# FINAL

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

# 2019

***Prepared For*:**

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

**Prepared in 2013 by**
**AMEC Environment & Infrastructure, Inc.**
**San Diego, CA 92123**

**And updated in 2019 by the**
**Station Natural Resources**
**Manager**

U.S. Navy (2019) Integrated Natural Resources Management Plan Naval Weapons Station Seal Beach Detachment Norco. Norco, California.

# 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 and Manual 4715.03 and Chief of Naval Operations Instruction and Manual 5090.1, specifically Chapter 12. This document was prepared and reviewed in coordination with U.S. Department of Interior (DOI), U.S. Fish and Wildlife Service (USFWS), and the California Department of Fish and Wildlife (CDFW) Inland Deserts Region in accordance with the 2013 Memorandum of Understanding between the U.S. Department of Defense (DOD), the USFWS, and the International Association of Fish and Wildlife Agencies (IAFWA) for a Cooperative INRMP on Military Installations.

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

**Approved by:** _____ 02 APR 2019

**Noel Dahlke**
**Captain, U. S. Navy**
**Commanding Officer**
**Naval Weapons Station Seal Beach**
**Seal Beach, California**

**Date**

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

**Approved by:**

**David O. Baillie** **Date**
**Installation Environmental Program Director**
**Naval Weapons Station Seal Beach**
**Seal Beach, California**

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

**Approved by:** _____ 11/27/2018

**Ryan Lockwood**
**Conservation Program Manager**
**Naval Weapons Station Seal Beach**
**Seal Beach, CA**

**Date**

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**Approving Official - U.S. Navy, Naval Facilities Engineering Command Southwest/ CNRSW**

**Approved by:**

**Doug Powers** **Date**
**Natural Resources Program Manager,**
**NAVFAC Southwest/CNRSW**
**San Diego, California**

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

**Approved by:** _____ 2/13/19

**Scott Sobiech** **Date**
**Acting 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:** Leslie MacNair — 2/5/19

**Leslie MacNair**
**Regional Manager**
**Inland Deserts Region**
**California Department of Fish and Wildlife**
**Ontario, California**

**Date**

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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's Commanding Officer (CO) 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 a Natural Resource Management Plan (NRMP) (U.S. Soil Conservation Service (USSCS) 1990), a draft INRMP prepared in 1998 (NAVFAC Southwest 1998), a finalized and signed INRMP produced in 2013 (USDON 2013), and continues with this update.

In 2005, the Detachment came under the command of NAVWPNSTA Seal Beach, formerly under the Naval Sea Systems Command. At that time, it was determined that an updated INRMP was necessary for Detachment Norco, which resulted in the final 2013 INRMP.

The Plan fulfills the requirements of Chief of Naval Operations Instruction (OPNAVINST) 5090.1 Chapter 12, 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). 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. Specifically, this INRMP satisfies the requirements of the DOD Instruction 4715.03, Natural Resources Conservation Program (2011), and its implementing manual, DODM 4715.03, Integrated Natural Resources Management Plan (INRMP) Implementation Manual (2013) and follows the "INRMP Guidance for Navy Installations" (USDON 2006).

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 water quality, water flow and circulation, invasive species, vector control, aesthetics, and vegetation management/maintenance issues. Manage the lake ecosystem to avoid problems such as the fish die-offs that occurred in 1993, 2013 and 2014 caused by low oxygen and impaired water quality.
- **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 broad, long-term statements (Goals) and ending with specific, short- term methods (Projects).

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

- GOAL 1: Provide good stewardship to protect, manage, and enhance the land, water, and wildlife resources of Detachment Norco while fulfilling mission requirements.
- GOAL 2: 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.
- GOAL 3: Support compliance with the historic district requirements for Lake Norconian and the ponds through natural resources management and enhancement, with an emphasis on maintaining water quality, vector control, and aesthetics.

The ASN (I&E) Memo of August 12, 1998, DON Policy Memo 98-06: Review of INRMPs Under NEPA, as well as OPNAVINST 5090, have 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 in 2013 (INRMP Guidance for Navy Installations 2006, Section 6.1; See Appendix N.). Updates to the document made in 2018 were not substantive to trigger an additional review under NEPA.

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# ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| 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 |
| CNDDB | 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 |
| DODM | U.S. Department of Defense Manual |
| DOI | U.S. Department of the Interior |
| DON | U.S. Department of the Navy |
| 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 |

# ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| FE | Federally-Endangered |
| FSC | Federal Species of Special Concern |
| FT | Federally-Threatened |
| FP | Fully Protected – State |
| 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 |
| INRMP | Integrated Natural Resources Management |
| 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 SW | 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 and Manual |
| OUSD | Office of the Under Secretary of Defense |
| PE | Federally-Proposed Endangered |
| PT | Federally-Proposed Threatened |
| QRP | Qualified Recycling Program |
| SE | State-Endangered |
| SEC | Sterner Environmental Consulting |

# ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| 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 |
| USDON | U.S. Department of the Navy |
| 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. During the following 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 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. NSWC 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's Commanding Officer (CO) 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 guide 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), a draft INRMP prepared in 1998 (Naval Facilities Engineering Command (NAVFAC) Southwest (SW) 1998). In 1998, the Detachment was under the Naval Sea Systems Command. In 2005, the Detachment came under the command of Naval Weapons Station Seal Beach. At that time, it was determined that an updated INRMP was necessary for Detachment Norco. The first compliant INRMP was signed in 2013 (USDON 2013) and integrated the recommendations of the installation's draft INRMP (NAVFAC SW 1998), the Final Integrated Cultural Resources Management Plan (ICRMP) updated in 2005, and the Integrated Pest Management Plan (IPMP) updated in 2011.

This Plan 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 and Manual 4715.03 and Chief of Naval Operations Instruction and Manual 5090.1, specifically Chapter 12. This all falls under the Secretary of the Navy Instruction (SECNAVINST) 6240.6E.

## 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 Readiness Program (OPNAVINST 5090.1 Chapter 12). 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) as referenced in the DOD Instruction and Manual 4715. 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 and data for annual Conservation Metrics, 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 SW) staff in 1998. The draft INRMP was not signed and 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, an INRMP is required, and therefore the requirement was fulfilled in 2013 with a signed and compliant document (USDON 2013). This updated INRMP for Detachment Norco integrates the recommendations of the previous draft and final INRMP, the Final Integrated Cultural Resources

Management Plan (ICRMP) updated in 2018, the Integrated Pest Management Plan (IPMP) updated in 2011, and the Lake and Landscape Management Plan completed in 2016 (USDON 2016).

## 1.3. Goals

In this INRMP, a Goal is a statement that sets the course toward 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. The objectives are listed in Section 5. To help achieve goals, projects are one-time or routinely repeated short-term actions or projects. INRMPs are required by DOD Instruction and Manual (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**: Provide good stewardship to protect, manage, and enhance the land, water, and wildlife resources of Detachment Norco while fulfilling mission requirements.
- **GOAL 2**: 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.
- **GOAL 3**: Support compliance with the historic district requirements for Lake Norconian and the ponds through natural resources management and enhancement, with an emphasis on maintaining water quality, vector control, and aesthetics.

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. Manage the lake ecosystem to avoid problems such as the fish die-offs that occurred in 1993, 2013, and 2014 caused by low oxygen and impaired water quality.

- **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 SW, Navy Region 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 (USDON 2006).

**CNIC**—The Commander of Navy Installations Command (CNIC) reviews the entire INRMP. Their role is to ensure that installations comply with DOD, DON, 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 COs 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 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 SW is responsible for providing support for natural resources management at Detachment Norco when requested. NAVFAC SW personnel such as the NEPA and INRMP coordinators, have natural resources programming and/or technical support roles in developing this INRMP. 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 CO 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 SW
- Commander Navy Region Southwest
- Naval Surface Warfare Center Corona Division
- U.S. Fish and Wildlife Service (USFWS)
- California Department of Fish and Wildlife (CDFW)
- 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 5090.1 Chapter 12, the Environmental and Natural Resources Program Manual.

This Plan fulfills OPNAVINST 5090.1 Chapter 12 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 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 5090.1 Chapter 12) 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 USFWS and CDFW concerning the conservation, protection, and management of fish and wildlife resources at NWSSB Detachment Norco.

DOD 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 (DOI), 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 5090.1 Chapter 12. 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 SW 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 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. Natural Resources Management
2. Listed Species and Critical Habitat
3. Recreation Use and Access and Conservation Law Enforcement
4. Sikes Act Cooperation
5. Team Adequacy
6. INRMP Implementation
7. Support of Installation Mission

NR Metrics are found on the Navy Conservation website.

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 (17 May 2005) guidance 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; 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 5090.1 Chapter 12. 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 5090.1 Chapter 12, 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. A Lake and Landscape Management Plan was completed in 2016 to gather information and determine management strategies and priorities that integrate mission requirements, natural resources and cultural resources (USDON 2016). Much of the substantive information relevant to natural resources has been incorporated into this INRMP update; however, the Lake and Landscape Management Plan still provides additional data regarding local limnology and can be used for reference. Some large datasets were collected including continuous logs of temperature and dissolved oxygen. The summarized findings and recommendations are included in Sections 3.1.4 and 5.6.1.

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

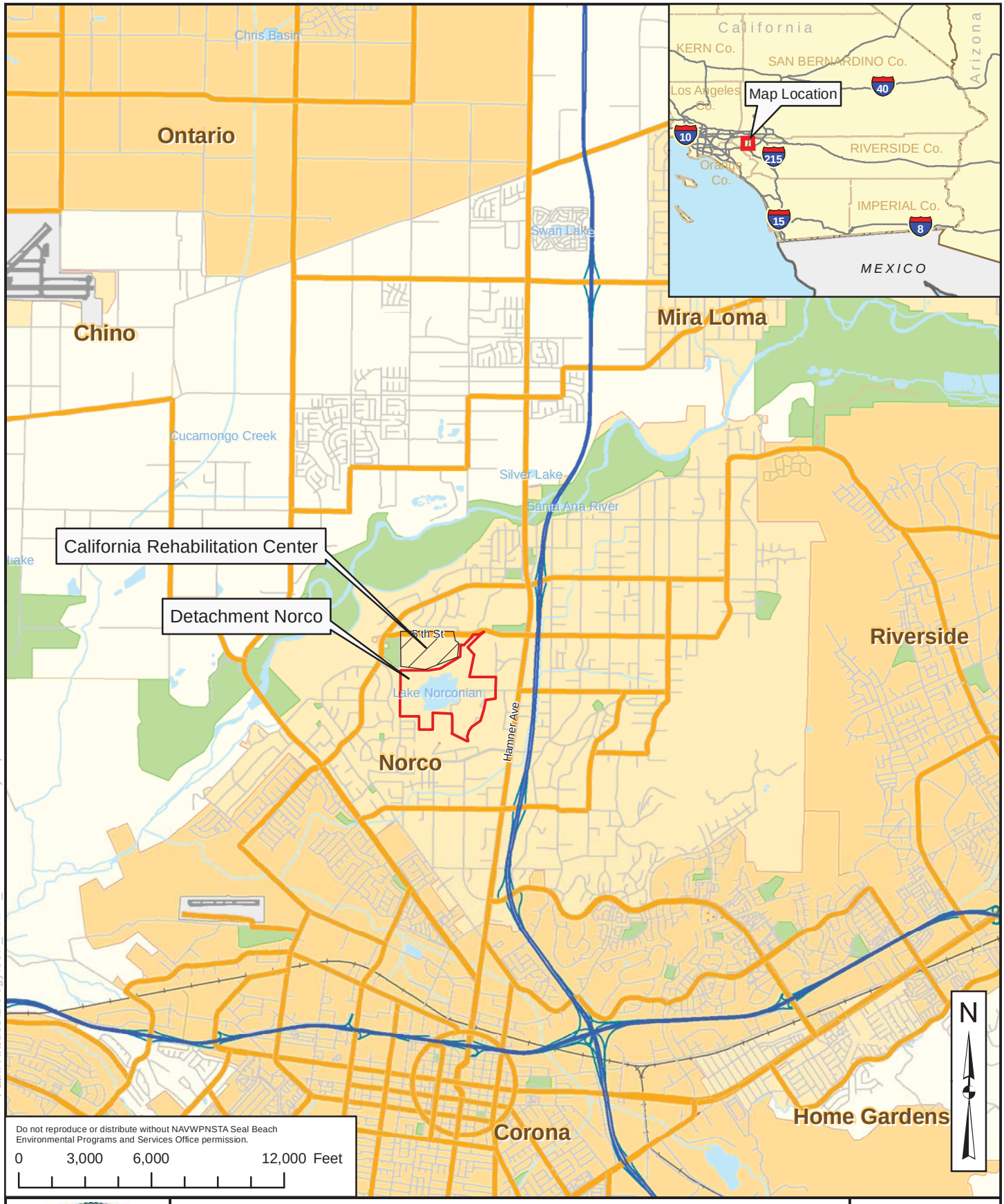
NAVWPNSTA Seal Beach and its detachments provide shore-based infrastructure support to the Navy's ordnance mission and other fleet and fleet support activities (CNIC 2009). The stated vision of the NAVWPNSTA Seal Beach and its detachments is to be the CNIC model for shore-based infrastructure support, 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

### 2.1.3 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.

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

**Figure 1**

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**Lake Norconian Club Historic District and Features**
**Naval Weapons Station Seal Beach Detachment Norco**
**Norco, California**

**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**

### 2.1.4 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.

## 2.1.5 Cultural Resources

### 2.1.5.1 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 SW 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.

### 2.1.5.2 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 fresh well water, the level of the lake is currently maintained with non-potable brackish well water fed into the lake near the west dam. The municipal water provided to Detachment Norco is used both for the general operation of the installation and for landscape irrigation. 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 1260 scientists, engineers, and support staff, and 350 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. 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.


**NSWC Corona Joint Warfare Assessment Laboratory**

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.
- One portable generator with a 65-gallon tank for diesel fuel.
- 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) when applicable and to use Best Management Practices (BMPs) to minimize environmental impacts.

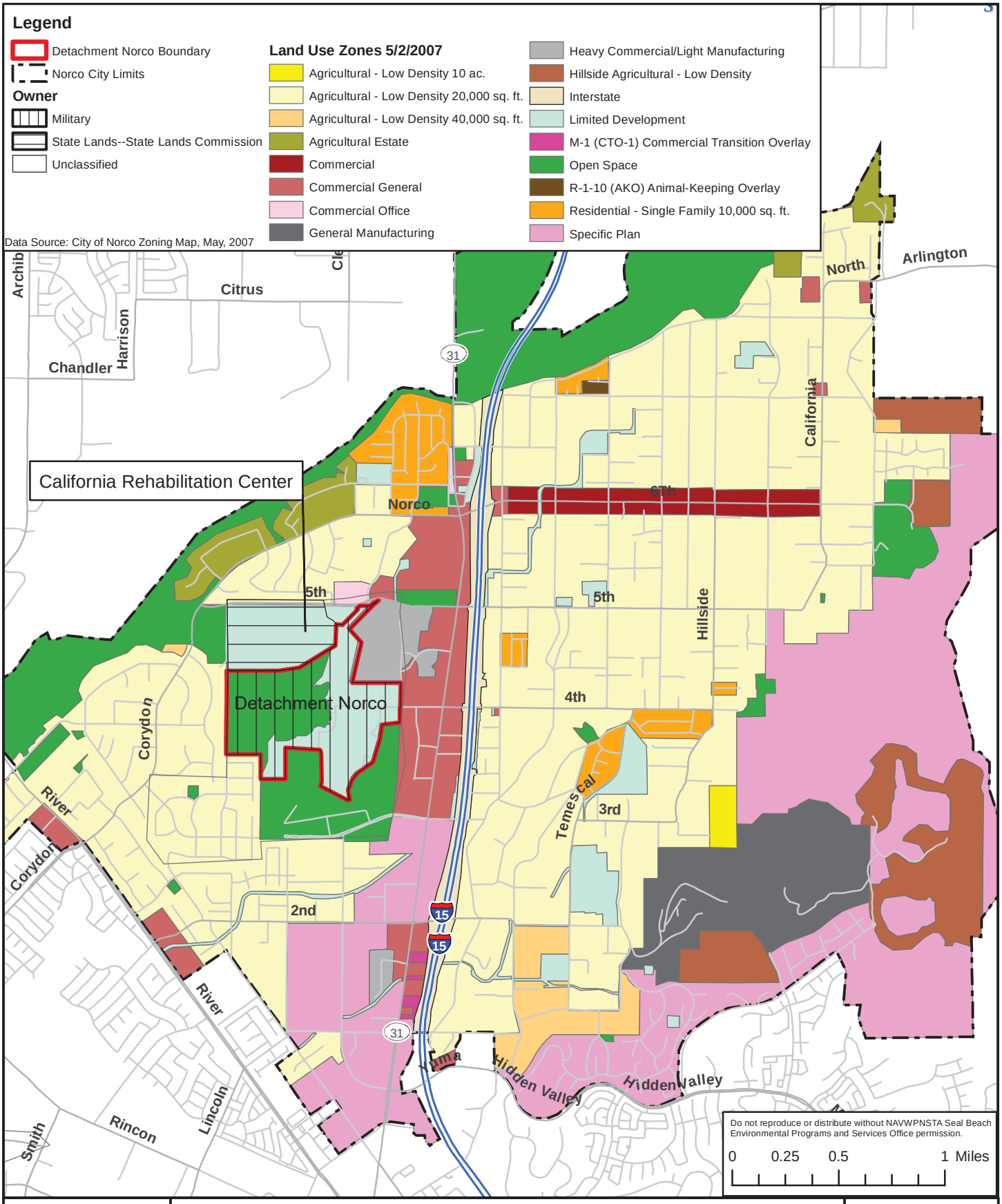
## 2.4. Regional Land Use and Conservation Programs

Regional land use provides a context for understanding the circumstances under which 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 (Southern California Association of Governments [SCAG 2009]), with a population of 27,336 as of 2012 (US Census Bureau 2017). 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.




**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.

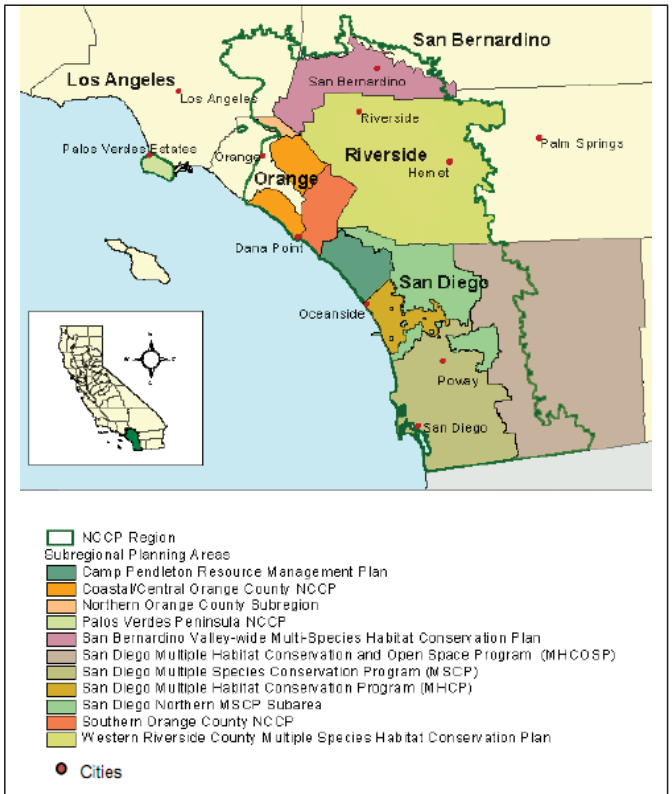


**Figure 4. Southern California Coastal Sage Scrub NCCP Region**

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).

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# 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. The majority of precipitation occurs from October through March.

