggests the species may have nested in the area, but a few late spring migrants are known to pass through the area in early June (Garrett and Dunn 1981). The species breeds fairly commonly along the Santa Ana River.

**Blue Grosbeak (*Passerina caerulea*).** Blue Grosbeak was not found during the 2009 surveys, even though it was found breeding on the installation in 1996. Aigner and Koehler (1996) did not indicate the locale of the breeding pair in 1996, but it is possible that it was in the riparian habitat that is now part of the restricted access area (and was not surveyed in 2009).

**Red-winged Blackbird (*Agelaius phoeniceus*).** Somewhat surprisingly, the Red-winged Blackbird was not found to be breeding in the freshwater marsh around Lake Norconian in 2009 (nor in 1996). This species was recorded during three of 10 surveys in 2008-2009.

**Tricolored Blackbird (*Agelaius tricolor*).** Two birds were observed on 8 May 2009. The Tricolored Blackbird is a California Species of Special Concern (Beedy 2008); the nearest breeding colonies are in the San Jacinto Valley.

**Western Meadowlark (*Sturnella neglecta*).** The Western Meadowlark is an uncommon winter visitor, and has been recorded during three of the last 11 winters.

**Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*).** During recent winters, flocks of Yellow-headed Blackbirds have been observed flying into marsh vegetation on the margin of Lake Norconian at dusk, presumably to a night roost. The maximum count was 270, on 17 December 2000, with lesser counts of 150, 180, and 70.

**Brewer's Blackbird (*Euphagus cyanocephalus*).** Brewer's Blackbirds are infrequently seen on the installation. Only once was a large flock observed: 130 on 17 December 2000.

**Great-tailed Grackle (*Quiscalus mexicanus*).** The largest concentrations of Great-tailed Grackles occurred between 30 January and 10 April 2009 (high count of 23 on 20 February and on 10 April). Only a few birds were detected after 8 May, and no evidence of breeding was obtained.

**Brown-headed Cowbird (*Molothrus ater*).** This species has only been observed during spring. A high count of 18 occurred on 10 April 2009.

**Hooded Oriole (*Icterus cucullatus*).** The Hooded Oriole is a fairly common summer visitor, with nest building and family groups observed in May 2009. Hooded Orioles often build their nests in palm trees.

**Bullock's Oriole (*Icterus bullockii*).** Bullock's Orioles are also summer residents on the installation, but are slightly less numerous than Hooded Orioles. Breeding was confirmed on 29 May 2009, when a family group was observed.

**House Finch (*Carpodacus mexicanus*).** The House Finch is a common year round resident. They undoubtedly nest on the installation, but could not be confirmed in 2009.



**Lesser Goldfinch (*Spinus psaltria*).** The Lesser Goldfinch is another year round resident, and sometimes occurs in large flocks, foraging on weed seeds in open habitats. The high count during the 2008-2009 surveys was 58 on 29 May 2009. It probably nests on the installation.

**American Goldfinch (*Spinus tristis*).** Small numbers of American Goldfinches were observed foraging with Lesser Goldfinches May and June of 2009. This species breeds fairly commonly along the Santa Ana River, in willow and cottonwood habitats.

**House Sparrow (*Passer domesticus*).** This nonnative species is an uncommon to fairly common resident, and breeds on the installation.

#### 4.0 DISCUSSION

Management efforts at the installation that would benefit birds would include the maintenance and enhancement of freshwater marsh and riparian habitats around Lake Norconian. These habitats have changed little since at least the early 1990s (L. LaPré, pers. comm.). Specific recommendations follow:

- The riparian woodland and scrub area at the northwest corner of Lake Norconian would benefit from control of nonnative plants (Pepper Trees, Castor Bean (*Ricinus communis*), and their replacement with natives (willows, cottonwoods, Mulefat). However, since the area is already being used by native birds (including a successful Cooper's Hawk nest in 2009), such a habitat enhancement program should be done in phases. The removal of Pepper Trees, for example, should be gradual, with newly planted willows or cottonwoods being allowed to develop prior to additional removal of exotics. An added benefit to this area would be the release of a small, but persistent flow of water into the woodland.
- Wood Ducks may be encouraged to nest at Lake Norconian through the installation of nesting boxes around the lake within and adjacent to the marsh habitats.
- Protection of the heron rookery is recommended through educating those that utilize the lake for recreation. This can be accomplished with the use of interpretive signs.
- European Starlings are known to displace native birds from nesting cavities. A program to control the numbers of this unprotected species could benefit species such as Nuttall's Woodpeckers (*Picoides nuttallii*) and Northern Flickers (*Colaptes auratus*).
- California Ground Squirrel colonies on the installation should not be controlled unless they are in areas where their burrows cause problems with base operation and maintenance, or safety. By allowing ground squirrels to remain, potential for Burrowing Owl occupation is enhanced.

