**PRE-FINAL**

# INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN

for

# PRESIDIO OF MONTEREY, ORD MILITARY COMMUNITY, SATELLITE COMMUNICATION STATION AT CAMP ROBERTS, AND BENICIA ARMY CEMETERY


*Prepared for:*
Department of Army
U.S. Army Garrison Presidio of Monterey
Monterey, CA

*Prepared by:*
HydroPlan, LLC
*and*
Marstel-Day, LLC

September 2016

*This page intentionally left blank.*

**PRE-FINAL**

# INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN

for

# PRESIDIO OF MONTEREY, ORD MILITARY COMMUNITY, SATELLITE COMMUNICATION STATION AT CAMP ROBERTS, AND BENICIA ARMY CEMETERY

*Prepared for:*

Department of Army

U.S. Army Garrison Presidio of Monterey

Monterey, CA

*Prepared by:*

HydroPlan, LLC

*and*

Marstel-Day, LLC

September 2016

*This page intentionally left blank.*

# INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN
# ACCEPTANCE PAGE

This Integrated Natural Resources Management Plan (INRMP) meets the requirements for INRMPs listed in the *Sikes Act* (16 U.S.C. 670a et seq.), Army Regulation (AR) 200-1, and DODI 4715.03. It has set adequate guidelines for conserving and protecting the natural resources at the U.S. Army Garrison Presidio of Monterey (USAG POM) installation sites: Presidio of Monterey (POM), Ord Military Community (OMC), the Satellite Communication Station (SATCOM) at Camp Roberts, and the Benicia Army Cemetery.

To the extent that resources permit, the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), and the U.S. Army do hereby agree to enter into a cooperative management program for the conservation and protection of natural resources present at the USAG POM sites. Signatures below represent approval and acceptance of this INRMP update.

**Approving Officials:**

_____ _____

Lawrence T. Brown
Colonel, U.S. Army
Commander
U.S. Army Garrison, Presidio of Monterey

Date

_____ _____

Ren Lohoefener
Regional Director, Region 8
U.S. Fish and Wildlife Service

Date

_____ _____

Julie Vance
Regional Manager, Region 4
California Department of Fish and Wildlife

Date

## INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN REVIEW

This INRMP has been reviewed by the following U.S. Army Garrison, Presidio of Monterey personnel.

**Reviewed By:**

| | |
|---|---|
| _____ | _____ |
| James M. Willison<br>Director, Public Works<br>U.S. Army Garrison, Presidio of Monterey | Date |
| _____ | _____ |
| Lenore Grover-Bullington<br>Environmental Chief, Public Works<br>U.S. Army Garrison, Presidio of Monterey | Date |
| _____ | _____ |
| Leanne Obra<br>Natural Resources Specialist, Public Works<br>U.S. Army Garrison, Presidio of Monterey | Date |

# List of Preparers

| HydroPlan, LLC | Title |
|---|---|
| Russell Reed | Program Manager |
| Paula Gagnon | Project Manager |
| Elmar Von Kurzbach | NEPA Quality Assurance/Quality Control |
| Eli Brossell | Project Manger |
| **Marstel Day, LLC** | **Title** |
| Jason See | Program Manager |
| Erika Sawyer | TO Manager |
| Jennifer Allen | Project Manager |
| Alicia Bihler | Analyst |
| Elizabeth Pratt | Analyst |
| Caitlin Dufraine | GIS Analyst |
| Shane Downing | Analyst |
| Meera Veelu | Researcher |
| Jessica Owen | GIS Technician |
| Gretchen Gorecki | Analyst |
| John Cannon | Analyst |
| **USAG POM** | **Title** |
| Lenore Grover-Bullington | Chief Environmental Division |
| Joelle Verhagen | NEPA Specialist |
| Lorrie Madison | Natural Resources Specialist |
| Leanne Obra | Natural Resources Specialist |
| **USACE** | **Title** |
| Shellie Sullo | Social Science Study Manager/Project Manager |

\

*This page intentionally left blank.*

# EXECUTIVE SUMMARY

This Integrated Natural Resource Management Plan (INRMP) has been prepared to guide natural resources management at the installation's four sites: the Presidio of Monterey (POM), Ord Military Community (OMC), the Satellite Communication Station at Camp Roberts (SATCOM), and the Benicia Army Cemetery. This INRMP will be implemented in accordance with the *Sikes Act Improvement Act of 1997* (*Sikes Act*) as amended through 2003; Department of Defense Instruction (DODI) 4715.03 (*Natural Resources Conservation Program*); Department of Defense Manual (DODM) 4715.03 (*INRMP Implementation Manual*); and AR 200-1 (*Environmental Protection and Enhancement*).

The *Sikes Act* requires the development and implementation of an INRMP for military installations. INRMPs, prepared in coorperation with U.S. Fish and Wildlife Service (USFWS) and state fish and wildlife agencies, balance the conservation of natural resources with military operations and training to maximize conservation without compromising the military mission. The purpose of this INRMP is to support the military mission at USAG POM from 2016 until the annual review per DODM 4715.03, enclosure 3(3)(b), is completed. Per the *Sikes Act*, this INRMP will be reviewed every five years with the USFWS and the California Department of Fish and Wildlife (CDFW) to determine whether this plan is being implemented to meet the requirements of the *Sikes Act* and contributing to the conservation of natural resources on USAG POM sites.

This INRMP provides goals to guide natural resource programs to ensure consistency with the military mission, while protecting and enhancing natural resources; and serves as a reference manual for understanding the management of USAG POM natural resources.

This plan is organized into the following chapters:

**Chapter 1 – Overview**

Describes the legal requirements and authorities applicable to the plan. Identifies INRMP goals and objectives and how they are assimilated into other installation programs. Includes a brief discussion of stakeholder's responsible for INRMP implementation and how this plan is integrated with other relevant resource management plans.

**Chapter 2 – Current Conditions and Use**

Provides a general description of the installation's current land use, military mission and operations, and the existing physical and natural conditions of each site. Includes information on climate, geology, topography, soils, water resources, and flora and fauna.

**Chapter 3 – Natural Resources Management and Mission Sustainability**

Summarizes how the military mission is integrated with sustainable land use. Outlines ecosystem services and climate change trends that may impact natural resources. Identifies how USAG POM implements its *National Environmental Policy Act of 1969* (NEPA) and *Endangered Species Act* (ESA) requirements. Lists current and potential agencies and organizations that can be utilized for beneficial partnerships and collaborative resource management planning. Summarizes public access and outreach on

USAG POM sites and describes how the California State Wildlife Action Plan (SWAP) has been integrated into this INRMP.

**Chapter 4 – Natural Resources Program Overview**

Provides a general overview of how natural resources program components (i.e., water resources, vegetation, forests, wildland fire, fish and wildlife, threatened and endangered species [TES]) are managed. Includes a list of specific conservation measures and projects for each program component.

**Chapter 5 – References**

Provides a list of references used in the development of this INRMP.

**Appendix A – List of Acronyms and Abbreviations**

Defines all acronyms and abbreviations used in this INRMP.

**Appendix B – USAG POM Project Implementation Schedule Table**

Summarizes all funding-dependent conservation projects presented in this INRMP including the title, description, USAG POM site, legal drivers, funding priority, and scheduled/target completion date.

**Appendix C – Flora Species Known to Occur on USAG POM Sites**

Lists all plant species known to occur or that have the potential to occur at each USAG POM site.

**Appendix D – Fauna Species Known to Occur on USAG POM Sites**

Lists mammal, bird, and reptile species known to occur or that have the potential to occur at each USAG POM site.

**Appendix E – Soil Erosion and Sediment Control Component Plan (SESCCP) for USAG POM Sites**

Identifies how the installation can minimize soil erosion for long-term sustainable conditions and provides site-specific Best Management Practices (BMP) to reduce soil erosion and runoff.

**Appendix F – Invasive Species Management Component Plan for USAG POM Sites**

Lists invasive plant species on the installation and includes tools, information, and BMPs for management and control.

**Appendix G – Endangered Species Management Component Plan (ESMCP) for USAG POM Sites**

Lists special status species that occur on the installation and includes tools, information, and BMPs for management.

**Appendix H – Huckleberry Hill Forest Management Plan**

Identifies the City of Monterey's objectives for managing the 81 acre, native Monterey pine forest at Huckleberry Hill Nature Preserve.

**Appendix I – Federal and State Mutual Agreement Letters**

Includes copies of INRMP concurrence letters from the USFWS and CDFW.

**Appendix J – INRMP Approved Plant Species List for Landscaping and Habitat Enhancement Projects**

Lists native plant species suitable for landscaping at USAG POM sites.

**Appendix K – INRMP Benefits for Endangered Species, Critical Habitat, and Migratory Birds**

Provides justification on how this INRMP is in compliance with ESA and the *Migratory Bird Treaty Act of 1918* (MBTA), how it benefits species regulated under these laws, and why the POM, OMC, SATCOM, and the Benicia Army Cemetery should be excluded from critical habitat designation.

**Appendix L – Best Management Practices (BMP) for Maintaining Improved Grounds**

Lists BMPs for landscaping on the installation including mowing, fertilizing, irrigating, and pruning.

**Appendix M – Best Management Practices (BMP) for Landscaping**

Lists BMPs for landscaping areas not previously landscaped (i.e., using native plants to conserve water and enhance native habitats).

**Appendix N – Summary of Protection and Mitigation Measures During Construction Activities.**

Lists protection and mitigation measures for use during construction activities, including invasive species management, tree protection procedures, and soil erosion and sediment control measures.

**Appendix O – Examples of Environmental Outreach and Education Materials.**

Provides examples of educational materials distributed by the installation to personnel and their dependents.

*This page intentionally left blank.*

# TABLE OF CONTENTS

## TABLE OF APPENDICES



## TABLE OF TABLES

## TABLE OF CONTENTS

Presidio of Monterey, Ord Military Community, Satellite Communication Station at Camp Roberts, and Benicia Army Cemetery

## TABLE OF FIGURES

# 1.0 OVERVIEW

## 1.1 PURPOSE

The purpose of this Integrated Natural Resources Management Plan (INRMP) is to set appropriate guidelines for conserving and protecting natural resources at the United States Army Garrison Presidio of Monterey (USAG POM) installation sites: Presidio of Monterey (POM), Ord Military Community (OMC), the Satellite Communication Station at Camp Roberts (SATCOM), and the Benicia Army Cemetery.

This management plan addresses stewardship of natural resources on an ecosystem-based scale and provides a means for the Army to protect biodiversity and provide high-quality military readiness.

All requirements set forth in this INRMP requiring the expenditure of the USAG POM funds are expressly subject to the availability of appropriations and the requirements of the *Anti-Deficiency Act* (31 U.S.C. Section 1341). No obligation undertaken by USAG POM under the terms of this INRMP will require, or be interpreted to require, a commitment to expend funds not obligated for a particular purpose.

## 1.2 AUTHORITY AND LEGAL REQUIREMENTS

Military installations are required to have a current INRMP according to the following regulations and directives:

- *Sikes Act Improvement Act* (16 USC §670a et seq) of 1997 as amended through 2003
- 32 Code of Federal Regulations (CFR) 190, Appendix-Integrated Natural Resources Management
- AR 200-1, Environmental Protection and Enhancement
- Office of the Deputy Under Secretary of Defense, Updated Guidance for the Implementation of the *Sikes Act*, 5 November 2004
- DODI 4715.03, Natural Resources Conservation Program
- Environmental Effects of Army Actions, 32 CFR 651
- Memorandum, Deputy Assistant Secretary of the Army for Environment, Safety and Occupational Health (DASA-ESOH), 18 September 2006, INRMP Template

USAG POM is federally owned property and must comply with all environmental laws, mandates, and regulations concerning land and natural resources management. In most cases it is necessary to document compliance. The Natural Resources Program (NRP), along with other elements from the Environmental Division of the Department of Public Works (DPW-E), oversees compliance with the following laws and regulations:

- *Clean Water Act* (CWA)
- *Migratory Bird Treaty Act* (MBTA)
- *Bald and Golden Eagle Protection Act*

- *Coastal Zone Management Act of 1972* (CZMA)
- *National Environmental Policy Act* (NEPA)
- *Endangered Species Act* (ESA)
- *Energy Independence and Security Act* (EISA) 42 U.S.C. § 17094
- *Federal Noxious Weed Act* as amended, 1990
- *Clean Air Act*
- Department of Defense (DOD) Directives 4700.4 and 4150.07
- Department of Army regulations such as AR 200-1, 200-2, 350-4
- *National Historic Preservation Act of 1966* (NHPA)
- *Archaeological Resources Protection Act*
- *Native American Graves Protection and Repatriation Act*
- *American Indian Religious Freedom Act*
- *Fish and Wildlife Conservation Act*
- *Sikes Act*
- Executive Order (EO) 13007, Indian Sacred Sites
- EO 13112, Invasive Species
- EO 13352, Facilitation of Cooperative Conservation
- 32 CFR Part 651, Environmental Analysis of Army Actions
- 36 CFR 800, Protection of Historic Properties
- 36 CFR 79, Curation of Federally-Owned and Administered Archaeological Collections

## 1.3 STEWARDSHIP AND COMPLIANCE

Stewardship is the responsibility to inventory, manage, conserve, protect, and enhance the natural resources entrusted to one's care in a way that respects the intrinsic value of those resources and the needs of present and future generations. Installations are required to recognize and balance environmental stewardship with mission readiness in retaining control and use of Army land for the purpose of maintaining the military mission.