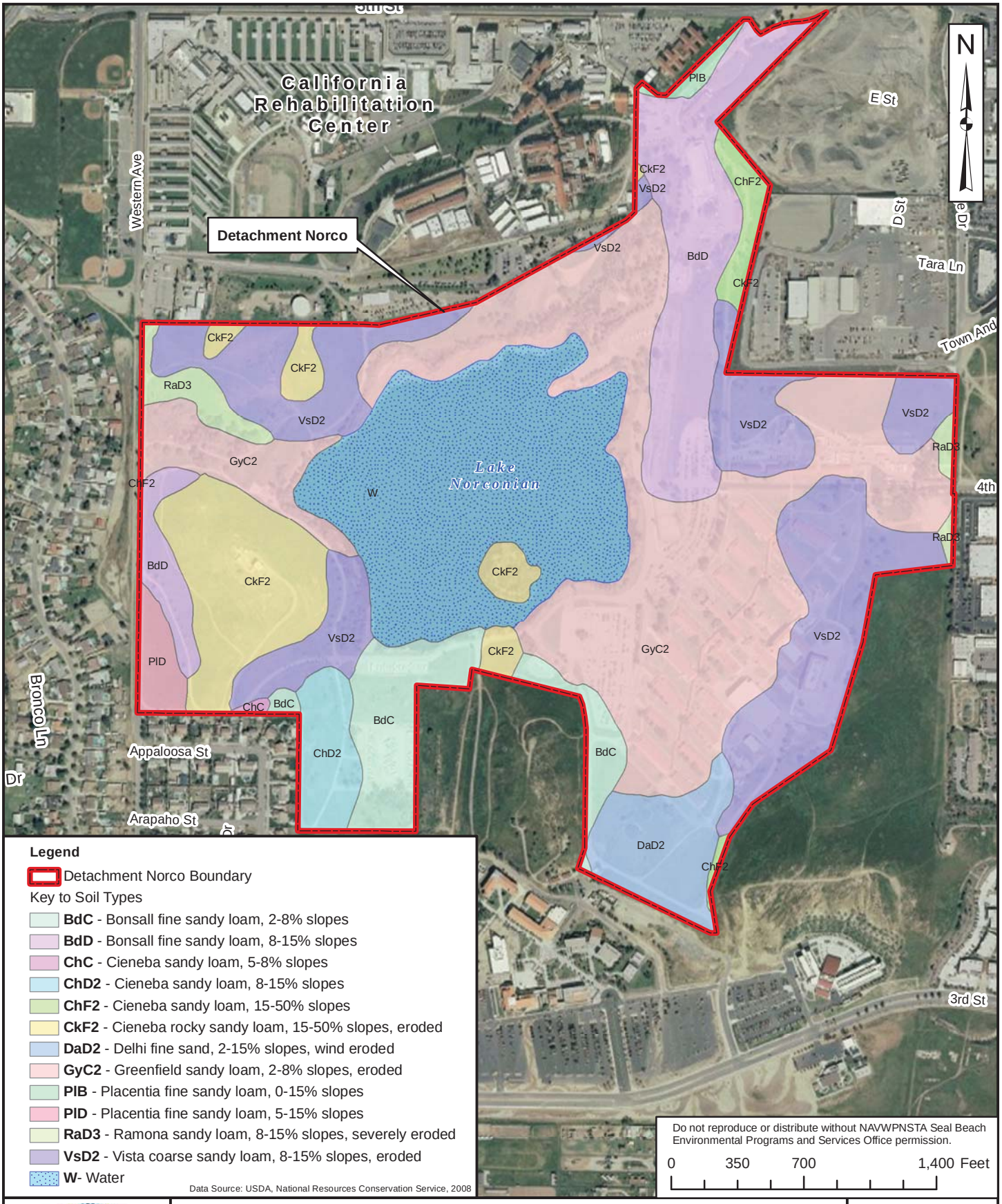
### 3.1.2 Topography

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 (USDON 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).




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

**Figure 5**

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**Table 1. 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** |

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), 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 and contains 350,000 cubic meters of water at full stage as measured by the Lake and Landscape Management Plan (USDON 2016).


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

**Figure 6**

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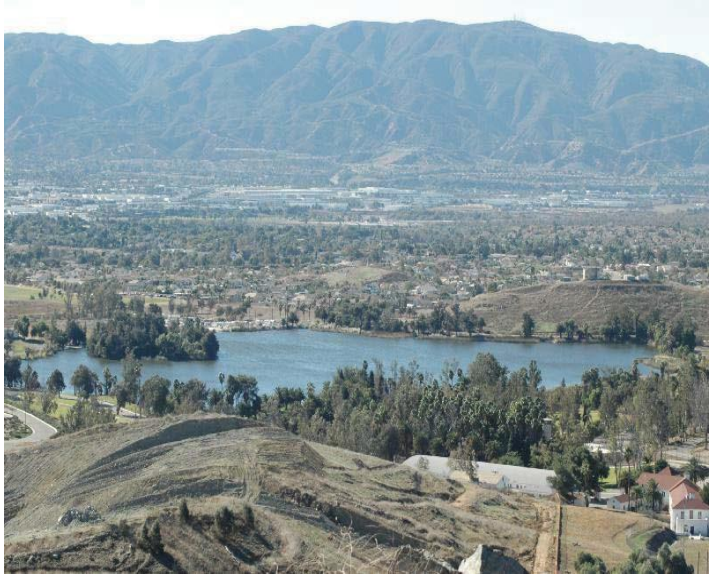
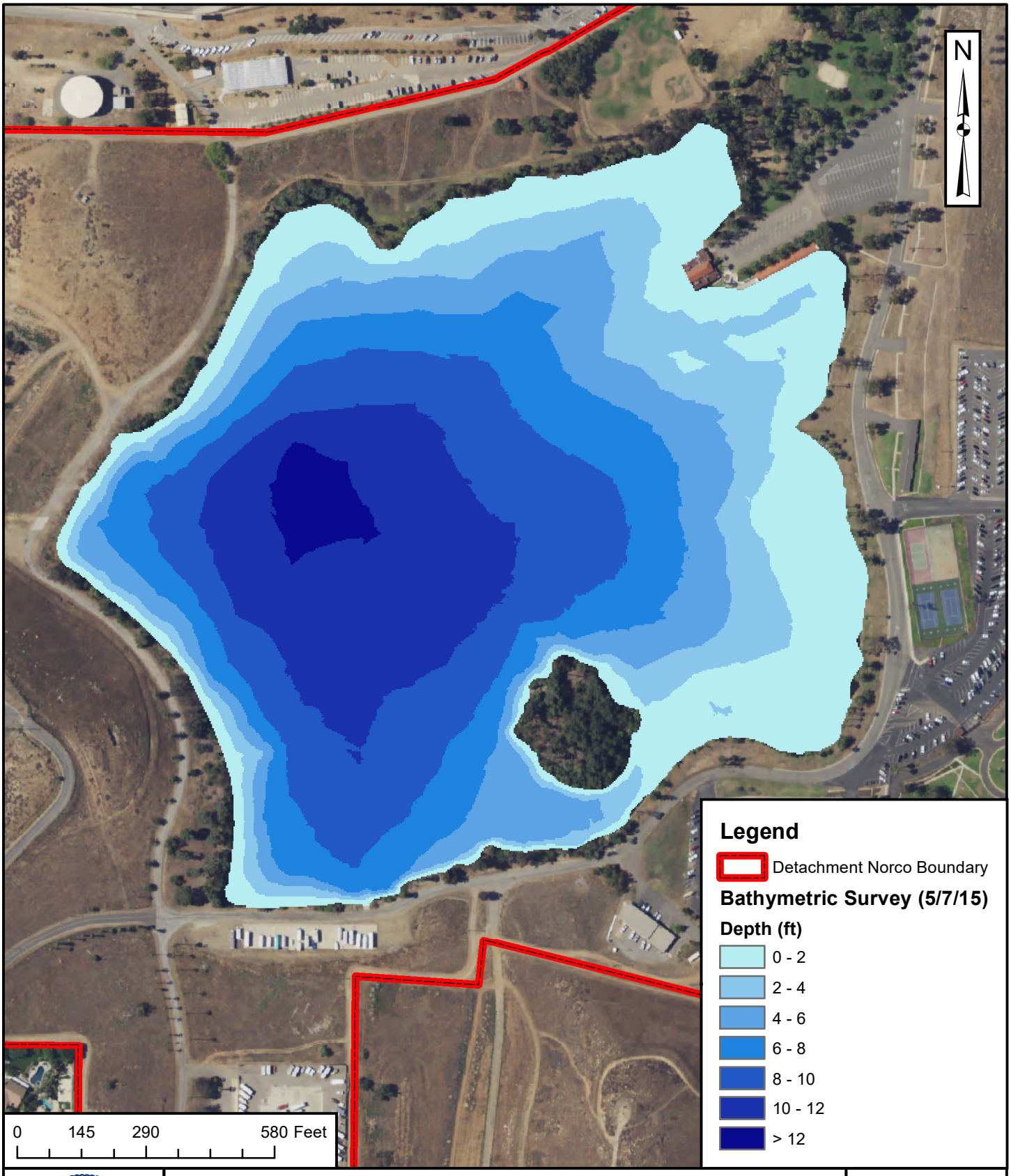
Although it was historically fed by potable well water, the level of the lake is currently maintained with water from the deeper geothermal aquifer fed into the lake near the west dam. In 1989-90, the west dam was rebuilt; however, it does not meet current State seismic safety standards (USSCS 1990), which is not uncommon for older assets in California. Above the lake is a series of four small ponds. Flow is maintained through the ponds using a recirculation pump.



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 and most notably it has no outflow except in years with abundant precipitation when overflow occurs. Lake Norconian is a terminal basin similar to many saline systems such as Mono Lake, the Great Salt Lake, or the Salton Sea. Evaporation causes the greatest loss of water from the lake, which is compensated by the imported water. Although artificial, the lake is not operated like a water supply reservoir with regular draw-downs. Due to the lack of an outflow, Lake Norconian does not flush water through it so total dissolved solids and other chemical constituents will tend to accumulate over time and a trend toward salinification can be expected. Winter conditions are quite mild so the lake does not freeze or have significant seasonal differences.

Lake bathymetry was measured on May 7, 2015 during development of the Lake and Landscape Management Plan (USDON 2016). Maximum depth was measured as 12.6 feet and total lake volume at the time was measured as 346,739 m3 (Figure 7, Table 2).




**Bathymetry of Lake Norconian**
**Naval Weapons Station Seal Beach Detachment Norco**
**Norco, California**

**Figure 7**

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**Table 2. Lake Norconian Volume and Surface Area by Depth (USDON 2016)**

| Depth (ft) | Depth (m) | Surface Area ($m^2$) | Layer Volume ($m^3$) | Cumulative Volume ($m^3$) |
|---|---|---|---|---|
| **0** | **0** | **192,429** | **55,181** | **346,739** |
| **1** | **0.30** | **169,888** | **49,016** | **291,557** |
| **2** | **0.61** | **151,905** | **44,097** | **242,541** |
| **3** | **0.91** | **137,566** | **39,959** | **198,444** |
| **4** | **1.22** | **124,734** | **35,776** | **158,486** |
| **5** | **1.52** | **110,169** | **31,542** | **122,709** |
| **6** | **1.83** | **96,943** | **27,430** | **91,167** |
| **7** | **2.13** | **83,219** | **22,866** | **63,737** |
| **8** | **2.44** | **67,110** | **17,845** | **40,871** |
| **9** | **2.74** | **50,384** | **12,561** | **23,025** |
| **10** | **3.05** | **32,673** | **7,273** | **10,465** |
| **11** | **3.35** | **16,030** | **2,806** | **3,191** |
| **12** | **3.66** | **3,791** | **385** | **385** |
| **13** | **3.96** | **-** | **0** | **0** |

### 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 well field has the option of pumping from a shallow aquifer containing fresh water or from a deeper aquifer containing geothermal brackish water. The well field property is described in the hydrogeology section in the Water Engineering Report and Master Plan – California Rehabilitation Center, Norco, California (CRC 1998; Appendix S). The City of Norco has tentative plans to use disinfected tertiary treated water to supply the lake in the future, although as of 2018 the feasibility of operating a recycled water system is not looking economically viable. 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 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 has planned to install a reclaimed water line that would bring high quality reclaimed water to Detachment Norco to supply the lake and landscape irrigation needs; however budget constraints have put the project on hold indefinitely. 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; the germination of cattails is stimulated; and, exposed, decaying shoreline vegetation may smell, attract flies, and contribute more organic and nutrient matter to lake sediment. Generally, the lake level should be maintained to be as constant as feasible with the water supply turned on beginning in late spring to replace evaporative losses and turned off in fall to begin gaining storage capacity in anticipation of winter precipitation.

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 infrequently within the past 40 years, such as in 1983 and 1998 (C. Quinn, NSWC Corona, pers. comm.).

### *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, USDON 2016).

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 winds 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, with subsequent release upon decomposition.
- Carbonate deposition: Chara, at pH > ~8 but influenced by salinity.

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 NSWC Corona Facilities Department's office depicts a few differences from today, most notably emergent vegetation (e.g., cattails and bulrush) along the eastern edge of the lake that became extensive leading up to 2015. Emergent macrophyte removal and management commenced in late 2015. 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).

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, bathymetric surveys were conducted in September 1995. October 1996 and May 2015. The 2015 measurements indicate a maximum depth of 13 feet and a volume of 282 acre-feet when the lake's surface is at 47.5 surface acres, or 3 feet below the dam spillway.

Another temporal trend in the physical environment will be the buildup and accumulation of salinity in the basin. Without an outflow, dissolved solids enter the basin with replenishment water but do not have an avenue to leave the basin. Lake Norconian is currently borderline brackish (salinity > 2 parts per thousand) and will continue to become more saline. One unknown negative flux of salinity is loss of water to groundwater. Conducting a hydrologic study using a conservative mass tracer such as bromide would help to quantify the local hydrology and allow for better prediction of rates of salinity increase. Measured addition of bromide could be achieved concurrent with an alum treatment to address phosphorous concentrations and adjust pH for a single project that would achieve three objectives.

## 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 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 3. Vegetation Communities Present Within Detachment Norco (AMEC 2009)**

| Vegetation Community | Acres | NatureServe Ecosystems Used in Metrics |
|---|---|---|
| Upland Vegetation Communities | | |
| **Non-native grassland: California Annual Grassland Series** | **93.6** | **California Central Valley & Southern Coastal Grassland** |
| **Coastal Sage Scrub: California Buckwheat Series** | **1.6** | **Southern California Coastal Scrub** |
| **Non-native Trees** | **6.0** | **Non-native Forest** |
| **Developed** | **77.9** | **Urban, Low Density** |
| Riparian/Wetland Vegetation Communities | | |
| **Bulrush Cattail Series** | **7.8** | **Freshwater Wetlands** |
| **Mulefat Series** | **7.8** | **Riparian Woodland** |
| **Red Willow Series** | **3.1** | **Southern Willow Scrub** |
| **Open Water** | **43.1** | **Freshwater Ponds and Lakes** |
| *Total* | **240.9** | |

#### 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 (CNDDB) 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) (CNDDB 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, which are not maintained or artificially irrigated. Non-native tree stands within the installation consist primarily of invasive species include eucalyptus (*Eucalyptus* spp.), Brazilian pepper tree (*Schinus molle*), fan palm (*Washingtonia robusta*), and other decorative species including pine (*Pinus* spp.) 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 removed more than 550 mature invasive trees from the lake margin and ponds area during 2015-2016.

## 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

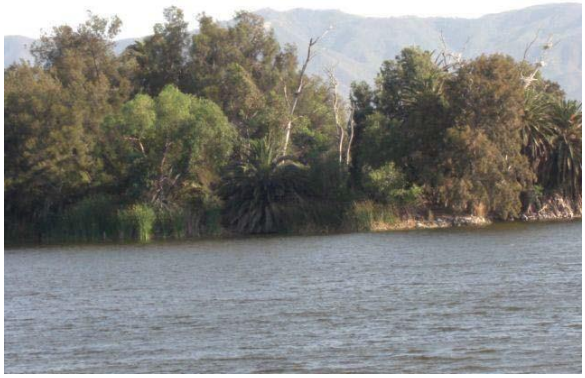
**Mulefat Series**- This community is dominated by mulefat (*Baccharis salicifolia*) and occurs within seasonally flooded and saturated canyon bottoms; irrigation ditches, and stream channels (Sawyer et. al 2009).

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 non-native 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 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.



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

**Open Water/Aquatic Vegetation**

Lake Norconian is characterized as open water and supports phytoplankton including diatoms and dinoflagellates, 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 pecitnatus*), 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 SW 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 SW 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 SW 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. because 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 SW 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: 144 birds, 6 fish, 4 amphibians, 8 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 a 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 1991). 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*), feral cats (*Felis catus*), and gray fox (*Urocyon cinereoargenteus*).

#### 3.2.4.3 Fishes

Lake Norconian has supported 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 (*Micropterous 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, NSWC Corona, pers. comm., USDON 2016). Declining water quality in recent years has caused multiple fish die-offs that have negatively affected the fishery and caused the suspension of recreational fishing. Currently, there may not be remaining populations of any gamefish species although mosquito fish remain abundant. The artificial construction of the ponds and lake 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 a handful of species records, including: Pacific tree frog (*Pseudacris hypochondriaca*), bullfrog (*Lithobates catesbeianus*), western fence lizard (*Sceloporus occidentalis*), southern alligator lizard (*Elgaria multicarinata*), western blind snake (*Leptotyphlops humilis*), gopher snake (*Pituophis catenifer*), and pond slider (*Trachemys scripta*). Of these, western fence lizards are the most predominant on the property (Phillips 1996). Suitable habitat for the native southwestern pond turtle (*Actinemys pallida*) is present but is impaired by a predominance of invasive species including bullfrogs and slider turtles. Urban development surrounding the Detachment presents a barrier to any potential dispersal of native pond turtle from the nearest occupied habitat.

#### 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:

3.2.4.5.1 **Endangered (FE)** - Any species that is in danger of extinction throughout all or a significant portion of its range.

3.2.4.5.2 **Threatened (FT)** - Any species that is likely to become an endangered species within foreseeable future through all or a significant portion of its range.

3.2.4.5.3 **Proposed (PT, PE)** - Any species that has been proposed for listing as threatened or endangered species.

3.2.4.5.4 **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.

3.2.4.5.5 **Candidate (C)** - Species for which there is sufficient information on biological vulnerability and threats to support proposals to list them as endangered or threatened.

3.2.4.5.6 **Fully Protected (FP)** - Golden eagle is fully protected by the Eagle Act.

3.2.4.5.7 **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, there protected status could change (USFWS 1996).

### 3.2.5.1 Threatened and Endangered Species with Potential to Occur

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 Revised Final Rule (2013)
**State Status**: Endangered; Fully Protected (1995)
**Regional Status**: MSHCP Covered Species (2003)

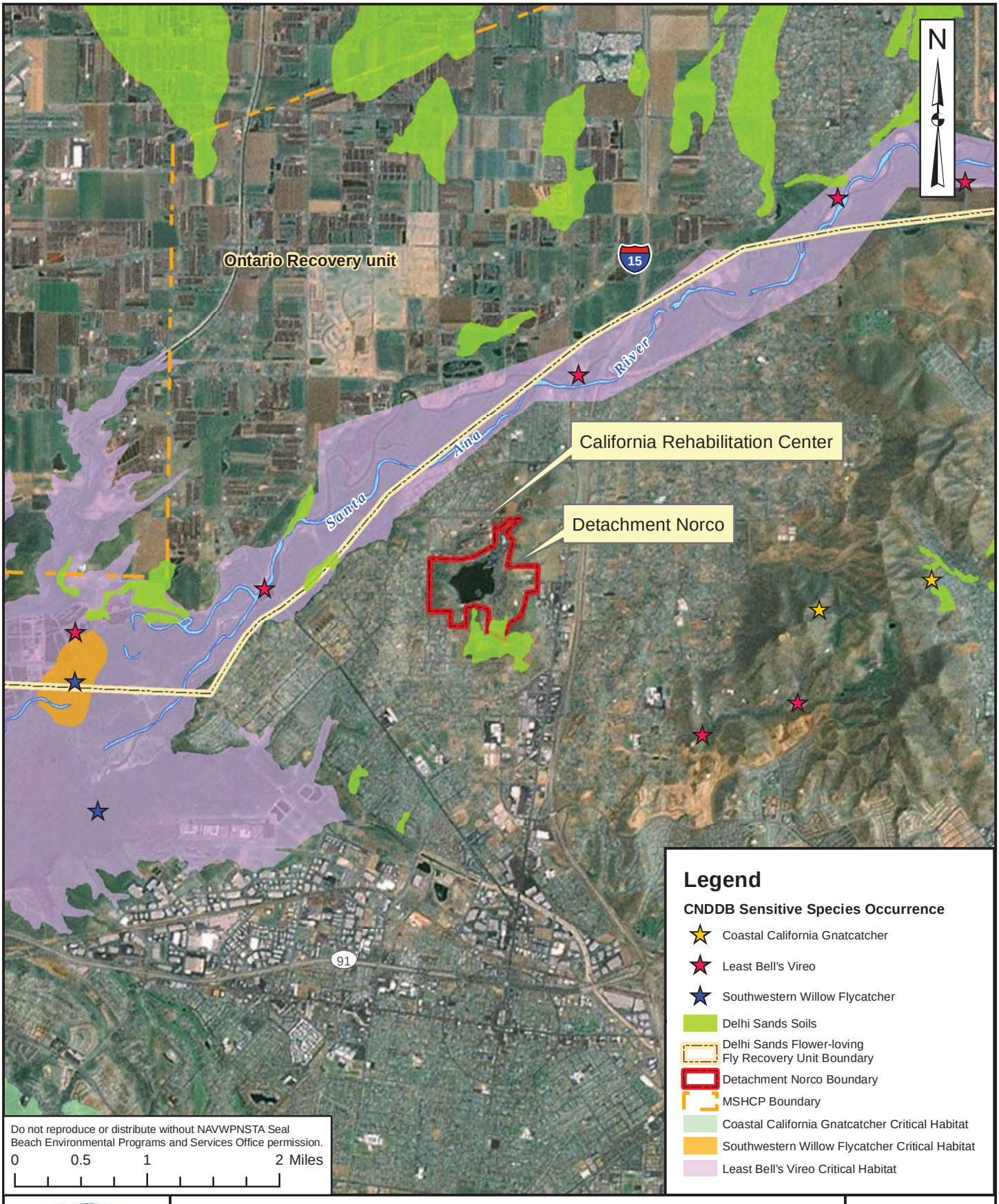
**Southwestern willow flycatcher (*Empidonax traillii extimus*)**

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 (Figure 8) (USFWS 2005).