AMEC also recommends that monitoring of birds take place to ensure that management practices are effective. Monitoring periods should be approximately five years apart.

#### 5.0 ACKNOWLEDGEMENTS

Dr. Lawrence F. LaPré generously provided data from the Christmas Bird Counts. Dr. Margaret Wallerstein and Lieutenant Commander Lauper facilitated access for the bird surveys.



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**APPENDIX R**  
**MAP OF NORCO LAND USE**

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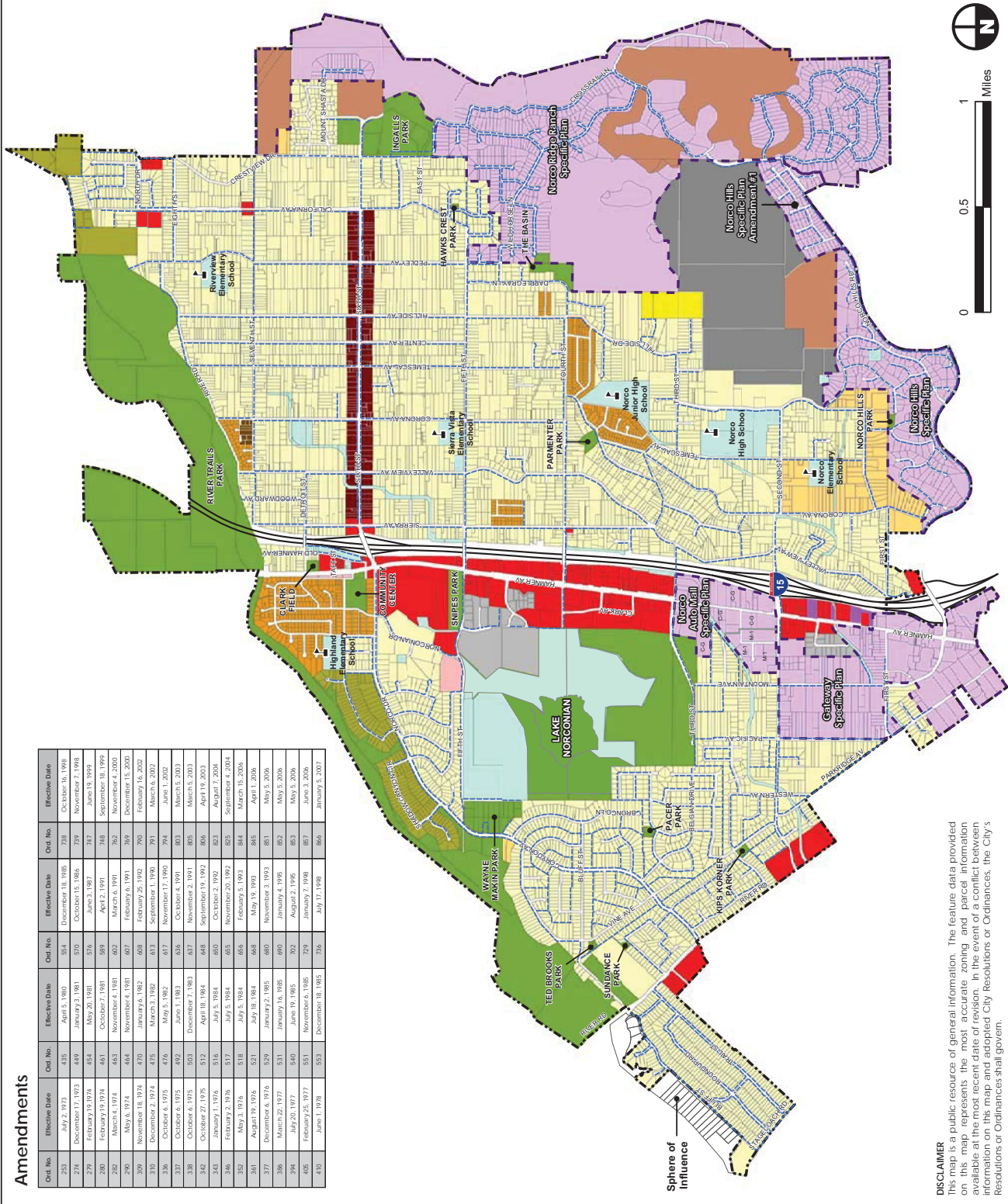