Conscious and active concern for the inherent value of natural resources must be given in all Army plans, actions, and programs. According to AR 200-1, stewardship projects and programs to be considered will be planned, initiated, and carried out in such a way as to prevent, minimize, or mitigate degradation of environment or endangerment of human health and safety (U.S. Army 2007). Stewardship projects, including education and public awareness, biological surveys, habitat management for non-listed species, and volunteer and partnership programs are outlined in this INRMP. Stewardship projects can occur on an indefinite timescale; therefore, these projects are prioritized after compliance projects.

"Compliance" in terms of an INRMP refers to actions that must occur on an installation for it to adhere to the statutes and regulations that are applicable to natural resource management. An installation is legally mandated or obligated to conduct these actions to meet current or recurring natural resources conservation management requirements, and

*it must* obtain funding for these actions. Table 1-1 shows some of the installations current compliance requirements.

***Table 1-1: USAG POM Consultation for Compliance with Natural Resource Management Requirements***

| Title | Consultation | Year |
|---|---|---|
| **POM** | | |
| POM Real Property Master Plan | Formal | 2013 |
| Huckleberry Waterline Restoration Project | Informal | 2013 |
| **OMC** | | |
| Closure and Reuse of Fort Ord | Formal | 1999 |
| **SATCOM** | | |
| SATCOM Environmental Assessment of Multiple Construction Projects | Informal | 2015 |
| Perimeter Fence Realignment and Anti-Terrorism Clearance at SATCOM | Informal | 2013 |
| Regional Hub Node Project at SATCOM | Informal | 2011 |
| Long-Range Program of the Area Development Plan | Informal | 2005 |
| Normal Operations and Construction Activities | Formal | 1996 |

## 1.4 SCOPE

The scope of this INRMP comprises the lands of the POM, OMC, SATCOM, and the Benicia Army Cemetery. Other site locations, such as Sharpe Army Depot and Riverbank Army Ammunition Plant are not addressed in this update.

Prior to this INRMP update, a 2001 and 2008 INRMP addressed the natural resource management for POM and OMC. During the preparation of the 2001 INRMP the Army was in the process of converting portions of Fort Ord (land referred to as "the former Fort Ord") to civilian reuse and realigning the remaining property for continuing Army use (land referred to as the OMC). The scope of the 2001 INRMP only consisted of the POM and OMC lands that were being retained by the Army. In addition, the 2001 INRMP utilized information collected during Planning Level Surveys (PLS) conducted from 1990–2000. The 2008 INRMP updated the information in the 2001 INRMP by including data and information collected in PLS conducted between 2001 and 2006. This INRMP update includes data and information collected from PLS and projects conducted from 2007–2015 and addresses natural resource management for SATCOM and the Benicia Army Cemetery, including documents and projects prior to 2007. See Table 1-2, which shows key references and associated data used for this INRMP update. A full list of references is included in Chapter 5.0.

Sharp Army Depot is located in Lathrop, California, approximately 8 miles south of Stockton and approximately 60 miles east of San Francisco. The Army has determined that the property is excess to the Army mission and is disposing of the property through the General Services Administration. The USAG POM is currently the caretaker of the property. The only notable natural resource is the burrowing owl, a state candidate

species. An existing 1997 Burrowing Owl Management Plan describes specific land management requirements for conservation of this species. The plan is currently being updated. Therefore, this location's natural resources will be addressed in this updated Burrowing Owl Management Plan, and will not be addressed in this INRMP update (Grover, personal communication 2016).

Riverbank Army Ammunition Plant is located just outside Riverbank, California, in Stanislaus County. In 2005, the Base Realignment and Closure (BRAC) commission recommended that this base be closed, and its functions transferred to Rock Island Arsenal. The Riverbank Local Redevelopment Authority assumed responsibility for the site in 2010. All environmental compliance functions are the responsibility of the U.S. Army BRAC Office. Therefore, Riverbank Army Ammunition Plant is not covered in this INRMP update (Grover, personal communication 2016).

***Table 1-2: Key References used to Update the POM INRMP Update***

| Document Title | Site (s) | Year |
|---|---|---|
| Field Memorandum of Results for the Presidio of Monterey/Ord Military Community Planning Level Surveys, Monterey County, California | POM, OMC | 2009 |
| Programmatic Biological Opinion for Multiple Activities at Camp Roberts, San Luis Obispo and Monterey Counties, California (1-8-08-F-24) | SATCOM | 2009 |
| Final Environmental Assessment and Finding of No Significant Impact, SATCOM Regional Hub Node Project, Camp Roberts, California | SATCOM | 2010 |
| POM Hooker's Manzanita Survey Report | POM | 2011 |
| Biological Opinion for the Former Fort Ord Vegetation Clearance Activities and Transfer of Parcels (E29b.3.1) | OMC | 2011 |
| Integrated Wildland Fire Management Plan (IWFMP) | POM | 2012 |
| Presidio of Monterey Invasive Plant Survey Report | POM | 2012 |
| Camp Roberts Training Site Integrated Natural Resources Management Plan Update, Planning Period Fiscal Year 2012-2017 | SATCOM | 2012 |
| Biological Assessment for the Presidio of Monterey Real Property Master Plan (00750.08) | POM | 2013 |
| Draft Vernal Pool Fairy Shrimp Habitat Survey Report for the Satellite Communications Facility, California | SATCOM | 2013 |
| Formal Consultation for the Presidio of Monterey Real Property Master Plan, Monterey, Monterey County, California (8-8-13-F-29) | POM | 2013 |
| Final Biological Assessment for the Presidio of Monterey Real Property Master Plan | POM | 2013 |
| Biological Opinion for the Presidio of Monterey Real Property Master Plan | POM | 2013 |
| Final Supplemental Environmental Assessment for Anti-Terrorism Force Protection Measures, SATCOM Camp Roberts, San Luis Obispo County, California | SATCOM | 2013 |
| Finding of No Significant Impact and the Environmental Assessment for the Huckleberry Hill Waterline Restoration Project, DRAFT | POM | 2013 |
| Final Environmental Impact Statement, Real Property Master Plan, Presidio of Monterey, California | POM | 2013 |
| Yadon's Piperia Survey Report, Presidio of Monterey, California | POM | 2014 |
| Satellite Communications Station Planning-Level Surveys Report, Draft | SATCOM | 2014 |
| Draft Environmental Assessment for Multiple Construction Projects, SATCOM, Camp Roberts, San Luis Obispo, California | SATCOM | 2015 |

## 1.5 GOALS AND OBJECTIVES

In accordance with the required elements defined in the *Sikes Act*, this INRMP shall, to the extent appropriate and applicable, provide for

- fish and wildlife management, land management, forest management, and fish-and-wildlife-oriented recreation;
- fish and wildlife habitat enhancement;
- integration of, and consistency among, the various activities conducted under the plan;
- establishment of specific natural resources management goals and objectives;
- sustainable use by the public of natural resources, to the extent that such use is not inconsistent with the needs of fish and wildlife resources;
- public access to the installation that is necessary or appropriate for the use, as described in the *Sikes Act*, subject to requirements necessary to ensure safety and military security;
- enforcement of applicable natural resource laws; and
- no net loss in the capability of installation lands to support the military mission and other activities as the Secretary of the military department determines appropriate.

The goals and objectives in Table 1-3 have been defined to address these INRMP-required elements and the specific needs of USAG POM sites.

*This page intentionally left blank.*

***Table 1-3: INRMP Goals and Objectives for USAG POM Sites***

| # | Goal / Objective |
|---|---|
| **Goal 1** | **Ensure overall protection, proliferation, and success of special status species, including threatened, endangered, at-risk species, federal trust species, and other species of interest.** |
| *Objective* 1.1 | Identify, monitor, and manage special status species in terrestrial and aquatic environments. |
| *Objective* 1.2 | Avoid, minimize, or mitigate the impacts on special status species from proposed actions (i.e., construction, training, maintenance, etc.) |
| *Objective* 1.3 | As feasible, identify, monitor, and manage migratory bird populations, bat populations, and other federal trust species to support regional population sustainability. |
| **Goal 2** | **Conserve soil and water resources to sustain and enhance water quality of nearby regional and installation water bodies and aquatic environments.** |
| *Objective* 2.1 | Avoid, minimize, or mitigate soil erosion and stormwater runoff by applying BMPs outlined in the Sediment Erosion and Sediment Control Component Plan (Appendix E). |
| *Objective* 2.2 | Avoid, minimize, or mitigate impacts on aquatic environments (i.e., intermittent streams and vernal pools) from site construction activities and long-term maintenance of developed areas. |
| *Objective* 2.3 | Promote and implement alternative stormwater management practices for achieving pre-development natural hydrology, to the extent practical, including low-impact development and other non-structural stormwater controls to prevent and minimize adverse impacts of stormwater runoff. |
| **Goal 3** | **Assess, sustain, and restore the ecological integrity of natural communities and native species to support the conservation of installation and regional native biodiversity.** |
| *Objective* 3.1 | Preserve and restore natural habitat corridors to support migratory and dispersal wildlife patterns and genetic exchange between wildlife and plant populations. |
| *Objective* 3.2 | Preserve, restore, and enhance natural habitats including habitat for pollinator species. |
| *Objective* 3.3 | Avoid, minimize, or mitigate impacts on natural habitats and native species from site project activities. |
| *Objective* 3.4 | Discourage practices that promote the establishment of non-native species and invasive species, and the subsequent displacement of native species. |
| *Objective* 3.5 | Follow an Integrated Pest Management Plan (IPMP) to prevent, detect, eradicate, or manage invasive and nuisance pest species, and species that pose a potential threat to human health and safety. |
| **Goal 4** | **Manage and enhance developed and landscaped areas to benefit native biodiversity, maintain vegetation of historical significance, and support water conservation.** |
| *Objective* 4.1 | Maintain and increase urban tree canopy, with an emphasis on preserving native trees and trees of historic significance. |
| *Objective* 4.2 | Adhere to tree protection procedures during site construction activities, post-construction landscaping, and long-term maintenance of infrastructure and landscaping. |
| *Objective* 4.3 | Adhere to the installation's tree mitigation guidelines that includes measures such as replanting ratios to mitigate the removal of native trees. |

| # | Goal / Objective |
|---|---|
| *Objective* 4.4 | Use site-specific native trees, shrubs, and herbaceous plants, with an emphasis on drought-tolerant species, in landscape designs. |
| **Goal 5** | **Provide for long-term sustainability of natural resources using the principles of ecosystem-based management, adaptive management, and the integration of INRMP elements.** |
| *Objective* 5.1 | Assess climate change vulnerability and identify adaptation strategies. |
| *Objective* 5.2 | Employ an adaptive management approach to assess efficacy of the INRMP. |
| *Objective* 5.3 | Ensure consideration of natural resource values in the development of plans, projects, and programs that affect those resources. |
| *Objective* 5.4 | Provide adequate staffing, equipment, technology, and funding for the Natural Resources Program. |
| *Objective* 5.5 | Enable regular training opportunities for natural resources staff. |
| **Goal 6** | **Promote environmental awareness for personnel and their dependents by providing an aesthetically pleasing natural environment on the installation, environmental education and outreach activities, and natural resources-related recreation opportunities.** |
| *Objective* 6.1 | Educate installation employees, tenants, residents, and contractors about natural resource topics, challenges, and best management practices. |
| *Objective* 6.2 | Promote natural resources-related recreation opportunities for personnel, their dependents, tenants, and contractors. |
| *Objective* 6.3 | Retain an aesthetically pleasing natural landscaped environment to achieve maximum physical, cultural, and spiritual benefits for users within the principles of multiple land uses and consistent with the military mission. |
| **Goal 7** | **Build and maintain effective partnerships with external stakeholders.** |
| *Objective* 7.1 | Maintain interagency cooperation with the USFWS, the CDFW, the City of Monterey, and other stakeholders. |
| *Objective* 7.2 | Develop and maintain effective partnerships with federal regulatory agencies, local governments, emergency response agencies, regional natural resource management agencies, non-governmental organizations (NGOs), universities, and the general public. |

1

## 1.6 RESPONSIBILITIES

Successful implementation of this INRMP requires the support of internal stakeholders and external stakeholders (i.e., Headquarters Installation Command, the USFWS, CDFW, City of Monterey, City of Seaside, U.S. Army Corps of Engineers [USACE], and contractors). The following section discusses the stakeholders' responsibilities for INRMP implementation.