### *Status on Detachment Norco*

Southwestern willow flycatcher was not detected during the 2008-2009 surveys (AMEC 2009) or during the 2014-2015 surveys (MultiMac JV 2015). 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 non-native trees along the lake margin north of the Lake Norconian Club (Figure 9). Both of these areas contain non-native 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 (CNDDB 2013).




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

**Figure 8**

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## Legend

Detachment Norco Boundary

### Vegetation Communities

- **BUL-CAT** - Bullrush-Cattail Series
- **CAB** - California Buckwheat Series (Disturbed)
- **DEV** - Developed
- **DEVE** - Developed (with nonnative components)
- **DEVLT** - Developed (lawns, landscaped with nonnative trees)
- **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)

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

**Figure 9**

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

**Federal Status**: Threatened (1993); Critical Habitat Revised Final Rule (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 8).

#### *Status on Detachment Norco*

Coastal sage scrub within the installation is considered marginal to support a gnatcatcher breeding pair 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 (CNDDB 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.


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

**Figure 10**

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### 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 (CNDDB 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 non-native trees along the lake margin north of the Lake Norconian Club (Figure 9). Both of these areas contain non-native trees and shrubs, but are suitable in vegetation structure and density. No least Bell's vireos were detected during 2008-2009 surveys nor during surveys in 2014-2015 (MultiMAC JV 2015). However, least Bell's vireo was identified within the installation in 1996 (believed to be transient) (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 (CNDDB 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 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).

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

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 8); 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) in the southern portion of the inner compound. No presence/absence surveys have been conducted for this species within the installation; however, the installation does not support suitable vegetation communities (desert sand-verbena) open sandy microhabitats to sustain this species. The area underlain by Delhi fine sand soil is primarily mowed non-native grasses and *Salsola* with a central non-native woodland of ash and peppertrees.

### 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)

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

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 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 10). Anecdotal reports from security personnel on the installation indicate that there has been occupation by burrowing owls within the non-native grassland habitat behind Buildings 501, 502, and 503. At least two burrows in this area contained rodent bones in 2012, indicating occupation at that time (R. Schallmann, pers. comm.). No owls were observed during surveys in 2008 and 2009 (AMEC 2009) or during surveys in 2014 and 2015 (MultiMac JV 2015). 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 10.

### 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 2017 (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 2018 (Appendix I).

**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 CBCs.

**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 the overall ecosystem and habitats within the site is expected to benefit species at risk.

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 10). 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 10). 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 (CNDDB 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 10). 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 non-native 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

No rare or sensitive plant species are known to occur on Detachment Norco (Appendix F). 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 SW 1998). A review of the Corona North USGS quadrangle in the CNDDB 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: Provide good stewardship to protect, manage, and enhance the land, water, and wildlife resources of Detachment Norco while fulfilling mission requirements.

- GOAL 2: 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.

- GOAL 3: Support compliance with the historic district requirements for Lake Norconian and the ponds through natural resources management and enhancement, with an emphasis on maintaining water quality, vector control, and aesthetics.

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.

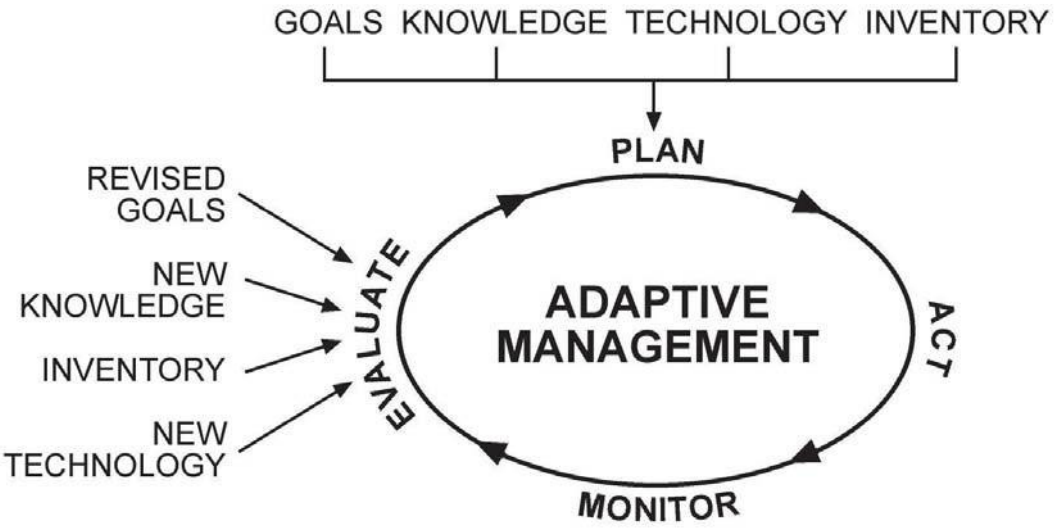
### 4.1.1 Ecosystem Management Approacht

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 a 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 11.




2.5 **Figure 11. 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 small parcel of open space that has not experienced the same 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 security clearances and authorization 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 (USDON 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).

## 4.8. Lake and Landscape Management Plan

A Lake and Landscape Management Plan for Detachment Norco was completed in July of 2016 (USDON 2016). The plan completed a thorough study of the limnology of Lake Norconian, a review of the historic aspects and considerations of the site, and identified recommended actions to maintain and enhance the condition of the site. Management considerations and recommendations from the Lake and Landscape Management Plan are incorporated into the INRMP.

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# SECTION 5: PROGRAM ELEMENTS

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

- **Compliance-based projects** - those that are required to meet the legal regulations governing the management of Navy lands and the needs of the military mission.
- **Stewardship-based projects** - 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, projects designed to comply only with State and local law and regulation do not qualify as compliance-based projects. In some instances, Federal law may require compliance with State law. In these instances, the projects are compliance-based. However, the ecosystem management approach of this INRMP recognizes the value of including stewardship-based management projects designed to meet the objectives of State and local natural resource law and regulation.

The resource-specific objectives and projects, 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 Projects:***

- 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 natural 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 Projects:***

- Use 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 5090.1).

## 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 Project:***

- As necessary, conduct a vegetation inventory within the installation to update the vegetation map. In addition to this inventory, presence/absence surveys for sensitive species 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.
- Continue to conduct annual removal of invasive plant species.
- In consultation with NSWC, implement the Landscape Management Plan (USDON 2016) which would include the management of vegetation within developed and undeveloped areas of the installation. The Landscape Management Plan would include objectives and projects 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 upland areas that have been significantly disturbed by noxious weeds by establishing appropriate native species that are known from the local region; 2) enhance existing coastal sage scrub (CSS) and grassland habitats by removing non-native 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, when apparent changes in the vegetation communities have occurred. Manage 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 bounded by 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, the majority of the original plantings are no longer present on the landscape (USDON 2016). 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 Projects:***

- 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.
- 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 in early April and continues through October or until sufficient rainfall.

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

- Collaborate with facilities to ensure irrigation BMPs are implemented.
- 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 13751 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 alternative upland plant communities.**

***Compliance and Stewardship Projects:***

- 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 and taking into account phenology of the target species, eradicate or control the spread and introduction of non-native and invasive plant species such as salt cedar, pampas grass, arundo, perennial pepperweed, 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 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. Native riparian and wetland vegetation may include cottonwood, sycamore, and willow species. 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, slider turtle, 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 5090.1 Chapter 12). Management measures and associated projects 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 Projects:***

- 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 annually, or as-needed, controlling and removing non-native 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.
- Restore native wetland/riparian plant habitats that have been significantly disturbed. 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 fed by non-potable well water via a direct line near the west dam. Under the MOA, the City of Norco is responsible for filling Lake Norconian (Appendix J). The lake also receives water from runoff, precipitation, groundwater seepage, and the seepage recharge system. Deposition of waste from waterfowl is the main source of nutrients to the lake. This deposition stimulates growth of aquatic and emergent vegetation. The plant communities release nutrients back to the water column, 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 lake water and sediment are very high. These nutrients are released when vegetation decays and becomes 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 Projects:***

- Implement water quality management goals and objectives as described in the Lake Management Plan (USDON 2016). Currently water samples are 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 facilitate vector control activities, 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 the water quality of Lake Norconian and its related ponds.**

***Compliance and Stewardship Projects:***

- Implement an initial and recurring maintenance water quality treatments to reduce phosphorous concentrations in the lake water as described in the Lake Management Plan (USDON 2016). Additions of aluminum sulfate are recommended to reverse eutrophication.
- Minimize fertilizer runoff to the lake by efficiently conserving water. Collaborate with facilities to ensure irrigation BMPs are implemented.
- 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

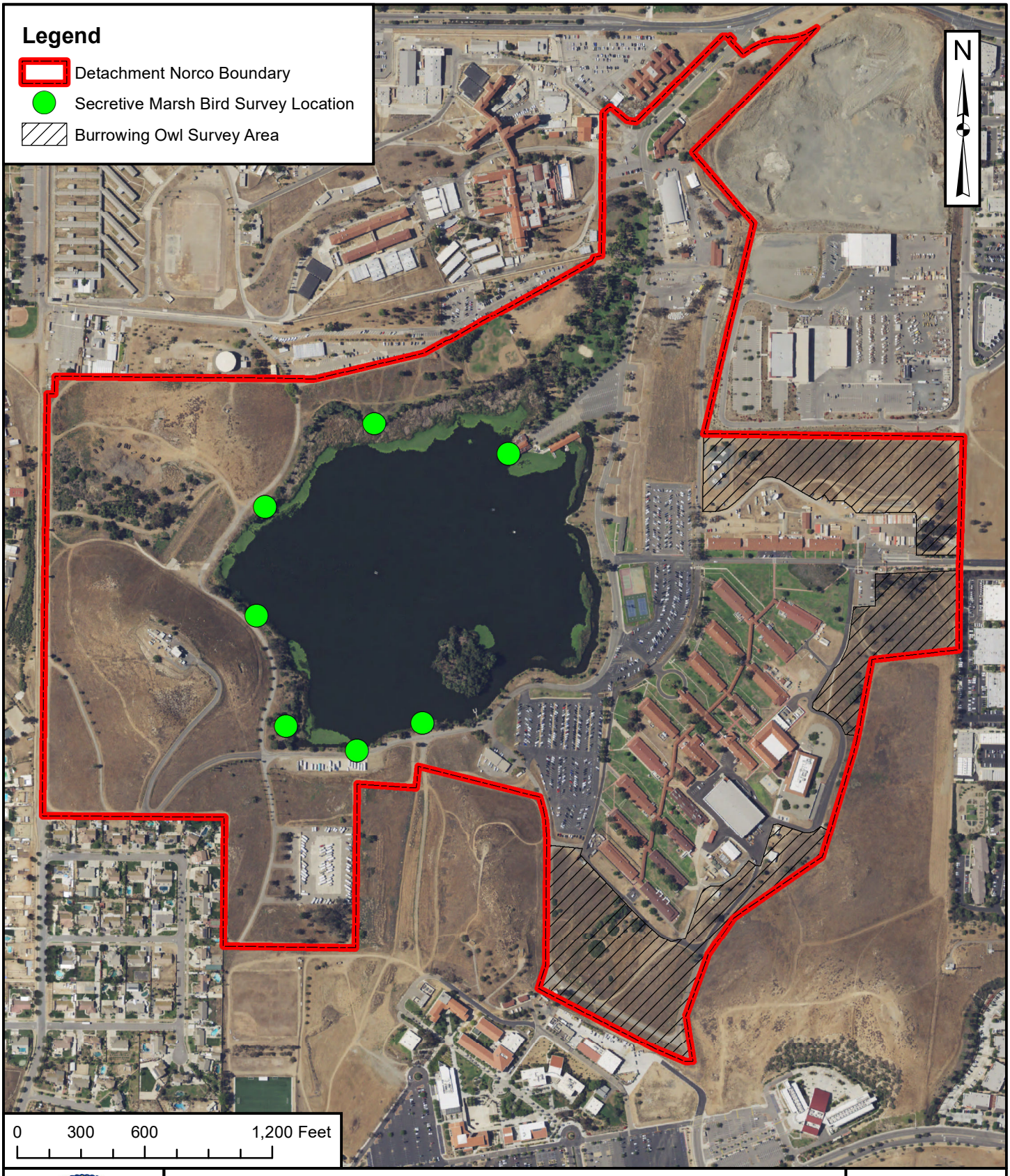
Sections 3.2.4 and 3.2.5 present wildlife species that are known to or have potential to occur within the Detachment. The primary goal of wildlife management within Detachment Norco is to preserve and protect wildlife while supporting multiple uses of the military installation. The wildlife management 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 projects 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.**

- Continue to conduct and update basewide wildlife inventories 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.
- Continue to conduct secretive marsh bird and burrowing owl surveys to collect data on current distributions of sensitive species. Conduct marsh bird surveys consistent with Conway (2011). Survey locations are depicted in Figure 12.
- 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.




**Protocol Avian Survey Locations**
**Naval Weapons Station Seal Beach Detachment Norco**
**Norco, California**

**Figure 12**

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### 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 Projects:***

- 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 Projects:***

- Ensure compliance with station Integrated Pest Management Plan.
- 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 Projects:***

- 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 non-native trees along the lake margin north of the Lake Norconian Club. Both of these areas contain native and non-native 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 (CNDDB 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 Projects:***

- 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 Projects:***

- 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 Projects:***

- 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 projects, 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). The office and lab based nature of the mission at Detachment Norco presents minimal potential for take. Individual projects involving the landscape or building exteriors are evaluated under NEPA as described in Section 4.3.

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

***Compliance and Stewardship Projects:***

- Survey suitable habitats within the installation annually (e.g. during the Christmas bird count) for the presence of MBTA species in accordance with Partners in Flight (PIF) guidelines. Keep records of survey results and update the fauna list to include new occurrences.
- 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 (Conway 2011, Figure 12).
- 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 Projects:***

- 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 Projects:***

- 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 5090.1 Chapter 12) 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 Projects:***

- 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 Projects:***

- 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, jogging, and wildlife watching around the lake.

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 historically stocked largemouth bass, bluegill, sunfish, catfish, mosquito fish, and threadfin shad. Some of these species, such as bass and shad, may no longer be present. Fishing is typically permitted anywhere along the shore of the lake, although fishing was suspended indefinitely in 2014 following fish die-offs. Fishing was 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 Projects:***

- 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.
- As water quality improvements get implemented, 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 fishing 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 SW has prepared an ICRMP for Detachment Norco. The ICRMP presents cultural resources management goals and projects 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 5090.1 Chapter 13: *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 effect on the Lake Norconian Club Historic District. Natural resource management activities that may result in an adverse effect 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.

#### 15.16.1.1 Cultural Resources Management Measures

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

***Compliance and Stewardship Projects:***

- 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 have a Wildland Fire Management Plan. DODI 6055.06 directs Commanding Officers of all installations with burnable acreage to develop and implement an

installation wildland fire management plan (WFMP); however, the threshold of burnable acreage is not defined. Detachment Norco does not have the potential for large (i.e. > 100 acres) wildfires and so may not require full development of an installation specific WFMP. The fire management principles of defensible space and fuels reduction are incorporated into facilities planning and grounds maintenance respectively. Vegetation management and removal services are provided by the grounds keeping contract. These activities should take into account plant phenology, native habitat conservation and MBTA protections. Currently, road sides, defensible space zones and unimproved grounds or ruderal areas are maintained via mowing and string trimming when vegetation reaches a height of 15", typically between one and five times per year dependent on rainfall. Periodic environmental reviews of the grounds keeping and facilities contracts will help ensure compliance and effectiveness.

## 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: 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 projects 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 COs have passed to these regional COs and area coordinators as part of their responsibilities.

NAVFAC SW 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 SW 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 SW. This information is collected in the NAVFAC Natural Resources Data Call Station and applicable GIS programs.

The installation CO 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 (5090.1 Chapter 12).

Formal adoption of an INRMP by the CO 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 5090.1 Chapter 12 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 CO, 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. Natural Resources Management
2. Listed Species and Critical Habitat
3. Recreation Use and Access and Conservation Law Enforcement
4. Sikes Act Cooperation
5. Team Adequacy
6. INRMP Implementation
7. Support of 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 (DODI [DOD 2011]) and by OPNAVINST 5090.1, 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 COs 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 5090.1 Chapter 12.

### 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 DODs, and applicable international and overseas requirements (OPNAVINST 5090.1). 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 5090.1 Chapter 12, 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 identity 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 projects 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 liming 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, vegetation 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 CO 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 projects 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 projects 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 (DODI 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 non-Federal 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 https://www.epa.gov/wetlands/5-star-wetland-and-urban-waters-restoration-grants.