# CITY OF NORCO ZONING MAP

City Council Resolution No.: 2007 23  
Date: May 2, 2007

## Legend

- Zoning**
- HS (Hillside Agricultural - Low Density)
  - OS (Open Space)
  - LD (Limited Development)
  - A-E (Agricultural Estate)
  - A-1-10 (Agricultural - Low Density 10 ac.)
  - A-1-20 (Agricultural - Low Density 20,000 sq. ft.)
  - A-1-40 (Agricultural - Low Density 40,000 sq. ft.)
  - R-1-10 (Residential - Single Family 10,000 sq. ft.)
  - C-O (Commercial Office)
  - C-G (Commercial General)
  - C-4 (Commercial)
  - M-1 (Heavy Commercial/Light Manufacturing)
  - M-2 (General Manufacturing)
  - SP (Specific Plan)
  - M-1 (CTO-1)
  - Commercial Transition Overlay
  - R-1-10 (AKO)
  - Animal-Keeping Overlay
  - Sphere of Influence
  - P-E (Pedestrian-Equestrian Trails)
  - Specific Plan Boundaries
  - City Boundaries



## Amendments

Ord. No.	Effective Date	Ord. No.	Effective Date	Ord. No.	Effective Date
253	July 2, 1973	435	April 5, 1980	541	December 18, 1995
274	December 17, 1973	449	January 3, 1981	570	October 15, 1986
279	February 19, 1974	451	May 20, 1981	576	June 3, 1987
280	February 19, 1974	454	October 7, 1981	591	April 2, 1991
282	March 6, 1974	463	November 4, 1981	602	March 8, 1991
290	May 6, 1974	464	November 4, 1981	607	February 6, 1991
309	November 18, 1974	470	January 6, 1982	608	February 25, 1992
310	December 2, 1974	476	March 3, 1982	613	September 1, 1990
336	October 6, 1975	492	June 1, 1982	617	November 17, 1990
337	October 6, 1975	503	December 7, 1983	637	November 2, 2003
342	October 27, 1975	512	April 18, 1984	648	September 19, 1992
343	January 1, 1976	516	July 5, 1984	650	October 2, 1992
346	February 2, 1976	517	July 5, 1984	655	November 20, 1992
352	May 3, 1976	518	July 5, 1984	656	March 19, 1993
361	August 19, 1976	521	July 18, 1984	661	May 19, 1993
377	December 6, 1976	529	January 2, 1985	660	November 3, 1993
386	March 22, 1977	531	January 16, 1985	660	January 2, 1995
394	July 20, 1977	540	June 19, 1985	702	August 2, 1995
405	February 25, 1977	551	November 6, 1985	729	January 7, 1998
430	June 1, 1978	553	December 31, 1985	726	July 17, 1998
				866	January 5, 2007

**DISCLAIMER**  
This map is a public resource of general information. The feature data provided on this map represents the most accurate zoning and parcel information available at the most recent date of revision. In the event of a conflict between information on this map and adopted City Resolutions or Ordinances, the City's Resolutions or Ordinances shall govern.