### 1.6.1 Internal Stakeholders

**Garrison Commander**

The Garrison Commander of USAG POM is ultimately responsible for implementation of this INRMP. The Commander is responsible for ensuring that the installation has the funding, staffing, and other resources necessary to effectively manage natural resources. The proponent for developing and implementing the INRMP is the Directorate of Public Works-Environmental Divison (DPW-E).

**Directorate of Public Works (DPW)**

The Directorate of Public Works (DPW) is responsible for managing USAG POM facilities and real property. DPW is comprised of the following six divisions: Environmental, Operations and Maintenance (O&M), Engineering, Master Planning, Housing, and Business Operations and Integration. DPW-E is responsible for ensuring that installation activities are compliant with federal, state, and DoD laws, policies, and guidance, relating to air, water, pollution prevention, cultural, and natural resources. O&M is responsible for maintenance of buildings, structures, grounds, and utilities. The Engineering Division provides engineering support and construction project management. The Master Planning Division is responsible for all facility planning and management on the POM, OMC, and SATCOM. The Housing Division provides relocation services to service members and their families, retirees and provides oversight of the management of military housing areas under the Residential Communities Initiative (RCI) program.

**Family, Morale, Welfare, and Recreation (FMWR)**

FMWR provides morale, welfare, and recreational services, programs, activities, and facilities to meet the needs of military personnel, their families, and authorized DOD civilians.

**Directorate of Emergency Services**

The Directorate of Emergency Services (DES) provides public safety and security services, law enforcement, criminal investigation, fire services, crime prevention, and installation intelligence for USAG POM sites. DES can be requested to provide conservation law enforcement support.

**Directorate of Plans, Training, Mobilization & Security (DPTMS)**

The DPTMS provides oversight on disaster preparedness, contingency planning, operational coordination and support, training area and facility scheduling, deployment coordination, antiterrorism, force protection, and security services.

**Public Affairs Office**

The Public Affairs Office (PAO) is responsible for formulating, implementing, and disseminating all command information to the public, including information about natural resources management. The PAO, through DPW-E, is responsible for providing timely and accurate information about this INRMP and related activities to the public, as the mission will allow.

**Staff Judge Advocate**

The staff judge advocate provides legal advice to the command in all areas of law, including compliance with applicable environmental and natural resource management laws and regulations. The Staff Judge Advocate (SJA) provides advice about the statutory and policy framework in which this INRMP is implemented. It is the SJA's responsibility to ensure that all violations of federal, state, and local fish and wildlife regulations are investigated and prosecuted, as appropriate. The SJA is also involved in enforcement actions, legal interpretation, development of Memoranda of Understandings (MOU) and Cooperative Agreements (CA).

**Resource Management Office (RMO)**

The Resource Management Office (RMO) manages financial and manpower resources by ensuring that they are protected, accounted for, and expended in compliance with statutory, regulatory, and policy requirements. The Budget Branch under the RMO provides contract management support for INRMP projects.

### 1.6.1.1 Other Installation Commands and Tenant Organizations

**Defense Language Institute Foreign Language Center**

The POM's primary tenant is the Defense Language Institute Foreign Language Center (DLIFLC), the largest foreign language training facility in the western world. The DLIFC's mission is to provide foreign language education, training, evaluation, and sustainment for DOD personnel to ensure the success of the Defense Foreign Language Program and enhance national security. As part of the U.S. Army Training and Doctrine Command (TRADOC), DLIFLC provides resident instruction in nearly two dozen languages seven hours per day, five days a week. Language courses last between 26 and 64 weeks. Currently, DLIFLC facilities at the POM accommodate approximately 3,500 soldiers, marines, sailors, and airmen, as well as select members of the U.S. Coast Guard.

### 1.6.1.2 Other Commands at the POM

A number of other commands at the POM assist service members while they attend the DLIFLC. A brief description of each command and its mission follows (U.S. Army 1995b).

**U.S. Army, 229th Military Intelligence Battalion (DLIFLC)**

The mission of the battalion is to support the academic mission of the DLIFLC, to execute common military training, to develop 'Soldier Linguists' under TRADOC, and to provide operational, security, administrative, and logistical support to assigned Army service members. The battalion, providing language education to 1,200 soldiers, is made

up of six companies, Alpha, Bravo, Charlie, Delta, Echo, and Foxtrot (DLIFLC 2015, USAG POM 2014b).

**The Marine Corps Detachment**

The mission of the Marine Corps Detachment at the DLIFLC is to provide operational, administrative, and logistical support for approximately 700 Marine Corps personnel attending the DLIFLC and the Naval Postgraduate School. Its mission is also to ensure that all matters pertaining to the Marine Corps and its personnel are considered by the DLIFLC (MARDET POM 2014).

**U.S. Air Force 517th Training Group (517th TRG)**

The mission of the 517th Training Group is to train airmen as linguists; to prepare Air Force students at the DLIFLC for academic and follow-on military training success; to provide students with an Air Force orientation, motivation, and physical training; and to augment DLIFLC language training with remedial and supplemental student assistance. The 517th TRG, which trains 1,200 airmen, includes the 311th Training Squadron and the 314th Training Squadron, and is under the 17th Training Wing at Goodfellow Air Force Base (DLIFLC 2015, USAG POM 2012a).

**The Center for Information Dominance Unit (CIDU)**

The mission of the CIDU is to act as an advocate and supporter for all Navy personnel attending language training at the DLIFLC, and to develop fleet-ready sailors with foreign language (CIDU 2013). The CIDU, occupying five barracks buildings and one administrative building, consists of 45 staff supporting 700-800 students (DLIFLC 2015).

### 1.6.2 External Stakeholders

**Headquarters, Installation Management Command (IMCOM)**

The next higher headquarters for the USAG POM is IMCOM, located at Fort Sam Houston, San Antonio, Texas. IMCOM has a requirement under AR 200-1 to review and concur with this INRMP.

**Army Environmental Command (AEC)**

The AEC, located in San Antonio, Texas, provides oversight, centralized management, and execution of Army environmental programs and projects. With regard to natural resources management, the AEC has specialized support capabilities in the areas of NEPA, TES, migratory birds, aquatic environments, forestry, cultural resources, pest management, environmental compliance, the Army Compatible Use Buffer (ACUB) Program, and related areas.

**U.S. Army Corps of Engineers (USACE)**

The USACE provides contract management, construction management, and technical support. With regard to natural resources management, the USACE manages construction and environmental contracts such as building renovations, new construction, biological surveys, development of natural resource plans and NEPA documents. The USAG POM has the option to use USACE contracts as vehicles for natural resources management, and

to access USACE organizations such as the U.S. Army Engineer Research and Development Center for technical assistance and support for natural resources projects.

### Camp Roberts Environmental Programs Division

The California Army National Guard (CA ARNG) manages the Camp Roberts Training Center in San Luis Obispo County, California. Due to SATCOMs location within Camp Roberts, USAG POM NRP personnel rely on technical support from the Environmental Programs Division at Camp Roberts to manage natural resources at SATCOM.

### U.S. Fish and Wildlife Service (USFWS)

The USFWS was involved in the development of this INRMP is a signatory agency for this INRMP. In addition, the Army consults formally and informally with the USFWS on TES pursuant to the ESA. The mission of the USFWS is "to work with others to conserve, protect and enhance fish, wildlife and plants and their habitats for the continuing benefit of the American people" (USFWS 2016). The USFWS office with responsibility for the POM, OMC, and SATCOM is in Ventura, California. The office with responsibility for the Benicia Army Cemetery is in Sacramento, California.

### California Coastal Commission (CCC)

The CCC is charged with the local coastal programs and federal consistency with the CZMA. The CCC is also the permitting official for coastal development permits and other enforcement measures such as coastal access, coastal habitats, and coastal violations. They also provide grants and educational programs about climate change, water quality, and coastal resources.

### California Environmental Protection Agency (CalEPA)

The CalEPA is charged with developing, implementing, and enforcing the state's environmental protection laws that ensure clean air, clean water, clean soil, safe pesticides, and waste recycling and reduction (CalEPA 2013b). The CalEPA includes the Air Resources Board, the Department of Pesticide Regulation, the Department of Toxic Substances Control, Office of Environmental Health Hazard Assessment, and State Water Resources Control Board (SWRCB). Each of these divisions regulates different environmental media (e.g., air or water).

### California Department of Fish and Wildlife (CDFW)

The CDFW was involved in the development of this INRMP and is a signatory agency for this INRMP. The mission of the department is to "manage California's diverse fish, wildlife, and plant resources and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public" (CDFW 2013). The CDFW has statewide responsibilities for assessing and restoring water quality and habitat; managing and regulating recreational boating, fishing, and hunting; and managing aquatic environments, wildlife and TES. The CDFW office with responsibility for the POM, OMC, and SATCOM is Central Region 4 in Fresno, California. The office with responsibility for the Benicia Army Cemetery is Bay Delta Region 3 in Napa, California.

## California Department of Forestry and Fire Protection (CAL FIRE)

The CAL FIRE serves and safeguards the people and protects the property and resources of California. USAG POM maintains a Cooperative Agreement with CAL FIRE to assist in the event of a major fire on-post that is beyond the capabilities of the local agencies to control. In such an event, CAL FIRE would provide resources such as personnel, apparatus, and equipment as needed for fire management on the POM (USAG POM 2012b).

## City of Monterey

The City of Monterey is contracted to provide municipal services to the POM, OMC, and SATCOM. Services provided include: facility maintenance and repair; fire detection and alarm system; street and stormwater system maintenance; elevator, generator, and HVAC system repairs; capital improvement projects; locksmith services; pest control, and tree maintenance. This partnership/contract was an IMCOM Best Practice 2010 finalist for the USACE Exemplary Practice Award. The City of Monterey staff provide a skilled and professional on-site work force that has superb knowledge of the facilities, customer service, and exemplar completion of projects within the allocated timeframe. The City of Monterey also provides 24/7 response to POM after emergencies (USAG POM 2012b).

The City of Monterey also leases and manages over 100 acres of POM's 392-acre site: the 81-acre Huckleberry Hill Nature Preserve, the 25 acre Lower POM Historic Park, and the 9.71-acre Soldier Field. The DPW-E works with the City of Monterey's city urban forester and historian on a regular basis to manage the leased land. USAG POM also maintains a Mutual Aid Agreement for fire management with the City of Monterey.

## City of Seaside

The City of Seaside is contracted to provide municipal services to OMC. Services include, facility maintenance and repair, fire detection and alarm system, street and storm water system maintenance, elevator, generator, HVAC system repairs, capital improvement projects, locksmith, pest control, and tree maintenance. This partnership/contract was cited as an IMCOM Best Practice 2010 finalist for the USACE Exemplary Practice Award.

## Monterey Bay Military Housing

Under the Residential Communities Initiative (RCI) program and ground lease, the POM partners with Monterey Bay Military Housing to manage military family housing on both POM and OMC.