## 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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# APPENDIX B GLOSSARY

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# Glossary

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| **Annual Increment** | 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. |
| **Bathymetry** | Science of mapping the contours of a body of water. |
| **Best Management Practices (BMP)** | 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. |
| **Biodiversity** | The diversity of life and its processes: living organisms, the genetic differences among them and the communities and ecosystems in which they occur. |
| **Biological Assessment** | 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. |
| **Biome** | A life zone on earth, such as grassland, or tropical rain forest. |
| **Bioregion** | A large collection of natural communities with a common weather regime, for instance Mediterranean climate. |
| **Botanical Areas** | 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. |
| **Candidate Species** | 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. |
| **Carrying Capacity (Operational)** | The maximum amount of military operations a given area can support without causing permanent environmental damage. |
| **Carrying Capacity (Outdoor Recreation)** | 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. |
| **Carrying Capacity (Wildlife)** | The maximum density of wildlife that a particular area or habitat will support on a sustained basis without deterioration of the habitat. |
| **CESA** | 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. |

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| **Conservation** | The prudent care, protection, and management of natural resources that best reflect sound resources stewardship for present and future generations. |
| **Critical Habitat** | 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. |
| **Damages** | 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. |
| **Disclosure** | 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. |
| **Dissolved Oxygen** | The concentration of oxygen in water at a specified temperature; used to measure water's ability to support aquatic life. |
| **Ecological Reserve Areas** | 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. |
| **Ecological Risk Assessment** | 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. |
| **Ecosystem** | A system formed by the interaction of a community of organisms with each other and the environment. |
| **Ecosystem Management** | 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. |
| **Endangered or Threatened Species** | A species of fauna or flora that has been listed be the USFWS or the NMFS for special protection and management under the ESA. |
| **ESA** | See FESA. |
| **Eutrophic** | Waters that are in a very nutrient-rich state, resulting in high organic production rates. |
| **Exotic Species** | 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. |
| **FESA** | Federal Endangered Species Act, as amended. Official Federal listing of endangered and threatened animals is published in the Federal Register. |

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| **Fish and Wildlife Cooperative Plan** | 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. |
| **Fish and Wildlife Management** | 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. |
| **Game Species** | Fish and wildlife that may be harvested per applicable Federal and State hunting and fishing laws. |
| **Grounds** | 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. |
| **Habitat** | An area where a plant or animal species lives, grows, and reproduces, and the environment that satisfies their life requirements. |
| **Injury** | 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." |
| **Integrated Natural Resources Management Plan (INRMP)** | 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 5090.1D. |
| **Land Management** | 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. |
| **Landscape** | 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. |
| **Listed** | A plant or animal species that had been determined by the State or Federal government to be threatened with extinction. |
| **Memorandum of Agreement (MOA)** | 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. |
| **Mitigation** | 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. |
| **Multiple Use** | The sustainable use of natural resources for the best combination of purposes to meet the long-term needs of the DOD and the public. |

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| **Natural Areas** | Managed areas suitable for demonstrations, education, and research. Sites should demonstrate the computability of different resource uses and sustained yield production. |
| **Natural Community** | 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. |
| **Natural Resources** | Landforms, soils, waters, and their associated flora and fauna. |
| **Natural Resources Damage Assessment** | 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. |
| **Natural Resources Management (NRM) Plan** | 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, forest, fish, and wildlife and outdoor recreation resources of the installation. (Superceded by INRMP.) |
| **Natural Resources Management Procedural Manual (NRMPM)** | Reference which provides comprehensive guidance for implementing requirements of pertinent laws, EOs, and Federal regulations, DOD directives, SECNAV and OPNAV instructions. (OPNAVINST 5090.1D) |
| **Natural Resources Management Professional** | 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. |
| **Natural Resources Trustee** | Federal trustees are those agencies who have statutory responsibilities with regard to protection or management of natural resources or stewardship responsibilities as a manager of federally-owned land. State agencies and Indian tribes may also be trustees. |
| **Non-Game Species** | Fish and wildlife species not classified as game species and that are not harvested for recreation or subsistence purposes. |
| **Nonpoint Source (NPS) Pollution/Polluted Runoff** | 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 from 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. |
| **Noxious Weeds** | Plant Species identified by Federal or State agencies as requiring control or eradication. |

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| **Outdoor Recreation** | 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. |
| **Outdoor Recreation Management** | 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. |
| **Planning Level Survey/Inventory of Biological, Cultural, or Earth Resources** | An inventory of sensitive and significant resources which must be identified in order to prevent impairment of the military mission or meet regulatory requirements. |
| **Programmatic Agreement (PA)** | 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. |
| **Prohibition** | 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. |
| **Projects** | Includes studies, plans, surveys, inventories, and land/water treatments as well as physical improvements. |
| **Proposed** | 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. |
| **Proposed Species** | Any species of fish, wildlife or plant that is proposed in the Federal Register to be listed under Section 4 of the ESA. |
| **Renewable Natural Resources** | Natural resources such as forests and wildlife that replace themselves in a relatively short time and are capable of providing sustained yields. |
| **Riparian Areas** | Areas closely related to or bordering rivers, streams, lakes, arroyos, playas, raven bottoms, etc. |
| **Salvage** | The act of transplanting or collecting seed for replanting in a protected place sensitive plants that would otherwise be destroyed. |
| **Scenic Areas** | Areas of superior natural beauty or scenic splendor that merit special management to preserve their qualities. |
| **Section 7** | 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. |

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| **Section 9** | 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. |
| **Section 10(a)** | Section 10(a) of the Federal Endangered Species Act. This section provides for permits to take listed species under certain conditions. |
| **Section 106** | 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. |
| **Sensitive** | Highly responsive or susceptible to modification by external agents or influences. |
| **Sensitive Habitat** | Land, water and vegetation needed to maintain one or more sensitive species. |
| **Sensitive Species** | Those species, federally-listed as endangered or threatened under the Endangered Species Act, proposed for listing, or candidate status. |
| **Significant** | Resources identified as having special importance, or as having or likely to have more influence on a particular aspect of the environment that other components. |
| **Species of Special Concern** | Designation by California Department of Fish & Game for taxa of concern to the State's Natural Diversity Data Base (NDDB). Not a legal or protection status, though these less common species may be listed in the future. |
| **State-Listed Species** | 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. |
| **Stewardship** | 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 or present and future generations. |
| **Sustainable Yield** | Production of renewable natural resources at a level such that harvest or consumptive use does not exceed net growth. |
| **Take** | 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." |
| **"Watchable Wildlife"** | Recreational viewing of wildlife under a cooperative, nationwide program. |
| **Water Birds** | Those families of birds of which most of all members are associated with fresh-water or salt-water habitats. |
| **Waterfowl** | Any of the larger swimming birds frequenting the margin of lakes, especially ducks, geese and swans. |
| **Watershed** | The ridge or crestline dividing two drainage areas: the area drainage by a river or stream. |

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| **Wetlands** | 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. |
| **Wildlife Management** | 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. |
| **Zoological Areas** | 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:


U.S. Department of Defense (DOD). 2011. Draft Department of Defense Manual (DODM) 4715.03 Integrated Natural Resources Management Plan (INRMP) Implementation. 14 January.

U.S. Dept. of the Navy (USDON). 2011. Chief of Naval Operations Instruction (OPNAVINST) 5090.1D. Environmental Readiness Program Manual. 10 January 2014.

# APPENDIX C

# LEGISLATION, EXECUTIVE ORDERS, REGULATIONS, AND INSTRUCTIONS

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## Legislation, Executive Orders, Regulations, and Instructions

### Legislation Related To Natural Resources

**Antiquities Act of 1906**

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.

**Archaeological and Historic Preservation Act of 1974**

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.

**Archaeological Resources Protection Act of 1979**

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.

**Bald Eagle Protection Act**

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.

**California Water Code**

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.

**Clean Air Act**

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 species. 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, Fungicide, and Rodenticide Act (7 U.S.C. §136 *et seq*.; 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: EO11988 (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; EO11990

(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 Sections 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 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.

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| **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.<br><br>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**

| | |
|---|---|
| **Exotic Organisms** | The Exotic Organisms Executive Order (EO 11987) restricts Federal Agencies in the use of exotic plant species in any landscape and erosion control measures. [Codified by Chapter 40] |
| **Floodplain Management** | 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. [Amended by 12148] [Codified by Chapter 40] |

| | |
|---|---|
| **Invasive Species** | The Invasive Species Executive Order (EO 13751) was issued on December 5, 2016 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 "… prevent the introduction of invasive species and provide for their control and to minimize the economic, plant, animal, ecological, and human health impacts that invasive species cause." EO 13751 defines invasive species, with regard to a particular ecosystem, as "…a non-native organism whose introduction causes or is likely to cause economic or environmental harm, or harm to human, animal, or plant health". Only a small proportion of non-native species are invasive. |
| **Off-Road Vehicles on Public Lands** | 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. |
| **Responsibility of Federal Entities to Protect Migratory Birds** | 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. |
| **Protection and Enhancement of the Cultural Environment** | 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.<br><br>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. |
| **Protection and Enhancement of Environmental Quality** | 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. [Amended by 11541 and 11991] [Codified by Chapter 40] |
| **Protection and Enhancement of Environmental Quality** | 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. [Amended by 12608] [Codified by Chapter 40]

**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 DOD. 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.

**DODI 4700.1**. Instructs the DON to implement and maintain natural resource management programs.

DODI 4715.1 of 24 February 1996. Environmental Security.

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

**DODI 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**

**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 CO, 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 5090.1D**. Department of the Navy Environment and Natural Resources Procedural Manual. Chapter 12, 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 DODI 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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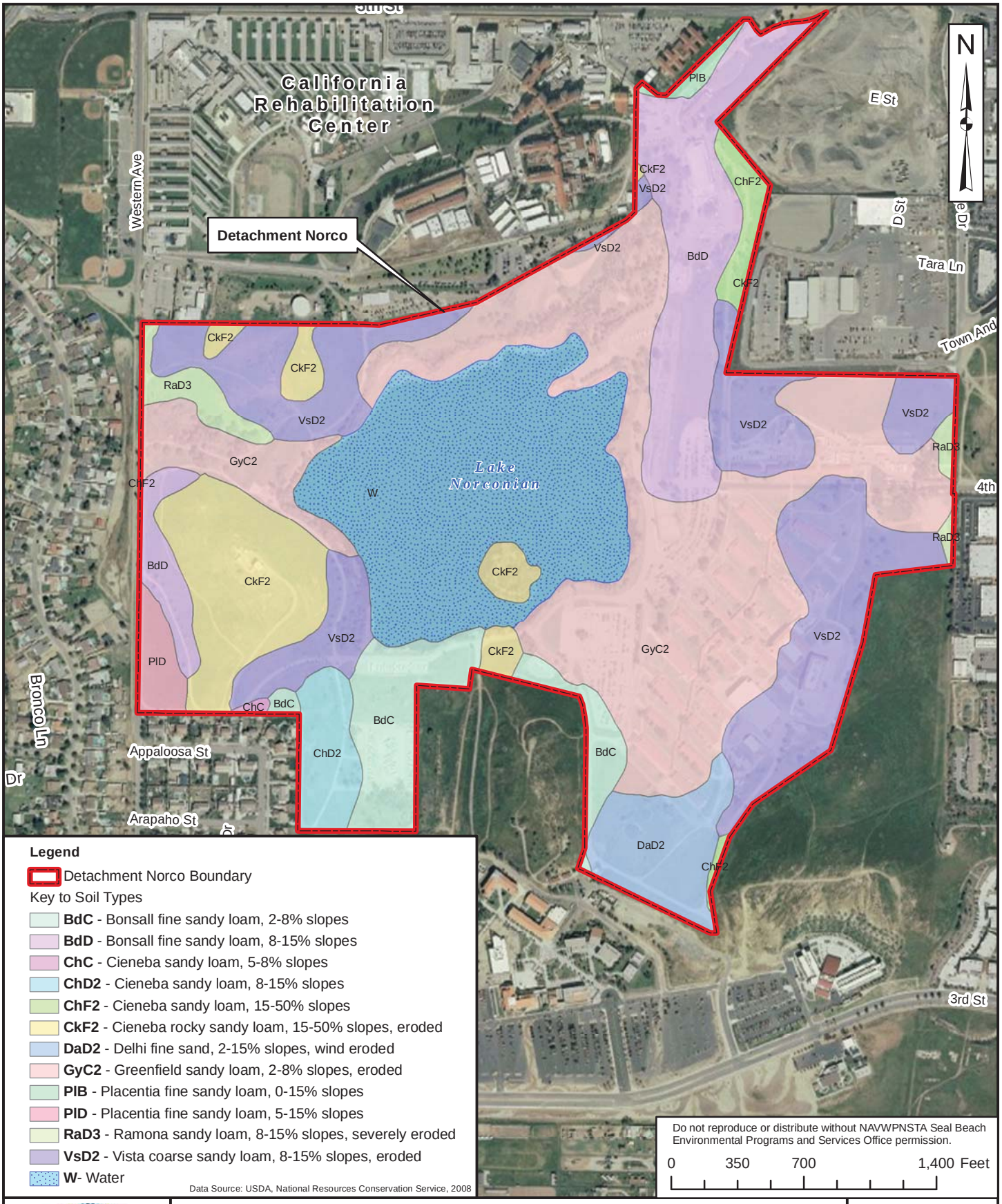


# Soil Types
## Naval Weapons Station Seal Beach Detachment, Norco
## Norco, California

**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 range from 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 corps, 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

# 2018 Annual Natural Resources Program Assessment Detachment Norco

United States Department of Navy policy requires installations to review their Integrated Natural Resources Management Plan (INRMP) annually in cooperation with the primary parties to the INRMP [U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), and in some cases NOAA-National Marine Fisheries Service (NOAA-NMFS)]. 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 part of the annual review, current INRMP Guidance requires each installation to complete an evaluation of the effectiveness of its INRMP. This evaluation is facilitated by the web-based Metrics Builder tool on U.S. Navy Conservation website (https://conservation.dandp.com).

The Natural Resources Metrics Builder was developed to provide a standard method for the collection and reporting of business metric information for Natural Resources programs. The metrics are used to determine how well the installation is doing with respect to Natural Resources management, the status of relationships with the USFWS and state fish and wildlife agencies, and INRMP implementation across Navy installations. This process provides the means to evaluate performance in seven focal areas:

1) Natural Resources Management (formerly Ecosystem Integrity);
2) Listed Species and Critical Habitat;
3) Recreation Use and Access and Conservation Law Enforcement;
4) Sikes Act Cooperation;
5) Team Adequacy;
6) INRMP Implementation; and
7) Support of Installation Mission.

Each focus area has criteria that have been established by Natural Resources managers and are used to help determine the status of a given functional area within Natural Resources. The status of the program is evaluated by scoring how well the installation follows the criteria and is based on yes/no and weighting scales. Scores are averaged across the section to give an overall view of successful program areas and areas which need improvement. It is important to note that not all criteria or all indicators apply to all installations. For example, the Fish and Wildlife Management and Public Use section has criteria that are only applicable to installations whose missions allow or are able to support public access and wildlife activities. In these instances, the questions are not considered and are therefore not scored.

Natural Resource programs at Seal Beach and its detachments have been evaluated. Following are the metrics results and a discussion of those evaluations:

# DETACHMENT NORCO
## 2018 Natural Resources Metrics Results and Assessment

| Naval Weapons Station Seal Beach Detachment Norco Natural Resources Metrics Scoresheet | | | | | | |
|---|---|---|---|---|---|---|
| Section | FY13 | FY14 | FY15 | FY16 | FY17 | FY18 |
| Natural Resources Management | | | | 0.74 | 0.63 | 0.58 |
| Listed Species and Critical Habitat | | | | 1.00 | n/a | n/a |
| Recreation Use and Access and Conservation Law Enforcement | | | | 0.55 | 0.79 | 0.79 |
| Sikes Act Cooperation | | | | 0.95 | 1.00 | 0.77 |
| Team Adequecy | | | | 0.63 | 0.63 | 0.72 |
| INRMP Implementation | | | | 0.43 | 0.25 | 0.43 |
| Support of Installation Mission | | | | 0.72 | 0.73 | 0.86 |

***Legend: red = 0-0.49, yellow = 0.50-0.69, green = 0.70-1.00, blue = not complete***

**Natural Resources Management**
The score for this section indicates declining lake water quality and an ecosystem that is severely vulnerable to collapse. Build-up of nutrients, alkalinity, and total dissolved solids is shifting the lake from a freshwater system that supported game fish to a saline system that is overloaded with organic matter. Failure to implement water quality enhancement measures leaves the lake susceptible to fish die-offs and impedes the efficacy of mosquito vector control measures.

**Listed Species and Critical Habitat**
There are no federally listed threatened or endangered species at Det. Norco and no critical habitat has been designated. There is a potential for endangered species to occur at Det. Norco, which triggers requirements to perform periodic surveys to determine presence/absence of the species. State species of interest are known to occur on the site.

**Recreation Use and Access and Conservation Law Enforcement**
There are limited opportunities for public recreational use due to security concerns. The fishing program has been suspended due to water quality concerns and past fish die-offs. In addition, station and military personnel have access to the site for walking, jogging and wildlife viewing. No boating is allowed due to safety concerns. The NR manager supports the annual Audubon holiday bird census that contributes no national level avian population monitoring.

**Sikes Act Cooperation**
The cooperation of Det. Norco with the US Fish and Wildlife Service and the California Department of Fish and Wildlife and other partners is satisfactory. The site has a compliant INRMP that is aligned with the mission and the management goals of the regulatory agencies and the agencies actively participated in the INRMP update during 2018. This year the USFWS revised their rating of the alignment of the INRMP from completely aligned to somewhat aligned due to proposed and ongoing development at the station. Sikes act cooperation is rated separately from INRMP implementation; that is the site has a satisfactory plan, which is failing to be implemented due to regional NR budget shortfalls.

**Team Adequacy**
The responses to this section are unchanged from 2017; however, the scoring system used has been updated causing the numeric score to go from yellow to green. Overall, the natural resources management staffing at Detachment Norco is sufficient. Utilization of regional support and volunteers has enhanced natural resources management at Detachment Norco.

**INRMP Implementation**
This section scored poorly in 2018 due to regional NR budget shortfalls and the site's low priority for funding allocation due to the absence of federally listed endangered species. The NR program manager was able to acquire funds for exotic weed control and updated the INRMP entirely in-house to meet Sikes act requirements in the absence of project funding.

**Support of Installation Mission**
Based on the Station Commanding Officer's perspective, the Natural Resources program has coordinated effectively with Station leadership and operators to ensure that mission needs are considered in concert with natural resources issues and requirements. Due to the nature of the activities at Det. Norco, mission needs are met with minimal to no work-arounds, and no net loss of military capability has been experienced. The overall visual aspects of the landscape around the lake and historic district have improved in recent years providing a benefit to morale and public safety (i.e. vector control) and the NR manager continues to actively request funds from NAVFAC facilities for further improvements to the lake and ponds. Additionally, the INRMP was updated in 2018 to meet the Sikes Act requirements for 5-year interval review and update. The final signatures are on schedule to be obtained by December 2018.

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# APPENDIX F

# VEGETATION RESOURCES

- **VEGETATION MAP**
- **PLANT INVENTORY**


## Legend

Detachment Norco Boundary

### Vegetation Communities

- **BUL-CAT** - Bullrush-Cattail Series
- **CAB** - California Buckwheat Series (Disturbed)
- **DEV** - Developed
- **DEVE** - Developed (with nonnative components)
- **DEVLT** - Developed (lawns, landscaped with nonnative trees)
- **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)

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

**Figure 9**

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Appendix F

# Plants Confirmed on Detachment Norco

Note: No special status species occur on this list.

| Paraphyly | Family<br>Genus Species | Common Name | Status | Hamilton 1987 | TDS 1996 |
|---|---|---|---|---|---|
| | **CUPRESSACEAE** | | | | |
| G | *Cupressus sp.* | cypress | | X | X |
| G | *Juniperus sp.* | juniper | | | X |
| G | *Thuja sp.* | arborvitae | | | |
| | **PINACEAE** | | | | |
| G | *Pinus sp.* | pine tree | | X | X |
| | **AIZOACEAE** | | | | |
| D | *Aptenia cordifolia* | baby sun rose | | | X |
| D | *Carpobrotus chilensis* | sea fig | | | X |
| D | *Carpobrotus edulis* | ice plant | | | X |
| D | *Lampranthus sp.* | hot-dog leaved ice plant | | | X |
| | **AMARANTHACEAE** | | | | |
| D | *Amaranthus albus* | | | X | |
| D | *Amaranthus blitoides* | pigweed | | | X |
| D | *Amaranthus graecizans* | | | X | |
| | **ANACARDIACEAE** | | | | |
| D | *Schinus molle* | California pepper tree or Peruvian pepper tree | | X | X |
| | **APOCYNACEAE** | | | | |
| D | *Nerium oleander* | oleander | | | X |
| | **ASTERACEAE** | | | | |
| D | *Acourtia microcephala* | | | X | |
| D | *Ambrosia psilostachya* | Western ragweed | | X | X |
| D | *Artemisia californica* | California sagebrush | | X | |
| D | *Baccharis pilularis* | chaparral broom, coyote brush | | | X |
| D | *Baccharis salicifolia* | mule fat, seep-willow, or water-wally | | X | X |
| D | *Centaurea melitensis* | tocalote | | | X |
| D | *Matricaria discoidia* | pineapple-weed | | | X |
| D | *Cichorium intybus* | | | X | |
| D | *Cirsium vulgare* | bull thistle | | X | X |
| D | *Conyza bonariensis* | hairy fleabane | | X | X |
| D | *Conyza canadensis* | horseweed | | X | |
| D | *Encelia californica* | bush sunflower | | X | |
| D | *Euthamia occidentalis* | Western goldenrod | | X | |
| D | *Gnaphalium californicum* | California everlasting | | | X |
| D | *Gnaphalium canescens ssp. beneolens* | | | X | |
| D | *Gnaphalium palustre* | | | X | X |
| D | *Hedypnois cretica* | | | X | |
| D | *Helianthus sp.* | | | | |
| D | *Deinandra fasciculata* | clustered tarweed | | | X |
| D | *Heterotheca grandiflora* | telegraph plant | | X | X |
| D | *Hypochaeris glabra* | smooth cats-ear | | | X |
| D | *Isocoma menziesii* | goldenbush | | | X |
| D | *Lactuca serriola* | prickly lettuce | | X | X |
| D | *Lepidospartum squamatum* | California broomsage | | X | |

**G = Gymnosperm, D = Dicot, M = Monocot**

1. **The Hamilton survey covered an additional 221 acres south of current property boundaries. This area was excessed by NWAS in 1985.**