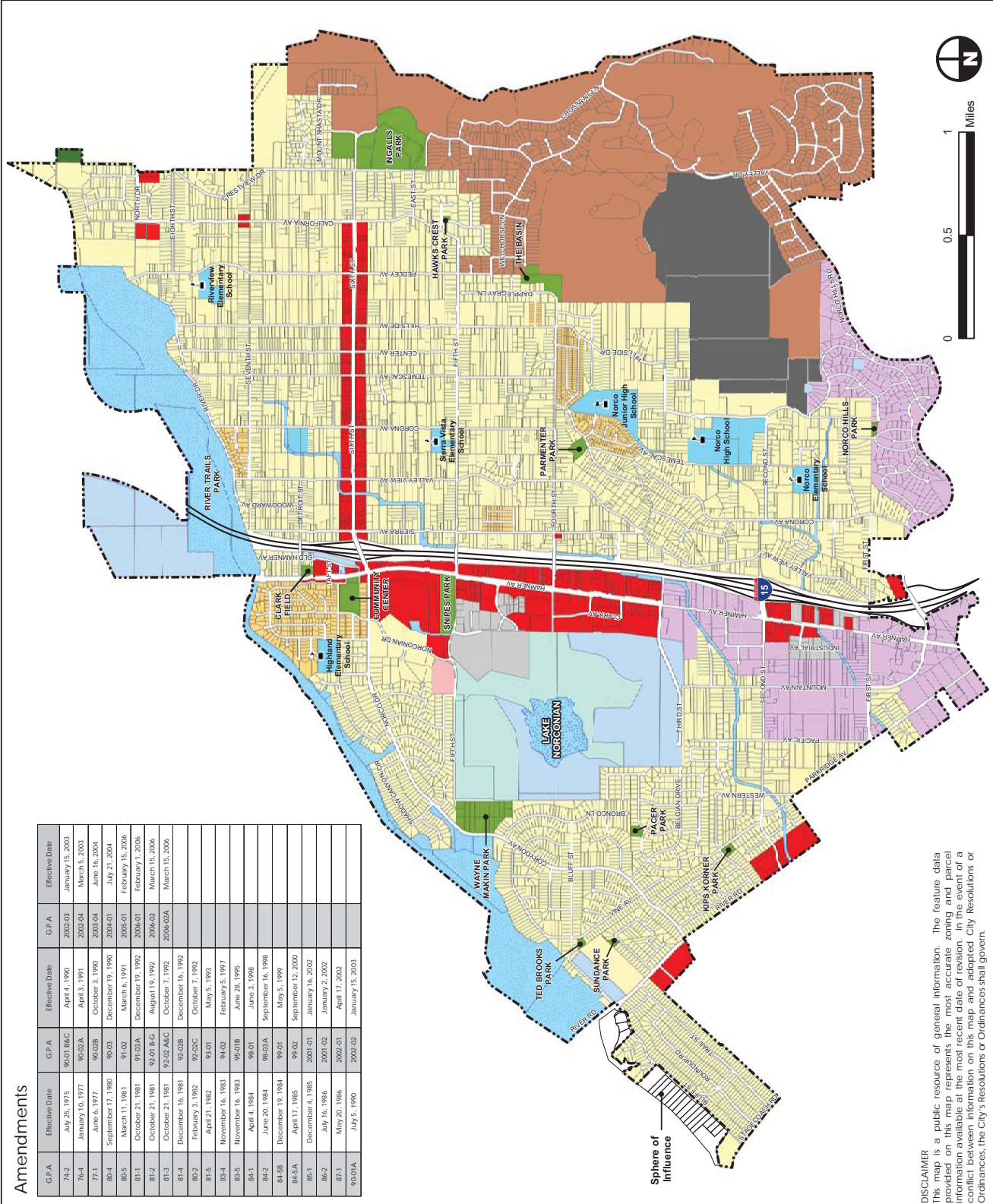
# CITY OF NORCO GENERAL PLAN LAND USE MAP

City Council Resolution No. 2007-23  
Date: May 2, 2007

**Legend**

Land Use Designations

- RA (Residential Agricultural)
- RL (Residential Low)
- IN (Institutional)
- CO (Commercial Office)
- CC (Commercial Community)
- I (Industrial)
- I-SR (Industrial - Special Research)
- A (Agricultural)
- S (Existing Schools)
- P (Parks)
- HS (Hillside Areas)
- WR (Water Related)
- PL (Public Lands)
- SP (Specific Plan)
- Sphere of Influence
- City Boundaries



## Amendments

GPA	Effective Date	GPA	Effective Date	GPA	Effective Date
74-2	July 25, 1975	90-01 B4C	January 15, 2003		
76-4	January 10, 1977	90-02A	2002-03		
77-1	June 6, 1977	90-02B	April 3, 1991		
80-5	September 17, 1980	90-03	October 1, 1990		
81-1	March 11, 1981	91-02	December 19, 1990		
81-2	October 21, 1981	91-03A	March 6, 1991		
81-3	October 21, 1981	92-01 B7G	August 19, 1992		
81-4	December 16, 1981	92-02 A8C	October 7, 1992		
82-2	February 3, 1982	92-03B	December 16, 1992		
81-5	April 21, 1982	92-02C	October 7, 1992		
83-4	November 16, 1983	94-02	May 5, 1991		
84-1	April 4, 1984	95-01B	February 5, 1997		
84-2	June 20, 1984	95-01B	June 28, 1995		
84-5A	April 17, 1985	98-03A	September 16, 1998		
85-1	December 4, 1985	99-01	May 5, 1999		
86-2	July 16, 1986	2001-01	September 12, 2000		
87-1	May 20, 1986	2001-02	April 1, 2002		
90-01A	July 5, 1990	2002-01	January 2, 2002		
		2002-02	April 11, 2002		
			January 15, 2003		

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