## Native American Tribes

If any Army undertaking is expected to affect historic resources, there are several non-federally recognized tribes and federally recognized tribes that should be consulted with, under Section 106 of the NHPA. The California Native American Heritage Commission has identified several non-federally recognized tribes that have a cultural connection to the land in Monterey County, including the Rumsen tribe of the Esselen nation, which lives in the areas surrounding the POM and OMC. At SATCOM, the federally recognized Santa Ynez Band of Chumash Indians need to be consulted with for undertakings. The Chumash are concerned with protection of certain plant species, such as soap root

(*Chlorogalum pmeridianum*) and have expressed interest in inclusion in tree mitigation actions. At Benicia, the federally recognized tribes of the Cortina Rancheria Band of Wintun Indians and the Yoche Dehe Wintun Nation should be consulted with for undertakings.

POM is required to follow guidelines and regulations set forth in DODI 4715.03 Enclosure 3(1)(e)(3), DODI 4715.03 Enclosure 3(7)(b)(3), and EO 13007 regarding consultation with federally recognized tribes and access to sites and resources that are of religious importance. POM is currently in the process of establishing relationships with federally recognized tribes.

**Private Contractors**

Various private contractors provide services to USAG POM sites. DPW-E coordinates with these contractors on a regular basis to ensure work is compliant with environmental laws, policy, and guidelines. At times, DPW-E relies on subject matter expertise from private contractors for pest management, water resource management, construction, implementing low impact development (LID) designs, and ground maintenance activities.

## 1.7 REVIEW AND REVISION PROCESS

Per the *Sikes Act*, USAG POM, USFWS, and CDFW will review this INRMP every five years to determine whether it is implemented pursuant to the *Sikes Act* and contributes to the conservation and rehabilitation of natural resources on the installation. During the reviews all parties will determine whether this INRMP needs a formal revision. Circumstances that may suggest a revision is necessary include:

- This INRMP no longer provides adequately for the conservation and rehabilitation of natural resources on USAG POM sites.
- The installation's mission or physical features have changed significantly.
- There are substantial natural resources effects anticipated from base realignment and closure, such as: a new species listing, new construction, new training, changes to training type of tempo, or other factors that were not addressed in this INRMP.

USAG POM will make updates or revisions to this INRMP based on the results of reviews. This INRMP may be simply updated to accommodate changes to information contained in this plan that do not require substantial changes in the way natural resources on the installation are to be managed. Although not expressly required by the *Sikes Act*, USAG POM may offer members of the public an opportunity to comment on an INRMP revision.

If the proposed revisions reflect significant changes in the natural resources management actions described in the existing INRMP, NEPA review shall be performed before the new INRMP is adopted. USAG POM shall afford the appropriate USFWS and state fish and wildlife management offices the opportunity to review all public comments received on any revised INRMP.

DODI 4715.03 also requires that INRMPs be reviewed annually in cooperation with internal and external parties to the INRMP. The annual review is intended to assess implementation progress, identify potential areas of improvement, and review expected projects for the coming year. External regulatory agencies (USFWS and CDFW) are invited to the annual reviews. It also provides an opportunity to incorporate changes in accepted environmental conservation practices and scientific advances associated with evaluation and implementation of natural resources management. If necessary, the annual review will include an update to the INRMP that includes an updated project list, documentation of significant changes to natural ecosystems, and updates to information contained in the INRMP appendices.

Further, DOD guidance requires that annual reviews will verify the following natural resources conservation metrics (DODI 4715.03):

a. INRMP project implementation
b. Federally listed species and critical habitat
c. Partnerships effectiveness
d. Fish and Wildlife management and public use
e. Team adequacy
f. Ecosystem integrity
g. INRMP impact on the installation mission

## 1.8 MANAGEMENT STRATEGY

This INRMP uses an integrated, adaptive, ecosystem management approach designed for sustainability and consistency with the military missions on USAG POM sites. This INRMP protects and enhances natural resources for multiple use, sustainable yield, and biological integrity. Implementation of this INRMP, and integration with other plans, is imperative for increasing mission capabilities, minimizing military training constraints, and maintaining maximum military flexibility.

### 1.8.1 Achieving No Net Loss of Military Mission

Section 101(b)(1)(I) of the *Sikes Act* and DODI 4715.03 both state that the INRMP shall, to the extent appropriate and applicable, and consistent with the use of the installation to ensure the preparedness of the Armed Forces, provide for "no net loss in the capability of military installation lands to support the military mission of the installation." Integrated natural resource management in an ecosystem-based framework promotes water quality, soil productivity, recreational uses of natural resources, and protection of biological diversity while allowing military training access to the resources. Effective sustainable use of the natural resources accomplishes no net loss in the capability of an installation to support the military mission.

USAG POM's goals and objectives are outlined in Table 1-3. All of USAG POM's goals and objectives were created to achieve no net loss while promoting natural resources on the installation sites. The specific goals and objectives that meet the criteria of no net loss are below:

- *Objective 1.2: Avoid, minimize, or mitigate the impacts on special status species from proposed actions (i.e., construction, training, maintenance, etc.).*
- **Goal 2: Conserve soil and water resources to sustain and enhance water quality of nearby regional and installation water bodies and aquatic environments.**
- *Objective 2.1: Avoid, minimize, or mitigate soil erosion and stormwater runoff by applying BMPs outlined in the Sediment Erosion and Sediment Control Component Plan (Appendix E).*
- *Objective 2.2: Avoid, minimize, or mitigate impacts on aquatic environments (i.e., intermittent streams and vernal pools) from site construction activities and long-term maintenance of developed areas.*
- *Objective 2.3: Promote and implement alternative stormwater management practices for achieving pre-development natural hydrology, to the extent practical, including low-impact development and other non-structural stormwater controls to prevent and minimize adverse impacts of stormwater runoff.*
- *Objective 3.3: Avoid, minimize, or mitigate impacts on natural habitats and native species from site project activities.*
- **Goal 5: Provide for long-term sustainability of natural resources using the principles of ecosystem-based management, adaptive management, and the integration of INRMP elements.**
- *Objective 5.1: Assess climate change vulnerability and identify adaptation strategies.*
- *Objective 5.2: Employ an adaptive management approach to assess efficacy of the INRMP.*
- *Objective 5.3: Ensure consideration of natural resource values in the development of plans, projects, and programs that affect those resources.*
- *Objective 5.4: Provide adequate staffing, equipment, technology, and funding for the Natural Resources Program.*
- *Objective 5.5: Enable regular training opportunities for natural resources staff.*

The effectiveness of this INRMP in preventing "net loss" will be evaluated during the annual review. Mission requirements and priorities identified in this INRMP will, where applicable, be integrated into other environmental programs and policies. It is not the intent that natural resources are to be consumed by mission requirements, but rather are sustained for the use of mission requirements. In order to achieve this, the goal of this INRMP is to conserve the environment for the purpose of the military mission. There may be instances in which a "net loss" may be unavoidable in order to fulfill regulatory requirements other than the *Sikes Act*, such as complying with a biological opinion under the provisions of the ESA, or from the protection of wetlands under the provisions of the CWA. However, both the USFWS and USACE are required to adhere to the *Sikes Act* provision of no net loss. Loss of mission capability in these instances will be identified in the annual update of the INRMP and will include a discussion of measures being undertaken to recapture any net loss in mission capability.

### 1.8.2 Ecosystem-Based Management

Ecosystem-based management on military installations provides a science-based approach to support present and future mission requirements while preserving and enhancing the health, resilience, and diversity of ecosystems on military lands. The first DOD guidance on ecosystem-based management was issued in the 1994 Memorandum by Under Secretary of Defense for Environmental Security, authored by Ms. Sherri Goodman (Goodman 1994). This policy grew out of a need to look "beyond the fence" to a myriad of environmental, social, and economic issues that can significantly affect installation natural resources management, but over which an installation may have little control or impact. DODM 4715.03 provides the following guidance for military installations to implement effective ecosystem-based management:

- Maintain and improve the sustainability and native biodiversity of ecosystems at the landscape and other relevant ecological scales to the "maximum extent that mission needs allow."
- Consider ecological units and timeframes to analyze the cumulative effects on ecosystems and coordinate regional ecosystem-based management as needed.
- Support sustainable human activities, including multiple use and sustainable development in order to meet the needs of the present without compromising the ability of future generations to meet their own needs.
- Develop a vision of ecosystem health with all interested parties (e.g., federal, state, tribal, and local governments; NGOs; private organizations; and public organizations) that factors in existing social and economic conditions as well and coordinates each parties' contributions to achieve desirable ecosystem goals.
- Develop local installation requirements and reconcile conflicts with ecosystem objectives.
- Develop a coordinated planning approach through early involvement of the military operation community, a detailed implementation strategy for installation lands, regular meetings with regional stakeholders, formal incorporation of ecosystem-based goals into strategic, financial, and program planning and design budgets, and increased efficiencies in programs affecting ecosystems.
- Rely on the best science and data available and establish standards for the collection, taxonomy, distribution, exchange, update, and format of ecological, socioeconomic, cartographic, and managerial data.
- Use goals and objectives to monitor and evaluate outcomes of activities for ecosystem management.

### 1.8.3 Adaptive Management

An adaptive management approach provides a structured process that allows for ecosystem management based on the best available science, closely monitoring and evaluating outcomes, and re-evaluating and adjusting objectives as more information is learned. Installations must develop management practices that can be adapted as scientific understanding of ecosystems evolves, new data becomes available, and missions change. The projects outlined in this INRMP are designed to allow DPW-E to

coordinate resultant impacts of such developments on existing ecosystem management to sustain both installation mission and natural resources conservation objectives. DODM 4715.03 outlines the following systematic procedures to establish an adaptive management approach:

- Identify and assess military mission operating and facility requirements.
- Analyze and assess risk to natural resources.
- Complete needs assessment surveys.
- Monitor and prepare the needs assessment results.
- Update natural resources inventories to ensure information is current.
- Reanalyze and reassess risk to natural resources.
- Adjust the overall program, as necessary.

## 1.9 INTEGRATION WITH OTHER PLANS

### 1.9.1 Regional Plans

Where appropriate, this INRMP integrates data and information, conservation measures, and mitigation requirements from the following regional natural resources management plans.

**Monterey Pine Forest Conservation Strategy Report (1996)**

The Monterey Pine Forest Conservation Strategy Report (Jones & Stokes 1996) identifies priority areas and conservation tools that can be used to achieve long-term conservation of the indigenous Monterey pine forest ecosystem in the Monterey area. The report identifies major threats, prioritizes conservation areas, and recommends strategies for implementing a regional conservation plan. Applicable best forest management practices and strategies outlined for conserving on-site Monterey pine forests are incorporated into this INRMP.

**Installation-Wide Multispecies Habitat Management Plan for Former Fort Ord, CA (1997)**

The Installation-Wide Multispecies Habitat Management Plan (HMP) for Former Fort Ord, CA (Jones & Stokes 1997) was developed as a requirement from the 1993 USFWS Final Biological Opinion (BO) for the Disposal and Reuse of Fort Ord. The HMP was developed to reduce the incidental take of listed species and loss of habitat that supports these species. The HMP establishes guidelines for the conservation and management of wildlife and plant species and habitats that largely depend on former Fort Ord lands for survival.

**State Wildlife Action Plan (SWAP) (2005)**

The California SWAP outlines the species and habitats of greatest conservation need, the major stressors affecting California's native wildlife and habitats, and the actions needed to restore and conserve California's wildlife (Bunn et al. 2005). The report provides recommended conservation actions for each region based on context-specific stressors and circumstances, as well as statewide conservation activities that apply to most or all regions. The POM, OMC, and SATCOM are all contained within the Central Coast region, while the Benicia Army Cemetery is in the Central Valley and Bay Delta region. Applicable statewide and region-specific conservation actions, outlined in the SWAP, have been incorporated into this INRMP (See Table 3-2).

**Camp Roberts Integrated Natural Resource Management Plan (2012)**

The Camp Roberts 2012 INRMP update (CA ARNG 2012) addresses natural resource requirements, focusing on managing federally threatened species and habitats and updating conservation measures and projects, for all property within Camp Roberts.