Appendix F

| Paraphyly | Family<br>Genus Species | Common Name | Status | Hamilton 1987 | TDS 1996 |
|---|---|---|---|---|---|
| D | *Corethrogyne filaginifolia* | common sandaster | | X | |
| D | *Microseris douglasii* | | | X | |
| D | *Osteospermum fruticosum* | trailing African daisy | | | X |
| D | *Senecio vulgaris* | groundsel | | X | |
| D | *Silybum marianum* | milk thistle | | X | X |
| D | *Sonchus oleraceus* | common sow thistle | | X | X |
| D | *Taraxacum officinale* | dandelion | | X | |
| D | *Xanthium strumarium* | cocklebur | | X | |
| | **BORAGINACEAE** | | | | |
| D | *Amsinckia menziesii var. intermedia* | common fiddleneck | | X | X |
| D | *Cryptantha sp.* | | | X | |
| D | *Heliotropium curassavicum var. oculatum* | alkali heliotrope | | | X |
| D | *Plagiobothrys sp.* | popcorn flower | | X | |
| | **BRASSICACEAE** | | | | |
| D | *Brassica nigra* | black mustard | | X | X |
| D | *Brassica rapa* | turnip, field mustard | | X | |
| D | *Capsella bursa-pastoris* | | | X | |
| D | *Hirschfeldia incana* | | | X | |
| D | *Lepidium lasiocarpum* | shaggyfruit pepperweed | | | X |
| D | *Lepidium latifolium* | perennial pepperweed | | | |
| D | *Raphanus sativus* | radish | | X | |
| D | *Sisymbrium altissiumum* | tumble or Jim Hill mustard | | X | |
| D | *Sisymbrium officinale* | hedge mustard | | X | |
| | **CACTACEAE** | | | | |
| D | *Opuntia littoralis [O. semispinosa]* | prickly pear | | X | |
| D | *Opuntia parryi* | cane cholla, snake cholla | | X | |
| | **CAPRIFOLIACEAE** | | | | |
| D | *Sambucus nigra ssp. caerulea* | blue elderberry | | X | X |
| | **CARYOPHLYLLACEAE** | | | | |
| D | *Stellaria media* | common chickweed | | | X |
| | **CASUARINACEAE** | | | | |
| D | *Casuarina sp.* | beach she-oak | | | |
| | **CHENOPODIACEAE** | | | | |
| D | *Atriplex semi baccata* | Australian saltbush | | | X |
| D | *Chenopodium album* | pigweed, lamb's quarters | | X | |
| D | *Chenopodium ambrosioides* | Mexican tea | | X | |
| D | *Monolepis nuttallianna* | Nutall's poverty weed | | | X |
| D | *Salsola tragus [S. kali]* | Russian thistle | | X | X |
| | **CONVOLVULACEAE** | | | | |
| D | *Convolvulus arvensis* | bindweed, orchard morning-glory | | X | |
| | **ERICACEAE** | | | | |
| | *Arbutus unedo* | strawberry tree | | | |
| | **EUPHORBIACEAE** | | | | |
| D | *Euphorbia polycarpa* | smallseed sandmat | | X | |
| D | *Croton setiger* | Turkey mullein or dove weed | | X | X |
| | **FABACEAE** | | | | |
| D | *Albizia julibrissin* | silk tree | | | X |
| D | *Ceratonia silique* | carob | | | X |

**G = Gymnosperm, D = Dicot, M = Monocot**

1. **The Hamilton survey covered an additional 221 acres south of current property boundaries. This area was excessed by NWAS in 1985.**

Appendix F

| Paraphyly | Family<br>Genus Species | Common Name | Status | Hamilton 1987 | TDS 1996 |
|---|---|---|---|---|---|
| D | *Cercidium microphyllum* | littleleaf Palo Verde | | | X |
| D | *Medicago sativa* | alfalfa, lucerne | | X | X |
| D | *Melilotus alba* | white sweetclover | | X | X |
| D | *Melilotus indica* | sourclover | | X | X |
| D | *Trifolium repens* | white clover | | X | |
| D | *Trifolium willdenovii* | | | X | |
| | **FAGACEAE** | | | | |
| D | *Quercus agrifolia* | coast live oak | | | X |
| | **GERANIACEAE** | | | | |
| D | *Erodium botrys* | long-beaked storksbill | | | X |
| D | *Erodium cicutarium* | redstem storksbill | | X | X |
| D | *Erodium moschatum* | whitestem storksbill | | X | X |
| | **LAMIACEAE** | | | | |
| D | *Marrubium vulgaare* | horehound | | X | X |
| D | *Rosmarius officinalis* | rosemary | | | X |
| D | *Salvia apiana* | white sage | | X | |
| | **MALVACEAE** | | | | |
| D | *Brachychiton populneus* | bottle tree | | | |
| D | *Malva parviflora* | cheeseweed | | | X |
| | **MYRTACEAE** | | | | |
| D | *Myrtle communis* | common myrtle | | | |
| D | *Callistemon citrinus* | lemon bottlebrush | | | X |
| D | *Eucalyptus globulus* | bluegum | | X | X |
| D | *Eucalyptus sp.* | eucalyptus | | | X |
| | **NYCTAGINACEAE** | | | | |
| D | *Mirabilis californica* | wishbone bush | | X | |
| | **NYMPHAEACEAE** | | | | |
| D | *Nymphaea mexicana* | yellow water lily | | | X |
| | **PITTOSPORACEAE** | | | | |
| D | *Pittosporum spp.* | Victorian box | | | |
| | **PLATANACEAE** | | | | |
| D | *Platanus racemosa* | Western sycamore | | | X |
| | **PLUMBAGINACEAE** | | | | |
| D | *Plumbago auriculata* | cape plumbago | | | |
| | **POLYGONACEAE** | | | | |
| D | *Eriogonum fasciculatum* | California buckwheat | | X | X |
| D | *Polygonum punctatum* | | | X | |
| D | *Rumex crispus* | curly dock | | X | X |
| | **PRIMULACEAE** | | | | |
| D | *Anagallis arvensis* | scarlet pimpernel | | | X |
| | **PROTEACEAE** | | | | |
| D | *Grevillea robusta* | silky oak tree | | | X |
| | **PUNICACEAE** | | | | |
| D | *Punica granatum* | pomegranate | | | X |
| | **ROSACEAE** | | | | |
| D | *Pyracantha sp.* | firethorn | | | |
| D | *Rhaphiolepis indica* | India hawthorn | | | X |
| | **SALICACEAE** | | | | |
| D | *Salix gooddingii* | Goodding's willow | | X | X |
| D | *Salix hindsiana* | sandbar willow | | X | |
| D | *Salix lasiolepis* | arroyo willow | | X | |
| | **SOLANACEAE** | | | | |

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1. **The Hamilton survey covered an additional 221 acres south of current property boundaries. This area was excessed by NWAS in 1985.**

Appendix F

| Paraphyly | Family<br>Genus Species | Common Name | Status | Hamilton 1987 | TDS 1996 |
|---|---|---|---|---|---|
| D | *Datura wrightii* | jimson weed | | | X |
| D | *Nicotiana glauca* | tree tobacco | | X | X |
| | **URTICACEAE** | | | | |
| D | *Urtica dioica ssp. holosericea* | hoary nettle | | X | |
| | **VIOLACEAE** | | | | |
| D | *Viola sp.* | violet | | | X |
| | **VITACEAE** | | | | |
| D | *Vitis californica* | wild grape | | | X |
| | **ARECACEAE** | | | | |
| M | *Washingtonia filifera* | California's fan palm | | X | X |
| M | *Washingtonia robusta* | Mexican fan palm | | | |
| M | *Phoenix dactylifera* | date palm | | X | X |
| M | *Syagrus sp.* | queen palm | | | |
| | **CYPERACEAE** | | | | |
| M | *Scirpus tabernaemontani [=S. validus]* | bulrush | | X | X |
| | **IRIDACEAE** | | | | |
| M | *Iris pseudacorus* | yellow flag | | | X |
| M | *Iris sp.* | iris | | | X |
| | **JUNCACEAE** | | | | |
| M | *Juncus balticus* | rush | | X | X |
| | **LILIACEAE** | | | | |
| M | *Yucca sp.* | yucca | | | X |
| | **POACEAE** | | | | |
| M | *Agrostis sp.* | | | | |
| M | *Arundo donax* | giant reed | | | X |
| M | *Avena barbata* | slender wildoat | | X | X |
| M | *Avena fatua* | wild oat | | X | X |
| M | *Bromus carinatus* | California brome | | | X |
| M | *Bromus diandrus* | ripgut brome | | X | X |
| M | *Bromus hordeaceus* | Soft brome | | X | |
| M | *Bromus rubens* | red brome | | X | X |
| M | *Bromus tectorum* | cheat grass, downy brome | | X | |
| M | *Cortadera sp.* | pampass grass | | | X |
| M | *Cynodon dactylon* | Bermuda grass | | X | X |
| M | *Cynosurus echinatus* | hedgehog dogtail | | X | |
| M | *Distichlis spicata* | saltgrass | | | X |
| M | *Elymus elymoides ssp. elymoides* | squirreltail | | X | |
| M | *Hordeum jubatum* | foxtail barley | | X | |
| M | *Hordeum marinum* | Mediterranean barley | | | X |
| M | *Hordeum marinum ssp. gussoneanum* | | | | X |
| | | | | | |
| M | *Lamarckia aurea* | goldentop | | | X |
| M | *Paspalum distichum* | | | | X |
| M | *Poa annua* | annual bluegrass | | X | X |
| M | *Polypogon interruptus* | ditch beard grass | | X | |
| M | *Polypogon monspeliensis* | annual beard grass | | | X |
| M | *Vulpia sp.?* | | | | |
| | **SAURURACEAE** | | | | |

**G = Gymnosperm, D = Dicot, M = Monocot**

1. **The Hamilton survey covered an additional 221 acres south of current property boundaries. This area was excessed by NWAS in 1985.**

Appendix F

| Paraphyly | Family<br>Genus Species | Common Name | Status | Hamilton 1987 | TDS 1996 |
|---|---|---|---|---|---|
| M | *Anemopsis californica* | Yerba mansa | | | X |
| | **TYPHACEAE** | | | | |
| M | *Typha latifolia* | broad-leaf cattail | | X | X |

Sources: 1) Hamilton, Michael P. and Associates 1987

2) Tierra Data Systems (TDS), Vegetation survey Spring 1996

**G = Gymnosperm, D = Dicot, M = Monocot**

1. **The Hamilton survey covered an additional 221 acres south of current property boundaries. This area was excessed by NWAS in 1985.**

# APPENDIX G

# WETLAND RESOURCES

- **WATER RESOURCES MAP**
- **1998 WETLAND DELINEATION**


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

**Figure 6**

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# 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 run-off from upslope developments, pumping, or plowing too deeply in a claypan that supports vernal pools. Effects originating off-site have served to shore 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 (USACE). 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 NWAS 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 USACE, 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 USACE'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<br><br>NEPA, CEQA | Enforcement; veto power over a Corps-issued permit<br>Comment only | Waters of the U.S., including wetlands<br>. |
| U.S. Army Corps of Engineers | Clean Water Act, Section 404<br>Rivers and Harbors Act, Section 10 | Regulates dredge and fill<br>Regulates construction of structures, dredge and fill. | Waters of the U.S, including wetlands.<br>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<br>Endangered Species Act<br><br>CEQA, NEPA | Review and comment only<br>USACE must consult with USFWS on 404 permits if endangered species on site.<br>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. (USACE responsible in some counties ties 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<br><br>CEQA, NEPA | Regulates projects that alter stream or lake flow, bed, channel or banks.<br>Comment only. | California streams and lakes, and riparian and lakeside vegetation. |
| State and Regional Water Quality Control Boards | Clean Water Act, Section 401<br><br>Clean Water Act, Section 402<br>CEQA, NEPA | Issues water quality certification, which is required for 404 permit<br>Regulates discharge of waste.<br>Comment only. | Waters of the U.S., including wetlands.<br><br>Waters of the U.S., including wetlands. |

*Table 0-2. Regulatory terminology addressing Waters of the United States. (Adapted from Cylinder et al. 1995)*

| Terms and Definitions |
|---|
| Waters of the U.S. (Clean Water Act, Section 404):<br><br>1. Special Aquatic Sites<br>a. Wetlands (seasonally or perennially waterlogged, and supporting specially adapted plants; usually in the transition zone between uplands and deep water habitats)<br>b. Sanctuaries and Refuges (Federal, State, or locally designated)<br>c. Mudflats (periodically inundated, unvegetated tidal flats, or inland lake/pond/stream margins)<br>d. Vegetated Shallows (permanently inundated with rooted, submerged plants)<br>e. Coral Reefs (invertebrate deposits in warm oceans)<br>f. Riffle and Pool Complexes (alternating turbulent and calm portions of streams over coarse substrate that provide high quality fish and wildlife habitat)<br>2. Territorial Seas - Zero Ordinary Low Tide and seaward three nautical miles<br>3. Tidal Waters - High Tide Line (includes spring and other periodic high tides but not storm surges)<br>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.<br><br>1. Tidal - Mean High Water Mark<br>2. Nontidal - Ordinary High Water Mark |
| Water bodies specifically excluded from Section 404 regulation:<br><br>1. Irrigation ditches<br>2. Drainage ditches excavated in uplands<br>3. Temporary sediment basins on construction sites<br>4. Reflecting pools<br>5. Wastewater systems, including treatment ponds and lagoons<br>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 (USACE 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 USACE (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.

## 1.1.1 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 totaling 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 | *Anemopsis* | Low spot in upper riparian | Wetland |
| 3 | *Scirpus* 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 USACE, 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 5090.1D). 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 USACE for questions on site-specific impacts.

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# APPENDIX I WILDLIFE INVENTORY

# APPENDIX I
# WILDLIFE INVENTORY

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# Appendix I. List of all wildlife species observed at Naval Weapons Station Seal Beach Detachment Norco

## BIRDS

| Scientific Name | Common Name | Status International/Federal/State | Source and Date Surveyed |
|---|---|---|---|
| **Order ACCIPITRIFORMES (hawks, eagles, vultures, osprey)** | | | |
| **Family Accipitridea** | | | |
| *Accipiter striatus* | Sharp-shinned hawk | CITES/-/- | A&K 1995-96; CBC 2003-04; Myers 2009; RS 2010; MultiMAC JV 2015 |
| *Accipiter cooperii* | Cooper's hawk | CITES/-/- | A&K 1995-96; CBC 1998-99, 2004-05, 2010; Myers 2009; RS 2012; FSC 2012; MultiMAC JV 2015 |
| *Aquila chrysaetos* | Golden eagle | CITES/-/- | Bloom 1994-95 |
| *Buteo jamaicensis* | Red-tailed hawk | CITES/BCC/- | Bloom 1994-95; A&K 1995-96; CBC 1998-2010; RS 2007; Myers 2008-09; FSC 2012; MultiMAC JV 2015 |
| *Buteo lineatus* | Red-shouldered hawk | CITES/-/- | A&K 1995-96; Bloom 1994-95; CBC 1998, 2000-01; Myers 2009; RS 2012; MultiMAC JV 2015 |
| *Circus cyaneus* | Northern harrier | CITES/-/- | CBC 2007 |
| **Family Cathartidae** | | | |
| *Cathartes aura* | Turkey vulture | -/-/- | Bloom 1994-95; A&K 1995-96; CBC 1998-2010; Myers 2008-09; RS 2010; MultiMAC JV 2015 |

| Scientific Name | Common Name | Status International/Federal/State | Source and Date Surveyed |
|---|---|---|---|
| **Family Pandionidae** | | | |
| *Pandion haliaetus* | Osprey | CITES/-/- | A&K 1995-96; Myers 2009; RS 2010 |
| **Order ANSERIFORMES (ducks, geese, swans)** | | | |
| **Family Anatidae** | | | |
| *Aix sponsa* | Wood duck | -/-/- | A&K 1995-96; RS 2011 |
| *Anas acuta* | Northern pintail | -/-/- | CBC 1990, 1993-94; A&K 1995-96; CBC 1998-2010; RS 2007; Myers 2008-09; MultiMAC JV 2015 |
| *Anas americana* | American wigeon | -/-/- | CBC 1990-91, 1993-94; A&K 1995-96; CBC 1998-2010; RS 2007; Myers 2008-09; MultiMAC JV 2015 |
| *Anas clypeata* | Northern shoveler | -/-/- | CBC 1991, 1993-94; A&K 1995-96; CBC 1998-10; RS 2007; Myers 2008-09; FSC 2012; MultiMAC JV 2015 |
| *Anas crecca* | Green-winged teal | -/-/- | CBC 1990-91, 1993-94; A&K 1995-96; CBC 1998-2004, 2008, 2010; RS 2007; Myers 2008-09; MultiMAC JV 2015 |
| *Anas cyanoptera* | Cinnamon teal | -/-/- | CBC 1991, 1993-94; A&K 1995-96; CBC 1998-2010; RS 2007; Myers 2008-09; FSC 2012; MultiMAC JV 2015 |

| Scientific Name | Common Name | Status International/Federal/State | Source and Date Surveyed |
|---|---|---|---|
| *Anas discors* | Blue-winged teal | -/-/- | CBC 1990-91, 1993; A&K 1996; CBC 2000, '02-04, 06-09; RS 2007; Myers 2008-09; MultiMAC JV 2015 |
| *Anas penelope* | Eurasian wigeon | -/-/- | A&K 1996; CBC 2001, 2009; RS 2007; MultiMAC JV 2015 |
| *Anas platyrhynchos* | Mallard | -/-/- | CBC 1990-91, 1993-94; A&K 1995-96; CBC 1998-2010; RS 2007; Myers 2008-09; FCS 2012; MultiMAC JV 2015 |
| *Anas strepera* | Gadwall | -/-/- | CBC 1990, 1993-94; A&K 1995-96; CBC 1999-2005, 2007-08, 2010; RS 2007; Myers 2008-09; MultiMAC JV 2015 |
| *Anser albifrons* | Greater white-fronted goose | -/-/- | CBC 2002 |
| *Aythya affinis* | Lesser scaup | -/-/- | A&K 1996; CBC 1999, 2003, 2005, 2007-08; Myers 2008-09; MultiMAC JV 2015 |
| *Aythya americana* | Redhead | -/-/- | CBC 1991; A&K 1995-96; CBC 2000-05, 2007-10; Myers 2008-09; RS 2010; MultiMAC JV 2015 |
| *Aythya collaris* | Ring-necked duck | -/-/- | CBC 1990, 1993-94; A&K 1995-96; CBC 1998-2005, 2007-10; RS 2007 Myers 2008-09; MultiMAC JV 2015 |

| Scientific Name | Common Name | Status International/Federal/State | Source and Date Surveyed |
|---|---|---|---|
| *Aythya valisineria* | Canvasback | -/-/- | CBC 1990-91, 1993-94; A&K 1996; CBC 1998-2010; RS 2007; Myers 2008-09; MultiMAC JV 2015 |
| *Branta canadensis* | Canada goose | CITES/-/- | CBC 1991, 1993-94; A&K 1995-96; CBC 1999-2003, 2005-10; RS 2007; Myers 2009; FSC 2012; MultiMAC JV 2015 |
| *Branta huchinsii* | Cackling goose | -/-/- | Myers 2009 |
| *Bucephala albeola* | Bufflehead | -/-/- | A&K 1996; CBC 1999, 2001, 2003-10; RS 2007; Myers 2008-09; FSC 2012; MultiMAC JV 2015 |
| *Chen rossii* | Ross's goose | -/-/- | CBC 2005 |
| *Dendrocygna bicolor* | Fulvous whistling-duck | -/-/- | A&K 1995 |
| *Lophodytes cucullatus* | Hooded merganser | -/-/- | A&K 1996 |
| *Melanitta perspicillata* | Surf scoter | -/-/- | A&K 1995 ;Myers 2009 |
| *Mergus merganser* | Common merganser | -/-/- | A&K 1996; CBC 2000; RS 2007; CBC 1998-2010; RS 2007; Myers 2008-09; FSC 2012 |
| *Oxyura jamaicensis* | Ruddy duck | -/-/- | MultiMAC JV 2015 |
| **Order APODIFORMES (swifts, hummingbirds)** | | | |
| **Family Apodidae** | | | |
| *Aeronautes saxatalis* | White-throated swift | -/-/- | CBC 1998-99, 06-07, 2010; Myers 2008; RS 2010; MultiMAC JV 2015 |
| *Chaetura vauxi* | Vaux's swift | -/-/- | RS 2011 |
| **Family Trochilidae** | | | |

| Scientific Name | Common Name | Status International/Federal/State | Source and Date Surveyed |
|---|---|---|---|
| *Archilochus alexandri* | Black-chinned hummingbird | CITES/-/- | Myers 2009 |
| *Calypte anna* | Anna's hummingbird | CITES/-/- | A&K 1995-96; CBC 2000-05, 2007-10; RS 2007; Myers 2008-09; MultiMAC JV 2015 |
| *Selasphorus sasin* | Allen's hummingbird | CITES/-/- | RS 2010; MultiMAC JV 2015 |
| **Order CHARADRIIFORMES (gulls, terns, plovers)** | | | |
| **Family Charadriidae** | | | |
| *Charadrius vociferus* | Killdeer | -/-/- | A&K 1995-96; CBC 1999, 2005, 2007, 2009; Myers 2009; RS 2010; MultiMAC JV 2015 |
| **Family Laridae** | | | |
| *Larus argentatus* | Herring gull | -/-/- | CBC 1999, 2007; Myers 2009 |
| *Larus californicus* | California gull | -/-/- | CBC 1990-91; A&K 1996; CBC 1999-2010; RS 2007; Myers 2008-09; MultiMAC JV 2015 |
| *Larus delawarensis* | Ring-billed gull | -/-/- | CBC 1991, 1993-94; A&K 1995-96; CBC 1998-2005, 2007-10; RS 2007; Myers 2008-09; MultiMAC JV 2015 |
| *Larus glaucescens* | Glaucous-winged gull | -/-/- | Myers 2009 |
| *Larus philadelphia* | Bonaparte's gull | -/-/- | CBC 1990-91, 1994; A&K 1995-96; CBC 1999-2009; RS 2007; Myers 2008-09; MultiMAC JV 2015 |
| *Larus thayeri* | Thayer's gull | -/-/- | Myers 2009 |
| *Sterna forsteri* | Forster's tern | -/-/- | CBC 1994; Myers 2009; RS 2010; MultiMAC JV 2015 |

| Scientific Name | Common Name | Status International/Federal/State | Source and Date Surveyed |
|---|---|---|---|
| *Sterna caspia* | Caspian tern | -/-/- | A&K 1996; Myers 2009; MultiMAC JV 2015 |
| **Family Recurvirostridae** | | | |
| *Himantopus mexicanus* | Black-necked stilt | -/-/- | CBC 1991, 1999-2000; RS 2012 |
| **Family Scolopacidae** | | | |
| *Actitis macularia* | Spotted sandpiper | -/-/- | CBC 1994, 1998-99, 2004-05; Myers 2008-09; RS 2010 |
| *Gallinago delicate* | Wilson's snipe | -/-/- | CBC 1999, 2002-04, 2007; RS 2007 |
| *Gallinago gallinago* | Common snipe | -/-/- | CBC 1990-91; A&K 1996 |
| *Limnodromus scolopaceus* | Long-billed dowitcher | -/-/- | CBC 1994, 1999-2000 |
| *Calidris minutilla* | Least sandpiper | -/-/- | CBC 1991, 1999 |
| **Order COLUMBRIFORMES (doves & pigeons)** | | | |
| **Family Columbidae** | | | |
| *Columba livia* | Feral rock dove | -/-/- | A&K 1995-96; CBC 1999, 2001, 2004-05, 2007; RS 2007; Myers 2008-09; MultiMAC JV 2015 |
| *Streptopelia decaocto* | Eurasian collared-dove | -/-/- | Myers 2009; CBC 2010; RS 2010; MultiMAC JV 2015 |
| *Zenaida macroura* | Mourning dove | -/-/- | A&K 1995-96; CBC 1998-2010; RS 2007; Myers 2008-09; FSC 2012; MultiMAC JV 2015 |
| **Order CORACIIFORMES (kingfishers, woodpeckers)** | | | |
| **Family Alcedinidae** | | | |

| Scientific Name | Common Name | Status International/Federal/State | Source and Date Surveyed |
|---|---|---|---|
| *Megaceryle alcyon* | Belted kingfisher | -/-/- | CBC 1994; A&K 1995-96; CBC 1998-02, 2004-10; RS 2007; Myers 2008-09; MultiMAC JV 2015 |
| **Order CUCULIFORMES (cuckoos, roadrunners)** | | | |
| **Family Cuculidae** | | | |
| *Geococcyx californianus* | Greater roadrunner | -/-/- | A&K 1995-96; FSC 2012 |
| **Order FALCONIFORMES (falcons)** | | | |
| **Family Falconidae** | | | |
| *Falco columbarius* | Merlin | CITES/-/- | Bloom 1994-95; RS 2007; Myers 2009; MultiMAC JV 2015 |
| *Falco mexicanus* | Prairie falcon | CITES/BCC/- | A&K 1995-96; FSC 2012 |
| *Falco peregrinus* | Peregrine falcon | CITES/BCC/- | A&K 1995-96; CBC 2006 |
| *Falco sparverius* | American kestrel | CITES/-/- | Bloom 1994-95; A&K 1995-96; CBC 1999-06, 2008-10; RS 2007; Myers 2008-09; MultiMAC JV 2015 |
| **Order GAVIFORMES (loons)** | | | |
| **Family Gavidae** | | | |
| *Gavia immer* | Common loon | -/-/- | CBC 2003 |
| **Order GRUIFORMES (rails, coots)** | | | |
| **Family Rallidae** | | | |
| *Fulica americana* | American coot | -/-/- | CBC 1990-91, 1993-94; A&K 1995-96; CBC 1998-2010; RS 2007; Myers 2008-09; FSC 2012; MultiMAC JV 2015 |

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|---|---|---|---|
| *Gallinula chloropus* | Common gallinule | -/-/- | CBC 1990, 1993-94; A&K 1995-96; CBC 1998-10; RS 2007; Myers 2008-09; MultiMAC JV 2015 |
| *Porzana carolina* | Sora | -/-/- | A&K 1996; CBC 2001, 03-04; Myers 2009; RS 2011; MultiMAC JV 2015 |
| *Rallus limicola* | Virginia rail | -/-/- | A&K 1996; Myers 2009; MultiMAC JV 2015 |
| **Order PASSERIFORMES (perching birds)** | | | |
| **Family Aegithalidae** | | | |
| *Psaltriparus minimus* | Bushtit | -/-/- | A&K 1995-96; CBC 1998-02, 2004-06, 2008-10; Myers 2008-09; RS 2010; MultiMAC JV 2015 |
| **Family Alaudidae** | | | |
| *Eremophila alpestris* | Horned lark | -/-/- | A&K 1995-96; RS 2007; MultiMAC JV 2015 |
| **Family Bombycillidae** | | | |
| *Bombycilla cedrorum* | Cedar waxwing | -/-/- | CBC 2003, 2005, 2008-10; Myers 2008-09; RS 2010; MultiMAC JV 2015 |
| **Family Cardinalidae** | | | |
| *Passerina amoena* | Lazuli bunting | -/-/- | Myers 2009 |
| *Passerina caerulea* | Blue grosbeak | -/-/- | A&K 1996; MultiMAC JV 2015 |
| *Pheucticus melanocephalus* | Black-headed grosbeak | -/-/- | Myers 2009 |
| **Family Corvidae** | | | |
| *Aphelocoma californica* | Western scrub-jay | -/-/- | RS 2011; MultiMAC JV 2015 |

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|---|---|---|---|
| *Corvus brachyrhynchos* | American crow | -/-/- | A&K 1995-96; CBC 1999-03, 2007-09; RS 2007; Myers 2008-09; MultiMAC JV 2015 |
| *Corvus corax* | Common raven | -/-/- | A&K 1995-96; CBC 2003-10; RS 2010; Myers 2008-09; MultiMAC JV 2015 |
| **Family Emberizidae** | | | |
| *Ammodramus savannarum* | Grasshopper sparrow | -/-/- | USFWS 1980 or Hamilton 1987 |
| *Chondestes grammacus* | Lark sparrow | -/-/- | A&K 1995-96; CBC 1999, 2004, 2007-08, 2010; Myers 2008-09; RS 2010; MultiMAC JV 2015 |
| *Junco hyemalis* | Dark-eyed junco | -/-/- | A&K 1995-96; CBC 2004, 2007-08; Myers 2008-09; RS 2010; MultiMAC JV 2015 |
| *Melospiza lincolnii* | Lincoln's sparrow | -/-/- | A&K 1995-96; CBC 1999-01, 2003, 2005-07, 2010; Myers 2008-09; RS 2012; MultiMAC JV 2015 |
| *Melospiza melodia* | Song sparrow | -/BCC/- | A&K 1995-96; CBC 1999-01, 2003-05, 2007-10; RS 2007; Myers 2008-09; MultiMAC JV 2015 |
| *Passerculus sandwichensis* | Savannah sparrow | -/-/- | CBC 2002, 2007-08, 2010; Myerss 2009; RS 2012; MultiMAC JV 2015 |
| *Passerella iliaca* | Fox sparrow | -/-/- | CBC 2001; Myers 2009 |
| *Pipilo chlorurus* | Green-tailed towhee | -/-/- | A&K 1995-96; MultiMAC JV 2015 |

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|---|---|---|---|
| *Pipilo crissalis* | California towhee | -/-/- | A&K 1995-96; CBC 1999-01, 2003-05, 2007-10; Myers 2008-09; RS 2010; MultiMAC JV 2015 |
| *Pipilo maculatus* | Spotted towhee | -/BCC/- | A&K 1995-96; CBC 2000-02; RS 2010 |
| *Piranga ludoviciana* | Western tanager | -/-/- | A&K 1996; Myers 2009; RS 2010 |
| *Spizella passerina* | Chipping sparrow | -/-/- | A&K 1995-96 |
| *Sternella neglecta* | Western meadowlark | -/-/- | A&K 1995-96; CBC 1998, 2003, 2010; RS 2007; Myers 2009 |
| *Zonotrichia atricapilla* | Golden-crowned sparrow | -/-/- | CBC 1999, 2004-05, 2007; Myers 2008 |
| *Zonotrichia leucophrys* | White-crowned sparrow | -/-/- | A&K 1995-96; CBC 1999-2010; RS 2007; Myers 2008-09; MultiMAC JV 2015 |
| **Family Fringillidae** | | | |
| *Carduelis psaltria* | Lesser goldfinch | -/-/- | A&K 1995-96; CBC 2000-01; Myers 2008-09; RS 2010; MultiMAC JV 2015 |
| *Carpodacus mexicanus* | House finch | -/-/- | A&K 1995-96; CBC 1999, 2001-05, 2007-10; RS 2007; Myers 2008-09; MultiMAC JV 2015 |
| *Spinus lawrencei* | Lawrence's goldfinch | -/BCC/- | RS 2011; MultiMAC JV 2015 |
| *Spinus tristis* | American goldfinch | -/-/- | CBC 2001; Myers 2009; RS 2010 |
| **Family Hirundinidae** | | | |
| *Hirundo pyrrhonota* | Cliff swallow | -/-/- | A&K 1995-96; Myers 2009; RS 2010; MultiMAC JV 2015 |

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|---|---|---|---|
| *Hirundo rustica* | Barn swallow | -/-/- | A&K 1995-96; CBC 2003; Myers 2009; RS 2010; MultiMAC JV 2015 |
| *Iridoprocne bicolor* | Tree swallow | -/-/- | CBC 2001; Myers 2009; RS 2010 |
| *Stelgidopteryx serripennis* | Northern rough-winged swallow | -/-/- | A&K 1995-96; CBC 2006; Myers 2009; RS 2010; MultiMAC JV 2015 |
| *Tachycineta thalassina* | Violet-green swallow | -/-/- | A&K 1995-96; RS 2012 |
| **Family Icteridae** | | | |
| *Agelaius phoeniceus* | Red-winged blackbird | -/-/- | A&K 1995-96; CBC 2000, 2004-05, 2010; Myers 2009; RS 2010; MultiMAC JV 2015 |
| *Euphagus cyanocephalus* | Brewer's blackbird | -/-/- | A&K 1996; CBC 2000; Myers 2009; MultiMAC JV 2015 |
| *Icterus bullockii* | Bullock's oriole | -/-/- | A&K 1996; Myers 2008-09; RS 2010; MultiMAC JV 2015 |
| *Icterus cucullatus* | Hooded oriole | -/-/- | A&K 1996; Myers 2009; RS 2010; MultiMAC JV 2015 |
| *Molothrus ater* | Brown-headed cowbird | -/-/- | A&K 1996; Myers 2009; RS 2010; MultiMAC JV 2015 |
| *Quiscalus mexicanus* | Great-tailed grackle | -/-/- | A&K 1996; CBC 2006-10; RS 2007; Myers 2008-09; MultiMAC JV 2015 |
| *Xanthocephalus xanthocephalus* | Yellow-headed blackbird | -/-/- | CBC 2000-01, 2003-06, 2010; RS 2011; MultiMAC JV 2015 |
| **Family Laniidae** | | | |
| *Lanius ludovicianus* | Loggerhead shrike | BCC/-/- | A&K 1995-96; CBC 1999; MultiMAC JV 2015 |

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|---|---|---|---|
| **Family Mimidae** | | | |
| *Mimus polyglottos* | Northern mockingbird | -/-/- | A&K 1995-96; CBC 1998-2010; RS 2007; Myers 2008-09; MultiMAC JV 2015 |
| *Toxostoma redivivum* | California thrasher | -/-/- | CBC 2009 |
| **Family Motacillidae** | | | |
| *Anthus rubescens* | American pipit | -/-/- | A&K 1995-96; CBC 1999, 2003, 2007; MultiMAC JV 2015 |
| **Family Parulidae** | | | |
| *Geothlypis trichas* | Common yellowthroat | -/BCC/- | A&K 1995-96; CBC 1998-01, 2003-10; RS 2007; Myers 2008-09; MultiMAC JV 2015 |
| *Wilsonia pusilla* | Wilson's warbler | -/-/- | A&K 1995-96; Myers 2009; RS 2010 |
| *Oreothlypis celata* | Orange-crowned warbler | -/-/- | A&K 1995-96; CBC 1999, 2004-05, 2008-09; Myers 2008-09; RS 2010; MultiMAC JV 2015 |
| *Oreothlypis ruficapilla* | Nashville warbler | -/-/- | RS 2010; MultiMAC JV 2015 |
| *Dendroica coronata* | Yellow-rumped warbler | -/-/- | A&K 1995-96; CBC 1998-2010; RS 2007; Myers 2008-09; FSC 2012; MultiMAC JV 2015 |
| *Dendroica nigrescens* | Black-throated gray warbler | -/-/ - | RS 2011 |
| *Dendroica occidentalis* | Hermit warbler | -/-/- | RS 2012 |
| *Dendroica petechia* | Yellow warbler | -/-/- | A&K 1995-96; Myers 2009; RS 2010 |
| *Dendroica townsendi* | Townsend's warbler | -/-/- | RS 2012 |
| **Family Passeridae** | | | |

| Scientific Name | Common Name | Status International/Federal/State | Source and Date Surveyed |
|---|---|---|---|
| *Passer domesticus* | House sparrow | -/-/- | A&K 1995-96; CBC 2008-10; Myers 2008-09; RS 2010; MultiMAC JV 2015 |
| **Family Polioptilidae** | | | |
| *Polioptila caerulea* | Blue-gray gnatcatcher | -/-/- | CBC 2001, 2008-10; Myers 2008 |
| **Family Ptilogonatidae** | | | |
| *Phainopepla nitens* | Phainopepla | -/-/- | CBC 2000, Myers 2009 |
| **Family Regulidae** | | | |
| *Regulus calendula* | Ruby-crowned kinglet | -/-/- | A&K 1995-96; CBC 1999-01, 2003-10; Myers 2008-09; RS 2010; MultiMAC JV 2015 |
| **Family Sturnidae** | | | |
| *Sturnus vulgaris* | European starling | -/-/- | A&K 1995-96; CBC 1998-02, 2004, 2006-10; RS 2007; Myers 2008-09; MultiMAC JV 2015 |
| **Family Troglodytidae** | | | |
| *Cistothorus palustris* | Marsh wren | -/-/- | A&K 1995-96; CBC 2000, 2004-05, 2008-10; RS 2007; Myers 2008-09; MultiMAC JV 2015 |
| *Salpinctes obsoletus* | Rock wren | -/-/- | CBC 2008-09; Myers 2008-09; MultiMAC JV 2015 |
| *Thryomanes bewickii* | Bewick's wren | -/-/- | CBC 1999-01, 2003-04, 2007-09; Myers 2008-09; MultiMAC JV 2015 |
| *Troglodytes aedon* | House wren | -/-/- | A&K 1995-96; CBC 1999-00, 2004, 2008-10; Myers 2008-09; RS 2011; MultiMAC JV 2015 |

| Scientific Name | Common Name | Status International/Federal/State | Source and Date Surveyed |
|---|---|---|---|
| **Family Turdidae** | | | |
| *Catharus ustulatus* | Swainson's thrush | -/-/- | Myers 2009 |
| *Catharus guttatus* | Hermit thrush | -/-/- | CBC 2008-09; Myers 2008 |
| *Siala mexicana* | Western bluebird | -/-/- | A&K 1995-96; CBC 2002, 2005-06, 2008-09; Myers 2008-09; RS 2010; MultiMAC JV 2015 |
| **Family Tyrannidae** | | | |
| *Empidonax dificilis* | Pacific-slope flycatcher | -/-/- | A&K 1995-96 |
| *Empidonax wrightii* | Gray flycatcher | -/-/- | Myers 2009 |
| *Myiarchus cinerascens* | Ash-throated flycatcher | -/-/- | A&K 1995-96; RS 2012 |
| *Sayornis nigricans* | Black phoebe | -/-/- | A&K 1995-96; CBC 1998-10; RS 2007; Myers 2008-09; FSC 2012; MultiMAC JV 2015 |
| *Sayornis saya* | Say's phoebe | -/-/- | A&K 1995-96; CBC 2000, 2003-10; Myers 2008-09; RS 2010; MultiMAC JV 2015 |
| *Tyrannus verticalis* | Western kingbird | -/-/- | A&K 1995-96; Myers 2008-09; RS 2010; MultiMAC JV 2015 |
| *Tyrannus vociferans* | Cassin's kingbird | -/-/-/ | A&K 1995-96; CBC 1999-07, 2009-10; RS 2007; Myers 2008-09; MultiMAC JV 2015 |
| **Family Vireonidae** | | | |
| *Vireo bellii pusillus* | Least Bell's vireo | -/FE/SE | USFWS 1980 or Hamilton 1987; A&K 1995-96 |
| *Vireo gilvus* | Warbling vireo | -/-/- | RS 2012 |
| **Order PELICANIIFORMES (herons, egrets, ibis)** | | | |
| **Family Ardeidae** | | | |

| Scientific Name | Common Name | Status International/Federal/State | Source and Date Surveyed |
|---|---|---|---|
| *Ardea alba* | Great egret (common) | -/-/ - | CBC 1993-94; A&K 1995-96; CBC 1998-2010; RS 2007; Myers 2008-09; FSC 2012; MultiMAC JV 2015 |
| *Ardea herodias* | Great blue heron | -/-/ - | CBC 1991, 1993-94; A&K 1995-96; CBC 1998, 2000-10; RS 2007; Myers 2008-09; FSC 2012; MultiMAC JV 2015 |
| *Botaurus lentiginosus* | American bittern | -/-/- | RS 2010 |
| *Bubulcus ibis* | Cattle egret | -/-/- | A&K 1995-96; CBC 1990-91, 1994; CBC 1999-2001 |
| *Butorides virescens* | Green heron | -/-/- | A&K 1995-96; CBC 1998, 00, 06-08; Myers 2008-09; RS 2010 |
| *Egretta thula* | Snowy egret | -/-/- | CBC 1993-94; A&K 1995-96; CBC 1999-2000, 2002-10; RS 2007; Myers 2008-09; FSC 2012; MultiMAC JV 2015 |
| *Ixobrychus exilis* | Least bittern | -/-/- | RS 2007 |
| *Nycticorax nycticorax* | Black-crowned Night-Heron | -/-/- | CBC 1994; A&K 1995-96; CBC 1999-07, 2000-08, 2010; RS 2007; Myers 2008-09; FSC 2012; MultiMAC JV 2015 |
| **Family Pelicanidae** | | | |
| *Pelecanus erythroorhynchos* | American white pelican | -/-/- | CBC 2002-03, 2005; Myers 2009 |
| **Family Threskiornithidae** | | | |

| Scientific Name | Common Name | Status International/Federal/State | Source and Date Surveyed |
|---|---|---|---|
| *Plegadis chihi* | White-faced ibis | -/-/- | CBC 2007; MultiMAC JV 2015 |
| **Order PICIFORMES** | | | |
| **Family Picidae** | | | |
| *Colaptes auratus* | Northern flicker | -/-/- | A&K 1995-96; CBC 1998, 2000, 2004-10; RS 2007; Myers 2008-09; MultiMAC JV 2015 |
| *Picoides nuttallii* | Nuttall's woodpecker | -/-/- | A&K 1995-96; CBC 1999, 2001-02, 2005, 2008-10; Myers 2008-09; RS 2010; MultiMAC JV 2015 |
| *Picoides pubescens* | Downy woodpecker | -/-/- | A&K 1995-96; CBC 2000 |
| *Sphyrapicyus nuchalis* | Red-naped sapsucker | -/-/- | MultiMAC JV 2015 |
| *Sphyrapicus ruber* | Red-breasted sapsucker | -/-/- | A&K 1995-96; RS 2010; MultiMAC JV 2015; RS 2017 |
| **Order PODICIPEDIFORMES (grebes)** | | | |
| **Family Podicipedidae** | | | |
| *Aechmophorus occidentalis* | Western grebe | -/-/- | CBC 1993-94; A&K 1995-96; CBC; 1998-2010; RS 2007; Myers 2008-09; FSC 2012; MultiMAC JV 2015 |
| *Aechmophorus clarkii* | Clark's grebe | -/-/- | CBC 1990; A&K 1995-96, CBC 1999-2010; RS 2007; Myers 2008-2009; MultiMAC JV 2015 |
| *Podiceps auritus* | Horned grebe | -/-/- | CBC 2000; RS 2007 |

| Scientific Name | Common Name | Status International/Federal/State | Source and Date Surveyed |
|---|---|---|---|
| *Podiceps nigricollis* | Eared grebe | -/-/- | CBC 1994; A&K 1995-96; CBC 1998-2010; RS 2007; Myers 2008-09; MultiMAC JV 2015 |
| *Podilymbus podiceps* | Pied-billed grebe | -/-/- | CBC 1991-94; A&K 1995-96; CBC 1998-2010; RS 2007; Myers 2008-09; FSC 2012; MultiMAC JV 2015 |
| **Order STRIGIFORMES (owls)** | | | |
| **Family Strigidae** | | | |
| *Athene cunicularia* | Burrowing owl | CITES/BCC/- | A&K 1995-96; RS 2007 |
| *Bubo virginianus* | Great horned owl | CITES/-/- | Bloom 1994-95; A&K 1995-96; Myers 2009 |
| *Megascops kennicottii* | Western screech-owl | -/-/- | A&K 1995-96; Myers 2009 |
| **Family Tytonidae** | | | |
| *Tyto alba* | Barn owl | CITES/-/- | Bloom 1994-95 |
| **Order SULIFORMES (cormorants)** | | | |
| **Family Phalacrocoracidae** | | | |
| *Phalacrocorax auritus* | Double-crested Cormorant | -/-/- | CBC 1990-91, 93-94; A&K 1995-96; CBC 1998-2010; RS 2007; Myers 2008-09; FSC 2012; MultiMAC JV 2015 |