**California Army National Guard Integrated Wildland Fire Management Plan (IWFMP) Draft (2013)**

The CA ARNG IWFMP (CA ARNG 2013a) fulfills AR 200-1 Chapter 4 Section 3.d.12 'Wildland Fire Management' and serves to manage wildfire threats in order to meet land management goals and objectives. This IWFMP presents a comprehensive approach to reduce the frequency of wildfires and the associated costs and damages at Camp Roberts and Camp San Luis Obispo.

**Update to the Avian Protection Plan for Camp Roberts Army National Guard Training Site (2013)**

The objectives of this Avian Protection Plan (Ventura Wildlife Society 2013) are to reduce the risk and occurrence of avian electrocutions and collisions at Camp Roberts, maintain compliance with federal and state environmental regulation, increase system reliability, provide a framework for improving implementation of avian safety standards, and promote environmental stewardship.

### 1.9.2 Installation Plans and Applicable NEPA Documents

Implementing this INRMP shall be coordinated with other installation management plans and NEPA documents to ensure environmental compliance and consistency with infrastructure development plans, operation and maintenance requirements, and training activities. Where appropriate, this INRMP integrates data and information, conservation measures, and mitigation requirements from the following installation plans and NEPA documents.

**POM and OMC Installation Pest Management Plan (2004)**

The POM and OMC Pest Management Plan (PMP) (U.S. Army 2004a) describes past and anticipated pests found on the installation sites and outlines the resources necessary for surveillance and control through an Integrated Pest Management (IPM) approach, including any administrative, safety, or environmental requirements. The plan provides a framework to reduce reliance on pesticides, to enhance environmental protection, and to

maximize the use of IPM techniques. DPW provides environmental protection and compliance oversight concerning pest management operations for USAG POM sites. The Installation Pest Management Coordinator (IPMC) is the DPW-E employee who oversees developing and implementing the Installations Pest Management Plan. The current PMP will be revised in 2017 to include SATCOM and Benicia Army Cemetery.

### Draft Presidio of Monterey Area Development Plan (2013)

The POM Area Development Plan (ADP) aims to establish a vision for the POM that maximizes the capacity for future development and mission needs in a sustainable manner (Michael Backer Jr. Inc et al. 2013). The plan recognizes six categories of planning issues and/or constraints, including siting of future barracks, dining and administrative facility siting; parking capacity; privatized lodging renovations; construction of an upper POM gate; and natural and cultural resource constraints. Primary natural resource constraints were identified as steep slopes, scattered populations of federally endangered and special status plant species, and forest conservation areas. The final plan shall integrate natural resource management goals and objectives outlined in this INRMP.

### USAG Presidio of Monterey Integrated Wildland Fire Management Plan (IWFMP) (2012)

The USAG POM IWFMP fulfills AR 200-1 Chapter 4 Section 3.d.12 'Wildland Fire Management' requirements and serves to reduce wildfire potential and effectively protect and enhance the mission of the DLIFLC (USAG POM 2012b). The IWFMP identifies risks and vulnerabilities within and around the garrison facilities to ensure these areas are safe from the threat of urban interface or wildland fires.

### Final Environmental Impact Statement (EIS) and Record of Decision for the Presidio of Monterey Real Property Master Plan (2013)

This EIS analyzed and evaluated the environmental and socioeconomic impacts related to the construction and operation of future infrastructure development at the POM and OMC. The Record od Decision announced the Army's decision to proceed with short and long term infrastructure development projects such as construction and renovation of a barracks, access control point upgrades, and classroom renovations.

### Integrated Cultural Resources Management Plan (ICRMP) and Associated Programmatic Agreement (2004)

The USAG POM ICRMP and the associated Programmatic Agreement (PA) outline cultural resources management actions and compliance procedures on the POM. The PA among the U.S. Army, the Advisory Council on Historic Preservation, and the California State Historic Preservation Officer Regarding Routine Maintenance of Historic Properties at the POM provides guidelines and procedures for integrating the installations cultural resources program and defines the historic preservation regulations concerning the Army's responsibilities in regard to management of the POM Historic District. The POM Historic District constitutes 75 acres of land, located in the Lower Presidio, on the eastern side of POM. Its historic significance dates from 1902 to 1939. Despite being nominated, the POM Historic District is not listed on the National Register of Historic Places (ICF

International 2013). The PA allows for landscape maintenance at the POM Historic District such as, grass cutting, hedge trimming, tree pruning, tree management and removal, and other vegetation removal as needed to ensure building materials are not damaged.

DPW-E provides resources protection and compliance oversight concerning cultural/historical management at the USAG POM sites. The Cultural Resources Program Manager is the DPW-E employee who oversees the cultural resources management program. The ICRMP is currently being updated.

**Hazardous Waste Management Plan (2007)**

The Hazardous Waste Management Plan (USAG POM 2007) establishes standard operating procedures and policies for the proper storage, management, transportation, and disposal of hazardous materials and hazardous waste at the POM and OMC.

DPW-E provides management and compliance oversight concerning hazardous waste management at the USAG POM sites. The Hazardous Waste Program ManagerIC is the DPW-E employee who oversees the hazardous waste management at POM and OMC. DPW-E will ensure proper coordination of hazardous waste management activities to ensure there are no adverse effects to natural resources.

**Phase II MS4 General Permit Implementation Plan (2013)**

The Phase II MS4 General Permit Implementation Plan for POM and OMC identifies the specific requirements of the Phase II MS4 General Permit, issued by the SWRCB Stormwater Program. The plant identifies the specific General Permit requirements that apply to POM and OMC, and describes the steps to be taken by the U.S. Army, DPW, USACE, and contractors to meet these requirements throughout the next 5-year period. This includes: Developing and implementing a public outreach and education program; providing biennial training program for appropriate employees involved in pollution prevention; conducting field sampling to detect potential illicit discharges; developing written procedures for conducting investigations into the source of all non-storm water discharges suspected to be illicit discharges; and implementing a program that focusses on pollution prevention, source control BMPs, and landscaping design and maintenance to reduce the amount of pesticides, herbicides, and fertilizers used during Army operations and activities.

**SATCOM ADP and Final Programmatic EA (2005)**

The SATCOM ADP and associated Programmatic EA directs future growth of the SATCOM facility including a number of components that will be constructed over the 20-year plan period. The ADP was initiated in response to immediate demands for facility optimization and expansion to accommodate additional communications missions and associated equipment systems scheduled for placement on the SATCOM site. The ADP assigns individual projects to three development planning periods: FLASH projects (i.e. building renovations, parking lot expansions), short-term projects (i.e. new buildings and parking ots), and long-term projects (i.e. building demolition, new buildings).

## SATCOM Draft EA for Multiple Construction Projects (2015)

This Draft EA evaluates the environmental effects of implementing four construction projects at SATCOM. The four projects include two antenna sites, associated infrastructure, a parking lot, and a wastewater discharge system. The EA found no significant impact from any of these projects.

# 2.0 CURRENT CONDITIONS AND LAND USE

As seen in Figure 2-1, POM and OMC are both located within Monterey County, California, near Monterey Bay and in close proximity to one another. The SATCOM site is located further south, within Camp Roberts in San Luis Obispo County, and the Benicia Army Cemetery is located further north, near the San Francisco Bay in Solano County. The following sections provide a description of the current conditions and land use for each USAG POM site. Each site has a separate Current Conditions and Land Use section (the POM is Section 2.1, OMC is Section 2.2, SATCOM is Section 2.3, and the Benicia Army Cemetery is Section 2.4).

## 2.1 PRESIDIO OF MONTEREY CURRENT CONDITION AND USE

### 2.1.1 Installation Description

#### 2.1.1.1 General Location Description

Located in the city of Monterey, California, the 392-acre site is located on a 1.5-mile-long, quarter mile wide stretch of land at the southern end of Monterey Bay. The POM is approximately 120 miles south of San Francisco and lies between Monterey Bay and State Route 68. The downtown area of Pacific Grove is approximately one mile northwest of the installation with portions of the city abutting the POM. The POM is served by the Monterey Peninsula Airport which is located to the east of the installation and south of State Route 218.

*This page intentionally left blank.*

***Figure 2-1: Regional Context of Presidio of Monterey, Ord Military Community, Satellite Communication Station at Camp Roberts, and Benicia Army Cemetery***

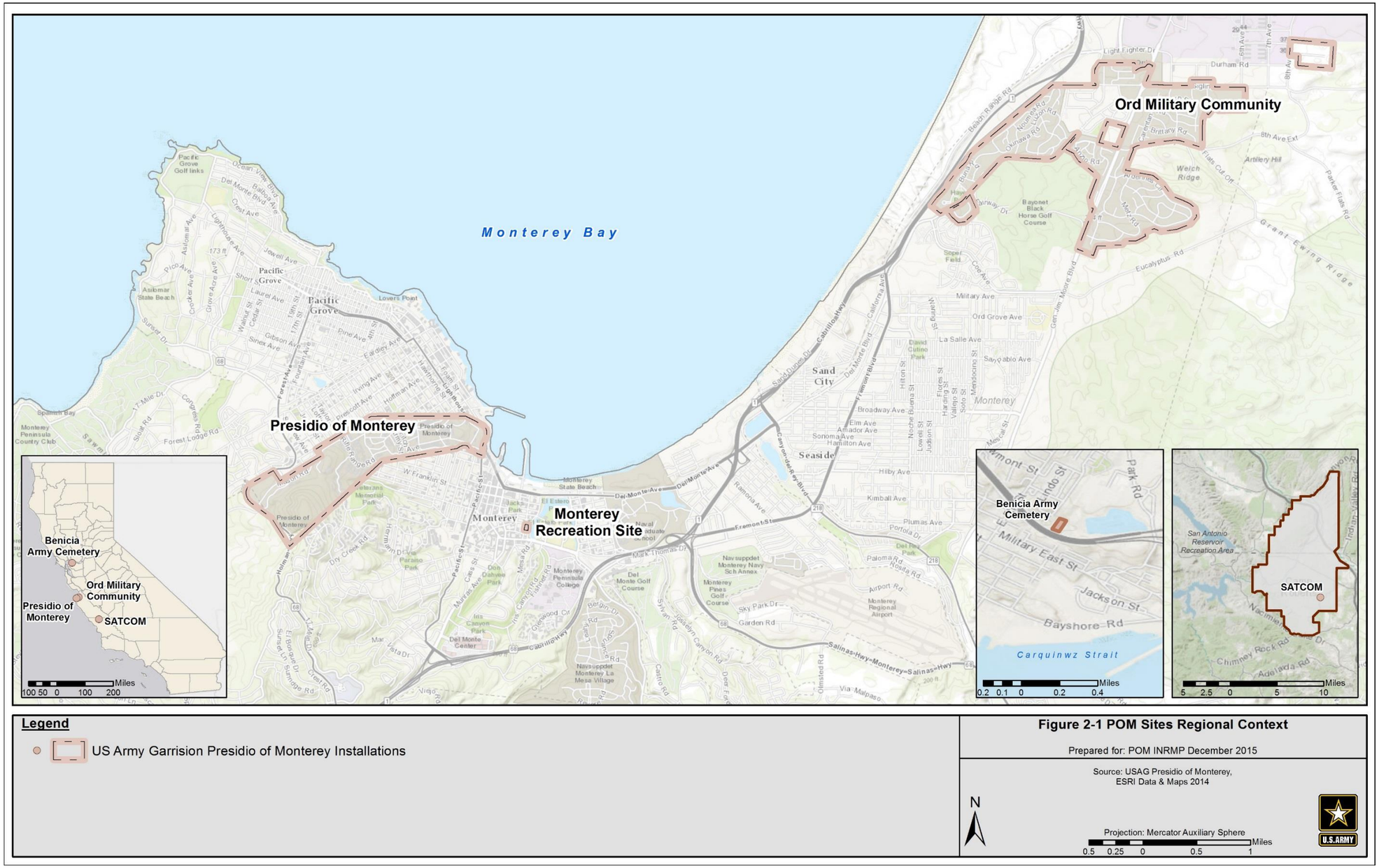
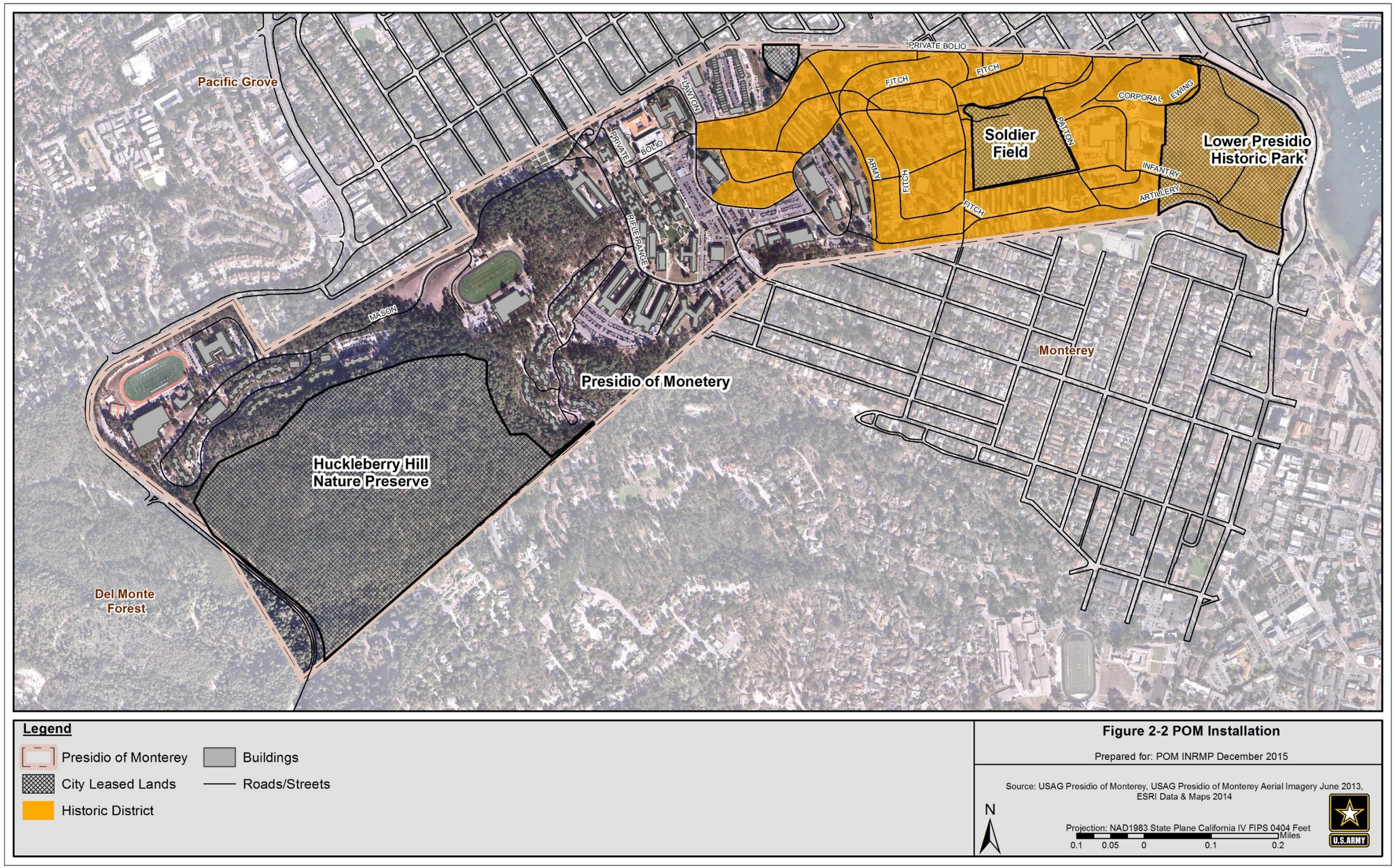


***Figure 2-2: Presidio of Monterey, Monterey County, California***



#### 2.1.1.2 Abbreviated History and Pre-Military Land Use

Prior to the arrival of the Spanish, Monterey Bay was home to the Ohlone Tribe. They were formerly known as Coastanoan, meaning "coast people", a name which was given to them by the Spanish. The Rumsen people are one of eight major groups within the Ohlone Tribe, and were the primary residents on the present day POM lands and surrounding areas. They were mostly hunter-gathers and practiced some agriculture. After Spanish colonization in 1770, they were baptized and forced to serve in the Mission San Carlos. The tribe is still unrecognized federally (Ohlone Costanoan Esslen Nation 2014; Monterey County n.d.; Coastanoan Rumsen Carmel Tribe 2014).

The land now owned by the POM has been utilized for military purposes since the Monterey Bay was first discovered and claimed for Spain by Sebastian Vizcaino in 1602. In 1770, when the small Spanish expedition colonized the area, they erected a presidio to defend against anticipated Russian attacks. A "presidio" is a fortified military base established by the Spanish between the 16th and 19th centuries. The Monterey Presidio, located near Lake El Estero, near what is now downtown Monterey, was one of four presidios and 21 missions, including Mission San Carlos, established by Spain. In 1796 the Spanish built a redoubt on the lower POM called "El Castillo," which still exists today below the surface of the ground. In 1822, Mexican rule replaced that of Spain in California and the original Presidio fell into disrepair.

Commodore John Drake Sloat, commanding the U.S. Pacific Squadron, seized Monterey with no opposition during the Mexican War in July 1846. A small garrison of Marines and seamen remained to protect the town and harbor; the new defenses were named Fort Mervine. The U.S. Army assumed responsibility for Fort Mervine from the Navy in January 1847 when the Company F, 3rd Artillery Regiment, arrived in Monterey. In the more than 50 years spanning from the Army's arrival until 1902, the fortification had various names, including Fort Halleck, Fort Savannah, Monterey Redoubt, Monterey Ordnance Depot, and Ord Barracks, and experienced several periods of abandonment. The Army's need for additional forts on the West Coast nearing the end of the Philippine Insurrection in 1902 led to the revival of the area as a military post. In September 1902, the 15th Infantry Regiment arrived to build a cantonment area at Monterey, which changed names from the Monterey Military Reservation to Ord Barracks, and then finally to its current designation as the POM in 1904, in honor of the area's original Spanish fort.

From 1904 to 1910, a school of musketry was operated on the post, a forerunner of today's Infantry Center at Fort Benning, Georgia. Several regiments rotated through the POM between 1902 and 1919. Between the two world wars, the post was the home of the 11th Cavalry and the 2nd Battalion, 76th Field Artillery. These units remained at the POM until 1940. In 1941, the POM became a reception center for inductees. Declared inactive on December 22, 1944, the post was reactivated in 1945. For a few months, the post was a staging area for civil affairs personnel preparing for the occupation of Japan. In 1946, the POM became a sub-installation of the nearby Fort Ord, and the Military Intelligence Service Language School (MISLS) moved there.

On September 8, 1947, the MISLS was renamed the Army Language School (ALS). In addition to Army personnel, the ALS trained some Air Force, Navy, and Marine linguists. The school was subsequently re-designated as the Defense Language Institute (DLI), West Coast Branch, on July 1, 1963. In 1973, the DLI was placed under the command of the TRADOC. In 1974, the DLI headquarters and the DLI East Coast Branch were merged with the West Coast Branch at the POM. In 1976, the school became the Defense Language Institute Foreign Language Center (DLIFLC) (U.S. Army 1995b; Bonds et al. 1986).

When Fort Ord closed in 1994, the POM again became a separate installation under TRADOC. Then, in 2006, the POM Garrison was separated from TRADOC when all Army garrisons were realigned under the Installation Management Command (IMCOM) (USAG POM 2014a).

#### 2.1.1.3 Military Mission

The POM's primary mission is to provide "first-class infrastructure and services to support mission readiness and enhance the quality of life for the Monterey Military Community and their Families" (USAG POM 2014a).

The following administration/support buildings and facilities are located on the POM:

- Army program offices that include: Army Community Service, Army Retention Office, and the Army Substance Abuse Program
- FMWR offices, as well as: Better Opportunity for Single Service members, Child Youth and School Services, Civilian Personnel Advisory Center, and a School Liaison (K-12)
- Medical and health services, as well as: fire department, police, public affairs, public works, safety, and religious support
- Other offices include, but are not limited to: Mission and Installation Contracting Command USAR DOC WEST; DPTMS; and Plans, Analysis, and Integration Office

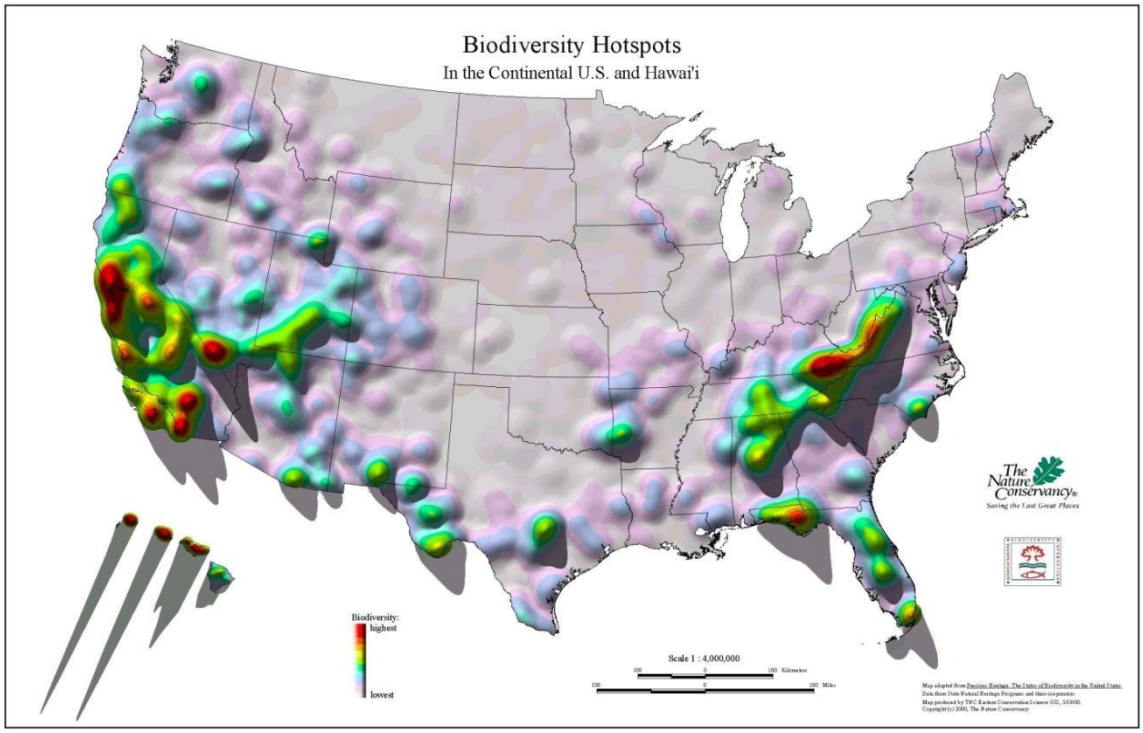
#### 2.1.1.4 Ecological History

Located within the Mediterranean California ecoregion, the current POM lands were historically dominated by Monterey pine (*Pinus radiata*) forest, often mixed with coast live oak (*Quercus agrifolia*), as well as grasslands and chaparral (WWF 2015b). The Monterey pine forest is a unique biological community of limited extent that faces continued threats from clearing and fragmentation due to urban growth. At the time of the European settlement (c. 1770) these forests were estimated to cover approximately 23,900 acres, today only 60 percent or 10,173 acres remains (Bates et al. 2011).

Monterey pine forest habitat is a fundamental ecosystem on which many native species rely and there are 19 rare plant species and 17 rare wildlife species that are associated with Monterey pine forest on the Monterey Peninsula (California Native Plant Society [CNPS] 1996). The Nature Conservancy considers the Monterey region one of the

Nation's biodiversity hotspots (Figure 2-3). The natural communities in this region have been threatened by habitat fragmentation, grazing, and alteration of fire regimes (i.e., over-burning or fire suppression). Native species are particularly at risk from invasive plants and animals that establish and spread with ease in these communities.

***Figure 2-3: Biodiversity Hotspots in the United States***




*Source: The Nature Conservancy*

## 2.1.2 Physical Environment

### 2.1.2.1 Land Use

Land use at the POM is defined by the grounds maintenance required and is classified using three categories: 1) improved, 2) semi improved, and 3) unimproved as seen in Figure 2-4. Improved areas are where intensive maintenance activities are planned and performed routinely and refer to developed areas including roads, structures, parking lots, athletic fields and other fully maintained areas. Semi-improved areas receive periodic and lower intensity maintenance and are primarily areas consisting of horticultural tree plantings and grass/lawn areas with scattered trees. Unimproved areas are primarily undeveloped, open space areas.