# HERPTILES

| Scientific Name | Common Name | Status International/Federal/State | Source and Date Surveyed |
|---|---|---|---|
| **Order SALIENTIA (frogs)** | | | |

| Scientific Name | Common Name | Status International/Federal/State | Source and Date Surveyed |
|---|---|---|---|
| **Family Ranidae** | | | |
| *Lithobates catesbeiana* | American bullfrog | -/-/- | Phillips 1996; MultiMAC JV 2015 |
| *Pseudacris hypochondriaca* | Baja California chorus frog | -/-/- | Phillips 1996 |
| *Xenopus laevis* | African clawed frog | -/-/- | R. Lockwood obs. 2018 |
| **Order SQUAMATA (lizards, snakes)** | | | |
| **Family Anguidae** | | | |
| *Elgaria multicarinatus* | Southern alligator lizard | -/-/- | Phillips 1996 |
| **Family Colubridae** | | | |
| *Pituophis catenifer* | Gopher snake | -/-/- | Phillips 1996 |
| *Thamnophis hammondii* | Western aquatic garter snake | -/-/- | Hamilton 1987 |
| **Family Phrynosomatidae** | | | |
| *Sceloporus occidentalis* | Western fence lizard | -/-/- | Phillips 1996; MultiMAC JV 2015 |
| *Uta stansburiana* | Side-blotched lizard | -/-/- | Hamilton 1987; MultiMAC JV 2015 |
| **Family Scincidae** | | | |
| *Plestiodon skiltonianus* | Western skink | -/-/- | MultiMAC JV 2015 |
| **Family Leptotyphlopidae** | | | |
| *Leptotyphlops humilis* | Western blind snake | -/-/- | Phillips 1996 |
| **Order TESTUDINATA (turtles)** | | | |
| **Family Chelydridae** | | | |
| *Trachemys scripta* | pond slider | -/-/- | USFWS 1980 or Hamilton 1987 |
| **Order URODELA (salamanders)** | | | |
| **Family Plethodontidae** | | | |
| *Batrachoseps nigriventris* | California slender salamander | -/-/- | Hamilton 1987 |

# MAMMALS

| Scientific Name | Common Name | Status International/Federal/State | Source and Date Surveyed |
|---|---|---|---|
| **Order CARNIVORA** | | | |
| **Family Canidae** | | | |
| *Canis familiaris* | Domestic dog | -/-/- | Phillips 1996 |
| *Canis latrans* | Coyote | -/-/- | Phillips 1996; MultiMAC JV 2015 |
| *Urocyon cinereoargenteus* | Gray fox | -/-/- | USFWS 1980 or Hamilton 1987 |
| **Family Felidae** | | | |
| *Felis sylvestris catus* | Feral domestic cat | -/-/- | Phillips 1996 |
| **Family Mustelidae** | | | |
| *Mephitis mephitis* | Striped skunk | -/-/- | Phillips 1996 |
| *Mustela frenata* | Long-tailed weasel | -/-/- | Phillips 1996 |
| **Family Procyonidae** | | | |
| *Procyon lotor* | Raccoon | -/-/- | Phillips 1996 |
| **Order LAGOMORPHA (rabbits)** | | | |
| **Family Leporidae** | | | |
| *Lepus californicus* | Black-tailed rabbit | -/-/- | Hamilton 1987 |
| *Sylvilagus audubonii* | Desert cottontail | -/-/- | Phillips 1996; MultiMAC JV 2015 |
| **Order MARSUPIALIA** | | | |
| *Didelphis virginiana* | Virginia opossum | -/-/- | Phillips 1996 |
| **Order RODENTIA** | | | |
| **Family Cricetidae** | | | |
| *Reithrodontomys megalotis* | Western harvest mouse | -/-/- | Phillips 1996 |
| **Family Geomyiodae** | | | |
| *Thomomys bottae* | Botta's pocket gopher | -/-/- | Phillips 1996 |
| **Family Muridae** | | | |
| *Mus musculus* | House mouse | -/-/- | Phillips 1996 |
| *Rattus rattus* | Black Rat | -/-/- | Phillips 1996 |

| Scientific Name | Common Name | Status International/Federal/State | Source and Date Surveyed |
|---|---|---|---|
| **Family Sciuridae** | | | |
| *Spermophilus beecheyi* | California ground squirrel | -/-/- | Phillips 1996; MultiMAC JV 2015 |

# FISH

| Scientific Name | Common Name | Status International/Federal/State | Source and Date Surveyed |
|---|---|---|---|
| **Family Clupeidae** | | | |
| *Dorsara petenense* | Threadfin Shad | -/-/- | USFWS 1980 or Hamilton 1987 |
| **Family Centrarchidae** | | | |
| *Lepomis macrochirus* | Bluegill | -/-/- | USFWS 1980 or Hamilton 1987; US DON 2016 |
| *Lepomis sp.* | Sunfish | -/-/- | USFWS 1980 or Hamilton 1987 |
| *Micropterus salmonides* | Largemouth Bass | -/-/- | USFWS 1980 or Hamilton 1987 |
| **Family Cyprinidae** | | | |
| *Ictalurus Ictalurus* | Channel catfish | -/-/- | USFWS 1980 or Hamilton 1987; US DON 2016 |
| **Family Poeciliidae** | | | |
| *Gambusia affinis* | mosquitofish | -/-/- | USFWS 1980 or Hamilton 1987; US DON 2016 |

**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.html#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

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# 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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# APPENDIX K STAKEHOLDER CONTACTS

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**Detachment Norco Integrated Natural Resources Management Plan (INRMP) 2018**
**Internal/External Stakeholders**

Chad Blais
Norco City Manager
2870 Clark Ave.
Norco, CA 92860
(951) 270-5678
cblais@ci.norco.ca

Anthony Winicki
NAVWPNSTA Seal Beach Detachment Norco
1999 4th Street
Norco, CA 92860-3634
(951) 273-4867
Anthony.a.winicki@navy.mil

CAPT Richard Braunbeck
Commanding Officer
Naval Surface Warfare Center
Building 512
Corona, CA 92787
(951) 393-5123

Nancy Ferguson
Fish and Wildlife Service
2177 Salk Ave.
Suite 250
Carlsbad, CA 92008

Jeff Brandt
California Dept. of Fish and Game
3602 Inland Empire Blvd.
Ontario, CA 91764
(909) 987-7161
Jeff.Brandt@wildlife.ca.gov

Kevin Bash
Lake Norconian Foundation
3678 Pedley
Norco, CA 92860
(951) 768-8981
norcobash@sbcglobal.net

Ryan Lockwood
Natural Resources Program Manager
Naval Weapons Station Seal Beach
Detachment Norco
(760) 731-3516
Ryan.s.lockwood1@navy.mil

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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/Cost Est. |
|---|---|---|---|---|---|---|---|
| Land Use Management | | | | | | | |
| Objective: Implement land use and conservation policies to the extent practicable and in concert with the mission of the installation. | | | | | | | |
| **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** | **Completed** | **EO 13423, EO13514** | **Ecosystem Integrity** | **EPSO/PW In-house** |
| Soil Management | | | | | | | |
| Objective: Prevent and control soil erosion and reduce likelihood of sedimentation of Lake Norconian and associated wetlands from erosion. | | | | | | | |
| **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 5090.1D** | **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** |
| Vegetation Management Program | | | | | | | |
| Objective: Manage natural habitats (i.e. non-landscaped and undeveloped areas) for the benefit of native plant and wildlife species. | | | | | | | |

# Appendix L

| Project or Activity/Objective | EPR Number | ERL Number | INRMP Section | Scheduled Implementation | Prime Legal Driver | Focus Areas | Funding Source/Cost Est. |
|---|---|---|---|---|---|---|---|
| Vegetation Management Program (cont'd) | | | | | | | |
| Objective: Manage natural habitats (i.e. non-landscaped and undeveloped areas) for the benefit of native plant and wildlife species. | | | | | | | |
| **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** | **Ongoing** | **Sikes Act, MBTA, OPNAVINST 5090.1D, CWA** | **Ecosystem Integrity** | **OM&N / $158,283** |
| **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 projects 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** | **Completed** | **Sikes Act, EO 11990, EO 13751, DODI 6055.6 NHPA 36 CFR 800; DOD Directive** | **Ecosystem Integrity** | **OM&N / $36,651** |
| **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 non-native 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** | **Ongoing** | **Sikes Act, EO 11990, EO 13751** | **Ecosystem Integrity** | **OM&N / $79,891** |
| **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** | **Ongoing** | **Sikes Act, OPNAVINST 5090.1D, DODI 4715.03, EO 13751** | **Ecosystem Integrity** | **OM&N / $41,741** |

# Appendix L

| Project or Activity/Objective | EPR Number | ERL Number | INRMP Section | Scheduled Implementation | Prime Legal Driver | Focus Areas | Funding Source/Cost Est. |
|---|---|---|---|---|---|---|---|
| Management of Anthropogenic Communities, Historic and Developed Landscapes | | | | | | | |
| Objective: Manage and maintain NRHP-listed historic landscaped areas within Detachment Norco. | | | | | | | |
| **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** | **Completed** | **Sikes Act, NHPA 36 CFR 800; DOD Directive** | **Ecosystem Integrity** | **OM&N / $41,741** |
| Objective: Manage new landscaping to promote water conservation. | | | | | | | |
| **Implement low maintenance plant requirements as a criterion for selection of any new plantings.** | **NA** | **NA** | **5.3.2.1.1** | **Ongoing** | **Sikes Act,** | **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** |
| Invasive Species Management Program | | | | | | | |
| Objective: Control high priority noxious and invasive plant species that have the potential to alter native upland plant communities. | | | | | | | |
| **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** | **Ongoing** | **FNWA, OPNAVINST 5090.1D, DODI 4715.03, EO 11990, EO 13751** | **Ecosystem Integrity** | **OM&N / $21,448** |
| **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** | **Completed** | **EO 13751** | **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/Cost Est. |
|---|---|---|---|---|---|---|---|
| Invasive Species Management Program (cont'd) | | | | | | | |
| Objective: Control high priority noxious and invasive plant species that have the potential to alter native upland plant communities. | | | | | | | |
| **Annually, or as-needed, eradicate or control the spread and introduction of non-native 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** | **Ongoing** | **EO 13751** | **Ecosystem Integrity** | **OM&N / $21,448** |
| **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 13751** | **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** | **2023** | **Sikes Act, ESA, Plant Protection Act** | **Ecosystem Integrity** | **OM&N / $210,731** |
| 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, slider turtle, 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** | **Completed** | **EO 13751** | **Ecosystem Integrity** | **OM&N / $49,325** |
| Wetlands Management Program | | | | | | | |
| Objective: Manage and enhance wetland resources on Detachment Norco. | | | | | | | |
| **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** | **2025** | **CWA, EO 13751, EO 11990, OPNAVINST 5090.1D, DODI 4715.03** | **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/Cost Est. |
|---|---|---|---|---|---|---|---|
| Wetlands Management Program (cont'd) | | | | | | | |
| Objective: Manage and enhance wetland resources on Detachment Norco (cont'd) | | | | | | | |
| **Enhance wetland habitat annually, or as needed, controlling and removing non-native 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.** | **6101312106** | **4** | **5.5** | **2019-2021** | **EO 13751, EO 11990** | **Ecosystem Integrity** | **OM&N / $21,448** |
| **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** | **2019-2021** | **CWA, EO 11990** | **Ecosystem Integrity** | **OM&N / $130,840** |
| **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** | **Ongoing** | **Sikes Act, EO 11990** | **Ecosystem Integrity** | **OM&N / $21,448** |
| Water Resources Management Program | | | | | | | |
| 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. | | | | | | | |
| **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** | **Completed** | **Sikes Act, NPDES Permit** | **Ecosystem Integrity** | **OM&N / $34,980** |
| **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** | **Completed** | **Sikes Act, NPDES Permit** | **Ecosystem Integrity** | **OM&N / $34,980** |
| **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 / $34,980** |
| **Reduce the amount of vegetative debris in the lake and ponds that could impede water flows.** | **610131210A** | **4** | **5.6.1** | **Ongoing** | **CWA, Sikes** | **Ecosystem Integrity** | **OM&N / $50,799** |

| Project or Activity/Objective | EPR Number | ERL Number | INRMP Section | Scheduled Implementation | Prime Legal Driver | Focus Areas | Funding Source/Cost Est. |
|---|---|---|---|---|---|---|---|
| Water Resources Management Program (cont'd) | | | | | | | |
| 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. | | | | | | | |
| **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** | **Completed** | **CWA, OPNAVINST 5090.1D, DODI 4715.03, EO 11990** | **Ecosystem Integrity** | **OM&N / $50,799** |
| Objective: Implement improvements to water quality systems of Lake Norconian and its related ponds | | | | | | | |
| **Based on water quality monitoring, install an aerator in Lake Norconian or take other appropriate water quality enhancement actions to improve water quality and increase circulation to help with vector control.** | **61013NR011** | **4** | **5.6.1** | **2019-2021** | **Sikes Act, FWCA, NPDES Permit** | **Ecosystem Integrity** | **OM&N / $50,000** |
| **Minimize fertilizer runoff to the lake by efficiently conserving water.** | **NA** | **NA** | **5.3.2.1.1** | **Ongoing** | **Sikes Act,** | **Ecosystem Integrity** | **PW In-house** |
| **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** | **2019** | **CWA, OPNAVINST 5090.1D, DODI 4715.03, EO 11990** | **Ecosystem Integrity** | **EPSO In-House** |
| Fish and Wildlife Management Program | | | | | | | |
| 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.** | **61013NR005** | **4** | **5.7** | **Ongoing** | **Sikes Act, ESA, MBTA, FWCA, EO 13186** | **Fish and Wildlife Management and Public Access** | **OM&N / $95,785** |
| **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** | **EPSO In-House** |

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|---|---|---|---|---|---|---|---|
| Fish and Wildlife Management Program (cont'd) | | | | | | | |
| Objective: Promote a sustainable and diverse wildlife community through population protection, monitoring, and habitat stewardship compatible with the facility's mission and urban location. | | | | | | | |
| **Maintain a bird checklist for migratory and resident species that use the Detachment.** | **NA** | **NA** | **5.7** | **Ongoing** | **Sikes Act** | **Fish and Wildlife Management** | **EPSO In-House** |
| **Maintain a fish inventory, from the results of fishing license holder requirements.** | **NA** | **NA** | **5.7** | **Ongoing** | **Sikes Act** | **Fish and Wildlife Management** | **EPSO In-House** |
| **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** |
| **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 via completion of the Annual Navy Conservation INRMP Metrics.** | **NA** | **NA** | **5.7** | **Ongoing** | **Sikes Act** | **INRMP Project Implementation** | **EPSO In-House** |
| Wildlife Habitat Management | | | | | | | |
| Objective: Protect and conserve wildlife habitat areas, particularly Lake Norconian and associated ponds | | | | | | | |
| **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 13751, MBTA, CWA** | **Ecosystem Integrity** | **OM&N / $21,448** |
| **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** |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Monitor bird populations every three to five years, or as-needed, to ensure that management practices are effective.** | **61013NR005** | **4** | **5.7** | **Ongoing** | **Sikes Act, MBTA** | **Fish and Wildlife Management** | **OM&N / $95,785** |
| Wildlife Habitat Management (cont'd) | | | | | | | |
| Objective: Protect and conserve wildlife habitat areas, particularly Lake Norconian and associated ponds. | | | | | | | |
| **Prohibit persons utilizing the lake for recreation from disturbing natural habitats utilized by wildlife.** | **NA** | **NA** | **5.7** | **Ongoing** | **Sikes Act, MBTA** | **Ecosystem Integrity** | **EPSO In-House** |
| **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** |
| Project or Activity/Objective | EPR Number | ERL Number | INRMP Section | Scheduled Implementation | Prime Legal Driver | Focus Areas | Funding Source/Cost Est. |
| Wildlife Problems, Animal Damage Control, and Feral Animals | | | | | | | |
| Objective: Use Integrated Pest Management (IPM) methods to control pest species and minimize incidental take of non-target wildlife. | | | | | | | |
| **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** |
| Objective: Monitor pesticide/herbicide applications within Detachment Norco | | | | | | | |
| **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** |
| Special Status Species: Threatened and Endangered Species and Species of Special Concern Management Program | | | | | | | |
| Objective: Conserve and maintain riparian habitat within the installation for use by migratory birds. | | | | | | | |
| **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** | **Ongoing** | **Sikes Act, ESA** | **Listed Species and Critical Habitat** | **OM&N / $34,036** |
| **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** | **Ongoing** | **Sikes Act,** | **Listed Species and Critical** | **OM&N / $130,840** |
| Objective: Conserve and monitor coastal sage scrub habitat within the installation for migratory birds. | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **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** | **Ongoing** | **Sikes Act, ESA** | **Listed Species and Critical Habitat** | **OM&N / $79,891** |
| **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 removal of non-native grasses and forbs.** | **61013NR007** | **NA** | **5.8.1** | **Ongoing** | **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/Cost Est. |
|---|---|---|---|---|---|---|---|
| Special Status Species: Threatened and Endangered Species and Species of Special Concern Management Program (cont'd) | | | | | | | |
| Objective: Enhance, conserve and monitor potential burrowing owl habitat within the installation. | | | | | | | |
| **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** | **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** | **Ongoing** | **MBTA/ Calif. ESA (Species of Special Concern - Priority 2)** | **Listed Species and Critical Habitat** | **OM&N / $16,230** |
| **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** | **N/A** | **MBTA/ Calif. ESA (Species of Special Concern - Priority 2)** | **Listed Species and Critical Habitat** | **EPSO/PW In-house** |
| Migratory Birds Management | | | | | | | |
| Objective: Enhance, conserve and monitor MBTA species and populations and associated habitat within Detachment Norco lands. | | | | | | | |
| **Monitor the suitable habitat within the installation every five years for the presence of MBTA species in accordance with PIF guidelines.** | **61013NR005** | **4** | **5.9** | **Ongoing** | **MBTA, ESA, MBTA rule, EO** | **Ecosystem Integrity** | **OM&N / $95,785** |
| **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** | **Ecosystem Integrity** | **EPSO In-House** |
| **Conduct annual secretive marsh bird surveys utilizing national protocol.** | **N/A** | **NA** | **5.9** | **Ongoing** | **MBTA and EO** | **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 of the actions and plans on migratory birds.** | **NA** | **4** | **5.9** | **Ongoing** | **MBTA rule, MBTA, EO 13186** | **Ecosystem Integrity** | **EPSO In-House** |
| **Participate in DOD's Partnership in Flight program to conserve and manage neotropical birds and their habitat.** | **NA** | **NA** | **5.9** | **Ongoing** | **MBTA, OPNAVINST 5090.1D** | **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/Cost Est. |
|---|---|---|---|---|---|---|---|
| Other Species of Regional Special Concern Management | | | | | | | |
| Objective: Protect and conserve sensitive species and the habitat areas they utilize, particularly Lake Norconian and associated ponds. | | | | | | | |
| **Ensure that species of regional and special concern are protected in the Landscape Management Plan and its implementation.** | **NA** | **NA** | **5.10** | **Completed** | **Sikes Act,** | **Listed Species and Critical** | **EPSO In-House** |
| **Update sensitive plant species surveys within the installation.** | **61013NR004** | **4** | **5.10** | **2019** | **Sikes Act, MBTA, Plant Protection** | **Listed Species and Critical Habitat** | **OM&N / $41,741** |
| **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** | **EPSO In-House** |
| Pollinator Management | | | | | | | |
| Objective: Maintain and enhance pollinator populations and their habitat when not in conflict with health and safety, or the military mission. | | | | | | | |
| **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** | **NA** | **NA** | **5.11** | **Ongoing** | **Sikes Act** | **Ecosystem Integrity** | **EPSO In-House** |
| **Revegetate with native species when possible.** | **61013NR006, 61013NR007** | **4** | **5.11** | **2019-2021** | **Sikes Act, EO 11990,** | **Ecosystem Integrity** | **OM&N / $210,731** |
| **Control the spread of invasive species.** | **61013NR006, 61013NR007** | **4** | **5.11 and** | **Ongoing** | **Sikes Act, EO 11990,** | **Ecosystem Integrity** | **OM&N / $210,731** |
| **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** |
| **Utilize pest management strategies that do not impact pollinators.** | **NA** | **NA** | **5.11** | **Ongoing** | **FWCA, FIFRA** | **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/Cost Est. |
|---|---|---|---|---|---|---|---|
| Climate Change and Regional Growth | | | | | | | |
| 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. | | | | | | | |
| **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** |
| Geographical Information System Management | | | | | | | |
| 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. | | | | | | | |
| **As needed, develop a current military use map that shows environmental considerations as well as military facilities.** | **NA** | **NA** | **5.14** | **Completed** | **Sikes Act** | **Ecosystem Integrity** | **EPSO In-House** |
| **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.** | **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/Cost Est. |
|---|---|---|---|---|---|---|---|
| Outdoor Recreation | | | | | | | |
| Objective: Promote compatible, sustainable, outdoor recreation opportunities while ensuring a healthy lake ecosystem. | | | | | | | |
| **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 5090.1D, 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 5090.1D, 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 5090.1D** | | **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 5090.1D, DODI 4715.03** | **Fish and Wildlife Management and Public Use** | **EPSO In-House** |
| Cultural Resources Management Measures | | | | | | | |
| Objective: Preserve the physical and ecological integrity of known Lake Norconian Club Historic District resources. | | | | | | | |
| **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 Archaeological Data Act of 1974;NHPA** | **Ecosystem Integrity** | **EPSO In-House** |
| **Monitor the presence of historic sites whenever projects involving ground disturbance or development are proposed in areas likely to contain cultural resources.** | **NA** | **NA** | **5.16.1** | **Ongoing** | **EO 11593; Preservation of Historical Archaeological Data Act of 1974; NHPA** | **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/Cost Est. |
|---|---|---|---|---|---|---|---|
| Objective: Provide sufficient technical support to staff as well as training and networking opportunities to achieve INRMP goals and objectives. | | | | | | | |
| **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 S