A 450-foot elevation contour separates the western "upper," mostly unimproved, portion of the POM from the "lower," mostly improved portion of the POM. Today, 56 percent of the POM is improved land. The remainder is semi-improved land (12 percent) and unimproved land (32 percent). Semi-improved and unimproved land includes Monterey

pine forest, mixed Monterey pine/live oak forest, and riparian forest vegetation communities (USAG POM 2008).

The central and eastern portions of the POM, below the 450-foot elevation contour, commonly known as the middle and lower POM, are the most heavily developed. These developed areas are considered improved lands and include classrooms, administrative and support offices, barracks, dining facilities, a post office, fitness center, lawn spaces, sports fields, single family homes for officers and their families, and the POM Historic District. The POM Historic District is leased to the City of Monterey, which manages it as a historic park.

The unimproved, forested portion of upper POM has been designated as a forest preserve. The forest preserve, known as the Huckleberry Hill Nature Preserve is currently leased to and managed by the City of Monterey. The preserve is operated with the goal of retaining the forest while providing a recreation area for installation personnel and Monterey county citizens.

In addition, two forested areas in the upper portions of POM have been designated as Forest Conservation Areas for the Federally Endangered Yadon's piperia (*Piperia yadonii*). As seen in Figure 2-4, Conservation Area #1 is comprised of 12.5-acres between Hilltop Field and Building 630 and Conservation Area #2 is comprised of 3.5-acres north of Mason Road in the northwestern portion of the POM.

Semi-improved lands on the POM provide important buffers between developed areas and forested areas. Native horticultural tree plantings comprised of Monterey pine, Monterey cypress (*Cupressus macrocarpa)* and coast live oak are found in areas designated as semi-improved lands, as are areas where native trees are allowed to regenerate, such as Bolio gulley, a grass area with scattered mixed pine and oak trees.

***Figure 2-4: Presidio of Monterey Land Improvement Status***

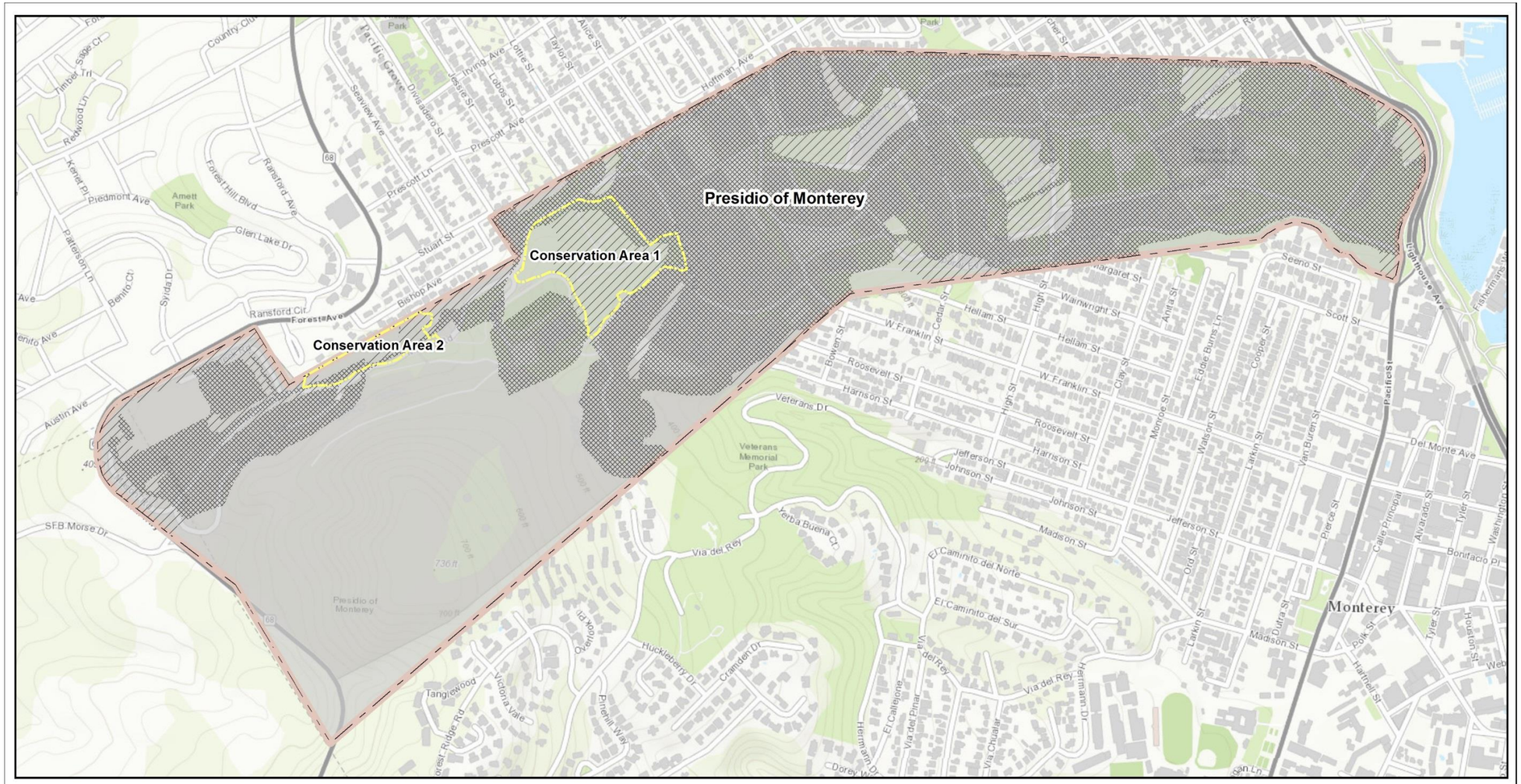
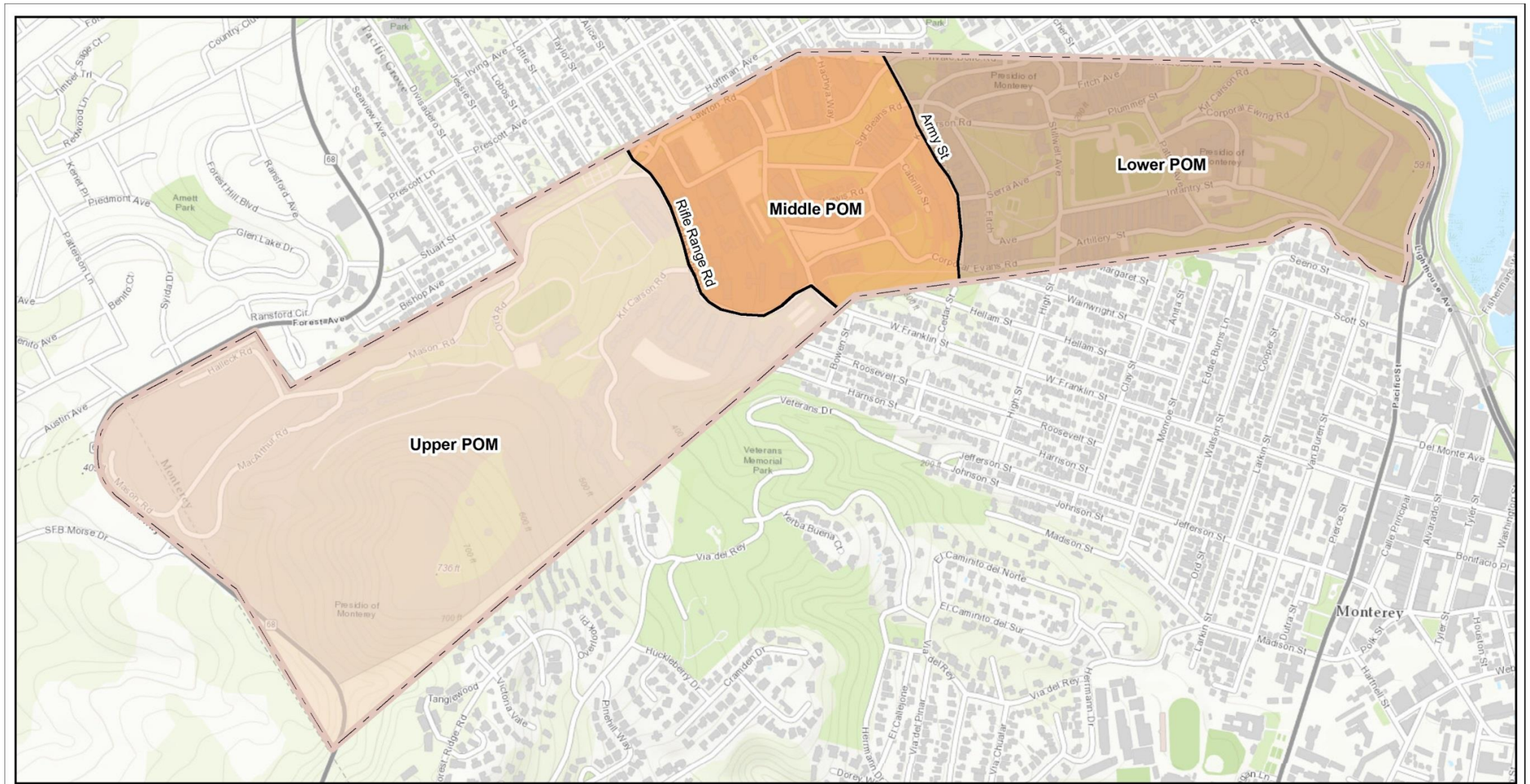


***Figure 2-5: Upper, Middle, and Lower POM***



#### 2.1.2.1.1 Leased Land

**Huckleberry Hill Nature Preserve**

The 81-acre Huckleberry Hill Nature Preserve is leased to the City of Monterey Parks Division and managed as a public park that provides passive recreational opportunities to Monterey County citizens. The preserve is managed in accordance with the Huckleberry Hill Nature Preserve Forest Management Plan (Appendix H).

**POM Historic District and Lower Presidio of Monterey Historic Park**

The 126-acre POM Historic District consists of all of lower POM and a section of upper POM (See Figure 2-2 and Figure 2-5). The Lower POM Historic Park, 26 acres of the overall Historic District, is leased to and managed by the City of Monterey. The Historic District includes over 119 historic architectural and landscape resources and contains Sloat Monument Scenic Overlook and the Presidio Museum. The City of Monterey's Museums, Cultural Arts, and Archives Manager oversees activities on the leased land. Management of the land, as stipulated in the lease, is in accordance with the Historical Preservation Plan and Maintenance Manual (Page & Turnbull 1994) and the ICRMP (U.S. Army 2004b), and compliant with federal laws and regulations regarding the preservation of the historic property.

**Soldier Field**

Soldier Field, the 10-acre multi-use sports field with 3 baseball fields, a running track, and a soccer field, is leased to and managed by the City of Monterey. All construction, operation, and maintenance of the area benefit the general public, military training, and recreational use. The land is managed in accordance with the lease and in compliance with federal laws and regulations regarding the preservation historic property.

#### 2.1.2.1.2 Outdoor Recreation Areas

Outdoor recreation areas on POM include Huckleberry Hill Nature Preserve and the Lower POM Historic Park. A trail system within Huckleberry Hill Nature Preserve provides access for bird watching, nature walks, bicycling, hiking, and sightseeing.

The Lower POM Historic Park is managed and used for recreational activities, primarily the preservation and protection of historic properties. Sloat Monument provides one of the best on-base vantage points of the Monterey Bay and the City of Monterey. The management of the monument protects this aesthetic asset. Lower POM Historic Park is also used for historical ceremonies.

#### 2.1.2.1.3 Surrounding Land Use

The POM is bounded by the cities of Monterey and Pacific Grove (see Figure 2-2). Land abutting the POM in the city of Monterey is zoned low- and medium-density residential (City of Monterey n.d.). Land adjacent to the POM in the city of Pacific Grove is also zoned low- and medium-density residential (City of Pacific Grove 2015).

To the southeast of the POM is the Del Monte Forest, managed by the Pebble Beach Corporation (see Figure 2-2). Highway 68 divides the Huckleberry Hill Nature Preserve

and the Del Monte Forest; however, there is valuable contiguous Monterey pine forest habitat that spans both natural areas.