# REPORT AND MASTER PLAN –

# CALIFORNIA REHABILITATION CENTER

# NORCO, CALIFORNIA OCTOBER 1998

# HYDROGEOLOGY SECTION

# SECTION VI
# HYDROGEOLOGY

## A. GENERAL

The sole source of water supplied to the CRC Norco water system is from the Temescal Groundwater Basin. CRC Norco currently draws water from this basin from four wells (Wells 2A, 3A, 4, and 5), located southeast from the CRC Norco facility, adjacent to Bluff Street, in the City of Norco, County of Riverside . A fifth well (Well 1) is inactive due to benzene contamination. Three CRC Norco wells (Wells 2A, 3A, and 5) are perforated in the shallow aquifer beneath this area to average depths of approximately 155 feet. Two CRC Norco wells (Wells 1 and 4) are perforated in the deep aquifer to average depths of approximately 710 feet.

As directed by the State of California Department of Health Services in Compliance Order No. 04-14-98CO-00, an assessment of CRC Norco's capability to supply its "existing and future water system demands with water continuously and reliably meeting all primary and secondary drinking water standards" was completed. The findings of this geohydrologic investigation is summarized in this section, with an outline of findings presented below. A detailed report entitled "Geohydrologic Investigation of California Rehabilitation Center - Norco Area" dated October, 1998 and prepared by Geoscience Support Services, Inc., is included as a separate Appendix.

## B. OUTLINE OF FINDINGS AND CONCLUSIONS

The following summarizes the key findings of the geohydroloic investigation:

- The nitrate concentration in the Shallow Aquifer correlates with pumping level changes in the area, i.e., a decrease in pumping water level correlates with an increase in nitrate levels.

- Both CRC Norco Wells 2A and 3A were pumped at 475 gpm with a specific capacity of over 25 gpm/ft when they were first constructed in 1988. However, recent data (4-Jun-97), shows that the specific capacity for both wells was below 5 gpm/ft. This clearly indicates that the well screen slots are probably clogged resulting in higher drawdowns and lower well efficiencies.

- Increased nitrate concentrations seem to have begun when additional pumping began from adjacent wells. In all probability, if the current pumping and drawdown conditions remain unchanged in the CRC Norco area, nitrate

concentrations in the Shallow Aquifer are expected to increase continuously in the future. Based on general trends of nitrate in the area, it is expected that nitrate concentrations in the CRC Norco wellfields may approach values of approximately 60 mg/L and possibly higher. The MCL for nitrate is 45 mg/L.

- An estimation of water balance terms for the CRC Norco area indicates that the change in ground water storage ($\Delta V$) is approximately -500 acre-ft/yr. (i.e., outflow of ground water from the basin is greater than inflow).

- An estimation of salt balance terms for the CRC Norco area Results show that the nitrate and TDS increase in the system is approximately 31 and 82 tons/yr, respectively. However, both TDS and nitrate can vary significantly within the study area due to localized "pockets" of high or low salt concentrations, which is common.

- The Maximum Perennial Yield calculated using the Equation of Hydrologic Equilibrium Method is approximately 4,600 acre-ft/year. The Maximum Perennial Yield calculated using the Hill Method is approximately 4,500 acre-ft/year.

- Two potential well sites (Well Site A and Well Site B) were chosen based on the geohydrology of the study area, saturated thickness, production potential and proximity to the wellfield in the area. A well completed at either of these sites is expected to supply ground water at a capacity of over 1,000 gpm.

- Based upon the calibrated CRC Norco ground water model developed for this area, pumping 500 gpm (807 acre-ft/yr) of water from proposed well Site A could cause a 1 to 3 ft drawdown in the Shallow Aquifer and a 5 to 10 ft drawdown in the Deep Aquifer in the vicinity of the existing CRC well field. Pumping 500 gpm (807 acre-ft/yr) of water from the well at Site B would cause similar drawdowns.

## C. PURPOSE AND SCOPE OF GEOHYDROLOGIC INVESTIGATION

The purpose of this study was to quantify the amount of ground water available for removal or use by CRC Norco from aquifers within the area, and to recommend sites for potential development of a permanent groundwater supply and determine possible causes of water quality problems in the aquifers.

The scope of this study includes:

- Compilation and development of the appropriate types and amounts of geologic, hydrologic, and water quality data to allow for reasonable and defendable interpretations and conclusions regarding ground water availability in the area;
- Field inventory of existing wells;
- Evaluation of aquifer tests and water quality data to provide a quantitative estimate of the aquifer parameters of producing zones and to identify spatial and vertical variations of the aquifer systems;
- Evaluation of impacts from additional short and long-term ground water withdrawal schemes; and
- Evaluation and priority ranking of potential production well sites.

## D. EXISTING WELLS IN PROJECT AREA

Currently, CRC Norco and City of Norco are the two major ground water producers in the area. The wells in the study area have total depths varying from 150 ft to 890 ft. In general, the production wells in the area are perforated in either of two aquifers present beneath the area:

| | | |
|---|---|---|
| Shallow Aquifer | CRC Norco Wells | 2, 2A, 3, 3A, and 5 |
| | City of Norco Wells | 4 and 8 |
| Deep Aquifer | CRC Norco Wells | 1 and 4 |

Four of the City of Norco Wells are perforated in both Aquifers:

| | |
|---|---|
| Both Aquifers | City of Norco Wells 12, 13, 14, and 15 |

Wells perforated in only one of the aquifers (either shallow or deep) produce hundreds of gallons per minute (gpm). Wells perforated in both aquifers discharge between 1,000 and 2,000 gpm.

## E. GEOLOGIC SETTING

The CRC Norco area is located in the Temescal Ground Water Basin. Two faults, the Chino Fault and Central Avenue Fault, are found in the southern portion of the area trending northwesterly. The major stratigraphy in the CRC Norco area is composed of Mesozoic granitic rocks. Tertiary sedimentary rocks, and Quaternary alluvium. The bedrock underneath the study area is primarily granitic rocks. South of the study area marine and continental rocks of Tertiary age lie beneath the alluvium. The unconsolidated deposits that comprise the ground water basin are Upper Pleistocene Old Alluvium and Recent Young Alluvium. These alluvial sediments form the water-bearing units from which ground water is pumped. The thickness of the entire alluvial sequence varies, but can be up to 900 feet. The principal water-bearing unit in the Temescal Ground Water Basin is the Old Alluvium. Other units, such as Terrace Deposits, Residual Soil and Younger Alluvium, may also produce water locally.

## F. GROUNDWATER MOVEMENT AND STORAGE

Ground water recharge in the CRC Norco area occurs primarily through infiltration and percolation of rainfall and surface runoff in unlined stream channels that flow from local mountains and hills. Recharge to the Old Alluvium also occurs through underflow from the upper stream sub-basin underlying the northern and southeastern parts of the study area. Ground water discharge in the area occurs through pumping of water from wells and subsurface outflow to the west.

Water levels records indicate a slight decline in the ground water table in the CRC Norco area since 1993. Ground water levels have declined approximately 15 feet in the Shallow Aquifer in the CRC Norco well field area with an annual average decline of three feet per year.

Within the CRC Norco area, ground water flows southwesterly in the upstream area (the northeast part of the area) and westerly in the southern area. It follows the same general flow direction of surface drainage. Ground water seepage velocities are estimated to range from 0.5 to 3.4 ft/day in the upstream area (northeast of the study area). The ground water storage in the CRC Norco area is estimated to be 389,000 acre-ft.

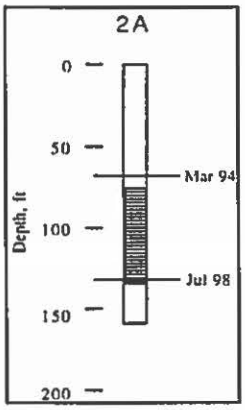
## G. WATER QUALITY

Water quality data from 1988 to 1998 for most of the CRC Norco wells was analyzed in this study. Thirteen constituents were used to evaluate the overall water type and contaminant levels. Trilinear diagrams indicate that water in the Shallow Aquifer has chemical characteristics of a calcium-sodium bicarbonate type and water in the Deep

Aquifer of a sodium chloride type. This difference suggests that the Shallow and Deep Aquifers receive recharge water from different sources.

Both nitrate and total dissolved solids (TDS) contour maps were constructed in this study to show their spatial distribution in the CRC Norco area. These maps are included in the Appendix as part of the geohydrologic investigation report. Five main constituents from ground water samples collected from CRC Norco wells (nitrate, manganese, iron, fluoride, and TDS) were further analyzed in this portion o f the study. In general, nitrate, manganese and TDS are high in the Shallow Aquifer. High fluoride concentrations were found in the Deep Aquifer associated with high ground water temperature.

The nitrate concentration in the Shallow Aquifer correlates with pumping level changes in the area, i.e., a decrease in pumping water level correlates with an increase in nitrate levels. The cause of the correlation between increased nitrate concentrations and lowered water levels is unknown but may be due to a combination of vertical stratification of nitrate concentrations and the positions of the well screens in relation to pumped water level. Based on the results of aquifer zone tests from other wells, the highest nitrate concentrations are commonly found near the ground water surface. Because the horizontal hydraulic conductivity of typical alluvial aquifers in usually 10 to 20 times higher than the vertical hydraulic conductivity, the water entering the well is mostly from horizontal flow. Under reduced pumping conditions when the water table is above the screened section of the wells, the water with higher nitrate concentrations can not directly enter the well and has to migrate slowly downward via dispersion. When pumping levels drop below the top of the well screen, the water with high nitrate concentrations can enter the well through the well screen along the cone of depression surface, causing nitrate levels to increase in the pumped water.




Review of ground water elevations and production from CRC Norco's file "Well Sounding" data sheets show that production in CRC Norco Wells 2A and 3A varied considerably throughout the period of record (1994 - 1998). Due to the increase in pumping rates, the pumping water levels were lowered and sometimes approached the bottom of the screen section (see sketch at right).

The following table summarizes production and pumping levels for the period Spring 1994 (beginning of record) to July 1998. As can be seen, pumping water levels have increased considerably over the years for comparable production rates.

Well Efficiency Decreasing -------->

| Wells | Spring 1994 | | Summer 1996 | | June 1997 | | July 1998 | |
|---|---|---|---|---|---|---|---|---|
| | Pumping Level, ft | Discharge Rate, gpm | Pumping Level, ft | Discharge Rate, gpm | Pumping Level, ft | Discharge Rate, gpm | Pumping Level, ft | Discharge Rate, gpm |
| CRC-2A | 83 | 300 | 76 | 121 | 133 | 281 | 131 | 239 |
| CRC-3A | 74 | 300 | 78 | 125 | 123 | 249 | 134 | 235 |

Based on ground water level data from nearby observation wells (CRC-Wells 2, 3, and the Navy Well), static water levels in the area fluctuated only 10 feet between 1994 and 1998 and are not responsible for the large increase in drawdowns observed in Wells 2A and 3A the last several years.

Both CRC Norco Wells 2A and 3A were pumped at 475 gpm with a specific capacity of over 25 gpm/ft when they were first constructed in 1988. However, recent data (4-Jun-97), shows that the specific capacity for both wells was below 5 gpm/ft. This clearly indicates that the well screen slots are probably clogged resulting in higher drawdowns and lower well efficiencies. Mechanical and/or chemical well rehabilitation is needed for both CRC-Wells 2A and 3A to try and restore efficiencies. Rehabilitation of production wells is typically part of a routine maintenance program.

This increase in pumping rates and lowering of pumping water levels directly correlates with an increase in nitrate concentration in both wells.

In all probability, if the current pumping and drawdown conditions remain unchanged in the CRC Norco area, nitrate concentrations in the Shallow Aquifer are expected to increase continuously in the future. Based on general trends of nitrate in the area, it is expected that nitrate concentrations in the CRC Norco wellfields may approach values of approximately 60 mg/L and possibly higher.

Both well rehabilitation and ground water management programs would by themselves lower nitrate levels. The well rehabilitation efforts would restore well efficiencies resulting in higher pumping levels which are less prone to nitrate entering the well screen. Proper ground water management (i.e. regulation of production rates in the wells) would also result in higher pumping levels and reduced nitrate concentrations.

## H. WATER BALANCE AND SALT BALANCE

Estimation of water balance terms were made for the CRC Norco area for the period from 1994 through 1996 based on the recent production, water level, and precipitation

data. The area encompasses approximately 7,200 acres and is bordered by a drainage boundary to the northeast, Santa Ana River to the northwest, and Temescal Creek to the south.

The water budget for the CRC Norco area for 1994 to 1996 is summarized in Table VI-1 below:

Table VI-1
Water Balance for CRC Norco Area
Average Conditions for 1994 to 1996
(Values in acre-ft/yr)

| | | |
|---|---|---|
| Inflow | Total Precipitation (Qpre) | 8,000 |
| | Underflow (Qui) | 9,500 |
| | Recharge from Return Flow (Qrrf) | 1,000 |
| | **Subtotal** | **18,500** |
| Outflow | Evapotranspiration (Qet) | 6,900 |
| | Surface Runoff (Qsr) | 800 |
| | Underflow (Quo) | 6,200 |
| | Ground Water Pumping (Qgwp) | 5,100 |
| | **Subtotal** | 19,000 |
| **Change In Ground Water Storage ($\Delta v$)** | | **-500** |

The change in ground water storage was estimated using the equation of hydrologic equilibrium, and was calculated to be 500 acre-ft/yr between 1994 and 1996.

A salt balance analysis was performed in the same area. Solution of a salt balance is closely related to the solution of the hydrologic balance equation. In this report, salt refers to the nitrate and total dissolved solids (TDS) in the ground water. Results show that the nitrate and TDS increase in the system was estimated to be 31 and 82 tons/yr, respectively. Ground water storage in the CRC Norco area is approximately 389,000 acre-ft. The increase in nitrate concentration was estimated to be 0.06 mg/L per year (31 x 735.8 / 389,000 = 0.06) and the increase in TDS concentration was approximately 0.16 mg/L per year (82 x 735.8 / 389,000 = 0.16).

It should be noted that both TDS and nitrate can vary significantly within the study area (i.e. "pockets" of high or low salt concentrations are common). The above results

reflect the estimated concentration over the study area. Local conditions may vary depending upon the existence of such "pockets."

## I. MAXIMUM PERENNIAL YIELD

Both the Equation of Hydrologic Equilibrium Method and the Hill Method were used to estimate the Maximum Perennial Yield for the CRC Norco area. The estimate of ground water Maximum Perennial Yield in the CRC Norco area was subject to the following assumptions:

- Ground water recharge from all sources could be utilized; and
- Ground water would not be produced from a continually declining aquifer.

The Maximum Perennial Yield of the CRC Norco area calculated using the Equation of Hydrologic Equilibrium is approximately 4,600 acre-ft/year.

The Hill Method is a simplification of the Equation of Hydrologic Equilibrium. By plotting annual changes in ground water elevations against annual ground water pumping, Hill measured the Safe Yield corresponding to a zero change in water level elevation. The Maximum Perennial Yield calculated using the Hill Method is approximately 4,500 acre-ft/year.

The Maximum Perennial Yield estimates are based on selected ground water level, production and precipitation data for the period of 1994 to 1996.

## J. RECOMMENDED WELL SITES

Two potential well sites were chosen based on the geohydrology of the study area, saturated thickness, production potential and proximity to the wellfield in the area. Site A is located southwest of the intersection between River Road and Bluff Street, and Site B is near Corydon Street south of River Road. A well completed at either of these sites is expected to supply ground water at a capacity of over 1,000 gpm. Interference from either of the proposed sites to existing nearby wells was evaluated using a ground water model developed during this study. A location map for these proposed wells is included in the Appendix of the geohydrological investigation report. A more detailed discussion of the recommended well sites is given in Section V of this report entitled "Water Supply Analysis."

## K. MODEL CALIBRATION

The CRC Norco ground water model developed for this area covers approximately 34 square miles with a two layer variable-grid network consisting of 120 nodes in the north-to-south direction (i-direction) and 120 nodes in the west-to-east direction (j direction) for a total of 28,800 nodes. The smallest node represents an area 200 ft (north-south) by 200 ft (east-west). Nodes near the edges of the model are of variable size, ranging up to 300 ft by 1,000 ft. The model area is bounded by a head-dependent or open (active) boundary with the exception of the Norco Hills and hills in the eastern portion of the model area. These areas represent impermeable boundaries and were assigned as no flow or inactive cells in the model.

The model calibration was run using nine transient stress periods (1950-1976, 1977-1981, 1981-1986, 1986-1991, 1992, 1993, 1994, 1995, and 1996) for a total period of 47 years. The period selected for the model calibration was based on the availability of precipitation data and production data.

To evaluate model calibration, model-generated water levels in 1996 were compared to the measured water levels in 15 wells. Results show a very good match between model-generated and measured water levels. In the CRC well field, excluding CRC Norco Well 4, residual water levels (model-generated less measured) ranged from -2 ft (model underestimated) to 9 ft (model overestimated). The model-generated ground water flow directions for each aquifer were very similar to the current conditions and were considered reasonable. Water balance analysis were also done to assess model calibration. The discrepance in the water balance is 0.01% for the model calibration indicating an accurate numerical solution.

## L. EVALUATION OF GROUND WATER OPERATIONAL SCENARIOS

The calibrated CRC Norco model was used to evaluate impacts due to pumping from proposed well sites A and B. Results show that pumping 500 gpm (807 acre-ft/yr) of water from proposed well Site A could cause a 1 to 3 ft drawdown in the Shallow Aquifer and a 5 to 10 ft drawdown in the Deep Aquifer in the vicinity of the existing CRC well field. Pumping 500 gpm (807 acre-ft/yr) of water from the well at Site B would cause similar drawdowns.