#### 2.1.2.2 Climate

The Monterey Peninsula climate is characterized by cool summers, mild winters, and low annual precipitation. Its proximity to the Pacific Ocean results in a marine influence on the climate; the prevailing climatic condition is the sea breeze/inland breeze regime. The ocean regulates the temperature of the sea breeze to create a climate in which the air temperature near the coast stays within a few degrees of the water temperature. Water temperature around the Monterey Peninsula is 50 degrees Fahrenheit (ºF) on average (USAG POM 2008).

Climate data collected by the Western Regional Climate Center (WRCC) shows average annual temperatures for Monterey ranging between 65ºF (average annual max temperature) and 48ºF (average annual minimum temperature). Average annual precipitation is 19.7 inches (WRCC 2014a).

Days are generally sunny and dry in the summer months, and morning and evening fog are common in coastal communities. In the fall, the fog subsides and the onshore breezes decline, resulting in warm weather (USAG POM 2008). The rainy season in the region is typically from mid-October through April.

#### 2.1.2.3 Ecoregion

The POM falls within the Mediterranean California ecoregion, which extends from Oregon to Baja California (CEC 1997). Within this ecoregion, the POM falls within the California Coastal Sage, Chaparral, and Oak Woodlands sub-ecoregion, which encompasses much of coastal central and Southern California (USEPA 2006). A Mediterranean climate of hot, dry summers and mild winters characterizes this sub-ecoregion. Its vegetation consists primarily of chaparral and oak woodlands, with some grasslands occurring at some lower elevations, and pine at higher elevations. Terrain is primarily coastal terraces, with some low mountains or foothills, parallel ranges and valleys, and irregular plains, as it extends away from the coast (CEC 2011).

#### 2.1.2.4 Geological Resources

##### 2.1.2.4.1 Geology

The POM lies along the western margin of the Coast Ranges physiographic province, which is characterized by ranges and valleys that parallel the coast. The Coast Ranges series of mountain ranges extends from Humboldt County in northern California, to Santa Barbara County in Southern California. Sandstone and shale make up the Coast Ranges, but it is difficult to distinguish the sedimentation (CERES n.d.). Granitic bedrock underlies much of the Monterey Peninsula from Huckleberry Hill eastward, with some granitic outcrops on terrace slopes and some coastal terraces (Jones & Stokes 1994b).

The Monterey Peninsula is largely comprised of marine terraces—six identified in total—and dune systems (Jones & Stokes 1994b). The soils covering the underlying shale and granitic bedrock on the peninsula support Monterey pine forest habitat (Jones & Stokes 1994b).

The POM is located in a region with high seismicity; several major faults and fault zones are within proximity to the base, including the San Andreas Fault Zone (approximately 25 miles northeast), the San Gregorio-Hosgri Fault (approximately 19 miles northwest), the Palo Colorado Fault (approximately 6 miles west), and the Sur-Nascimento Fault Zone (approximately 10 miles southwest) (USACE 2013a). The Monterey Bay Fault Zone, which is a lower magnitude fault zone, is approximately 1 mile offshore in Monterey Bay and the closest active fault to the POM (USACE 2013a).

USGS investigations at the POM in 2011 found that rocks underlying the upper POM near Building 829 could not convey high-velocity seismic waves, which is consistent with fault-weakened material. This suggests that a possible north-northwest fault is located immediately east of Building 829 (USACE 2013a).

#### 2.1.2.4.2 Topography

Elevations at the POM range from approximately 30 to 770 feet above mean sea level (msl). From the eastern boundary at Lighthouse Avenue (approximately 30 feet msl), the topography of the POM rises to 126 feet msl at Sloat Monument. Two prominent hills also exist at the POM: one near Bishop Avenue that has an elevation of 595 feet msl; and Presidio Knoll, located on the Huckleberry Hill Nature Preserve, which has an elevation of over 770 feet msl (USAG POM 2008).

#### 2.1.2.4.3 Soils

Figure 2-6 depicts the soils found on the POM. Descriptions of the two major soil series at the POM follow.

**Narlon Series**

- Consists of poorly drained soil with slow to medium runoff. Permeability is slow and erosion potential is moderate. Slopes range from 2 to 30 percent (USDA 1978).
- Narlon loamy fine sand, 2 to 9 percent slopes (NcC) comprises the majority of the lower and middle POM. NcC is gently to moderately sloping soil on marine terraces. Temporary shallow ponds may form in swales during prolonged wet periods.
- Narlon loamy fine sand, 15 to 30 percent slopes (NcE) is present at the top of Huckleberry Hill, as well as along the western and northern boundaries of the Nature Preserve. NcE is strongly sloping and moderately steep soil with medium runoff. The soil is typically woodland use, with low productivity for Monterey pine (USDA 1978).

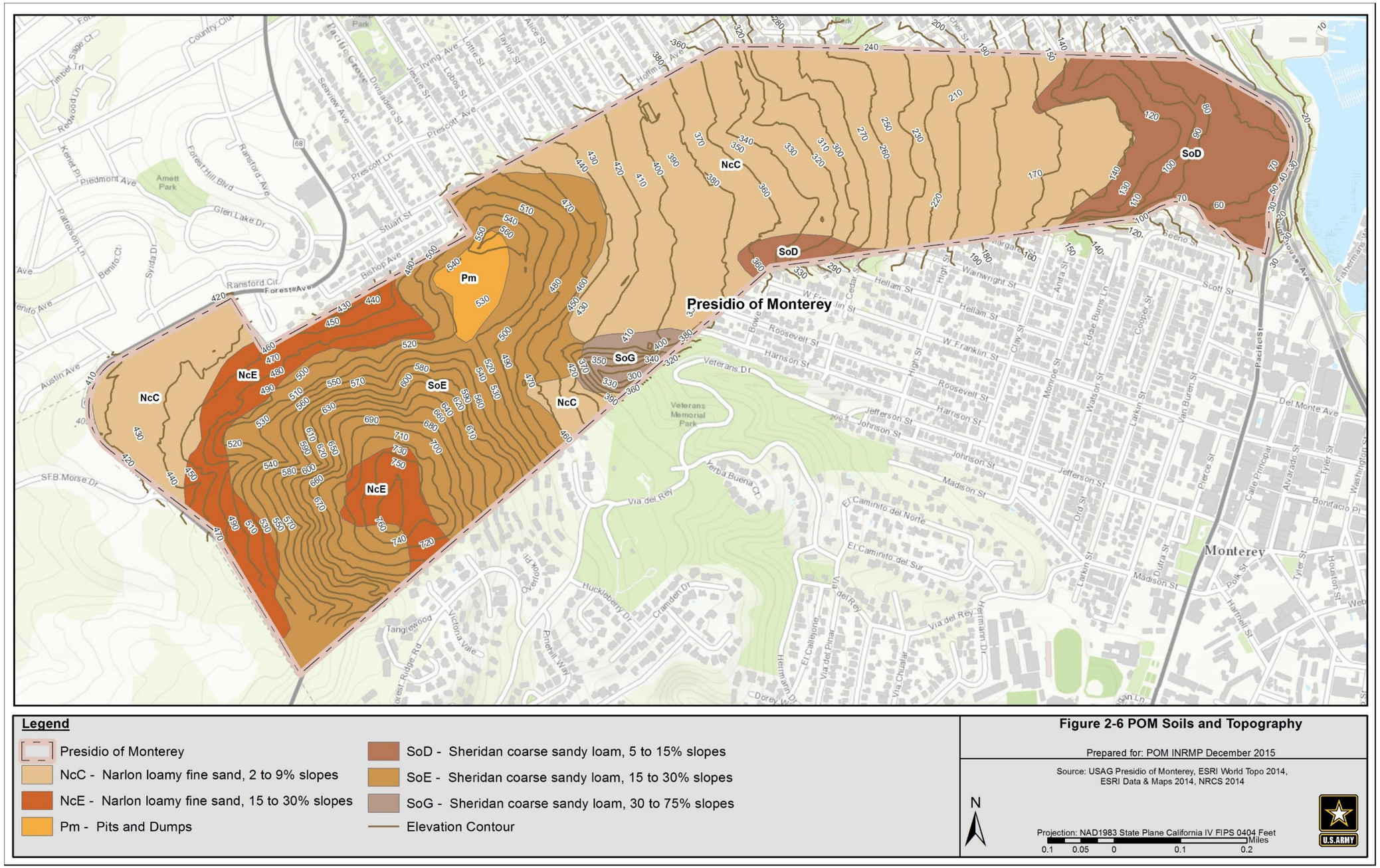
### Sheridan Series

- Consists of well drained soils, typically found on hills and mountains. Slopes range from 5 to 75 percent. Permeability is moderately rapid. It is usually underlain by granitic and schistose rock (USDA 1978).
- Sheridan coarse sandy loam, 5 to 15 percent slopes (SoD) comprises the eastern-most portion of POM, in the historic district, as well as a small portion in the southern middle POM. SoD is moderately sloping to strongly sloping with moderate runoff, typically on the lower side slopes of granitic uplands or on small rounded ridgetops (USDA 1978).
- Sheridan coarse sandy loam, 15 to 30 percent slopes (SoE) comprises the upper portion of the POM, including much of the Presidio Knoll and the Lower POM Historic Park. SoE is moderately steep with rapid runoff and a moderate erosion hazard (USDA 1978).
- Sheridan coarse sandy loam, 30 to 75 percent slopes (SoG) comprises a small portion in the middle-to-upper POM, adjacent to Veterans Memorial Park in the City of Monterey, where the public gains access to Huckleberry Hill Nature Preserve. SoG is steep and very steep soil found on hills and mountains with rapid or very rapid runoff and high or very high erosion potential (USDA 1978).

### Pits and Dumps

- Pits and dumps (Pm) soil and underlying material have been excavated for refuse disposal. Drainage, permeability, surface runoff, depth of root zone, and available water capacity are all variable. (USAG POM 2008; USDA 1978).
- On the POM, Pm comprises the landfill area and Hilltop Field athletic field.

***Figure 2-6: Soils and Topography at Presidio of Monterey, Monterey County, California***



*This page intentionally left blank.*

### 2.1.2.5 Water Resources

#### 2.1.2.5.1 Surface Water

No natural surface waters are found on the POM beyond stormwater runoff and two intermittent streams, seen in Figure 2-10. One intermittent stream follows the southeastern boundary of the POM near Franklin Street to Lighthouse Avenue and the other is on the southern boundary of the POM in the forested ravine adjacent to Veteran's Memorial Park. Surface water runoff from precipitation is collected by the POM's storm drain system and discharged directly into to the Pacific Ocean or Monterey Bay (Jones & Stokes 1994a).

The POM discharges stormwater runoff to Monterey Bay thorough five storm drains and two open drainage channels. For some storm drains, drainage water leaves the POM and enters the storm drain systems of the cities of Pacific Grove and Monterey, which in turn discharge into the Pacific Ocean or Monterey Bay (Jones & Stokes 1984). The northern portion of the POM drains into the Monterey Bay Watershed and the southwestern corner drains into the Carmel Bay-Frontal Pacific Ocean Watershed (Figure 2-7).

Storm drains and channels at the POM are described below.

The two open drainage channels include:

- Drainage channel southwest of the POM dormitories and east of Huckleberry Hill Nature Preserve. An open ditch that runs southwest and exits the POM southwest of the entrance to the POM at Franklin Street.
- Drainage channel running along the southern border of the POM to Lighthouse Avenue. An open drainage ditch that runs along the southern border of the POM from east of the entrance to the POM at High Street to Lighthouse Avenue.

The five storm drains include:

- North POM. A 36-inch reinforced concrete pipe (RCP) that drains the north part of the POM.
- Southern boundary. A 51-inch RCP that runs along the southern boundary of the POM.
- South central portion of the POM. A 24-inch RCP that drains the south central area of the POM in the dormitory area.
- Northwest of the Huckleberry Hill Nature Preserve. A 24-inch RCP that drains the northwest portion of the POM along Highway 68.
- Northeast of Huckleberry Hill Nature Preserve. A 30-inch RCP that drains into Pacific Grove's storm drain system.

In addition to the main drainage channels and storm drains, a series of smaller storm drains serve specific portions of the base. These smaller drains collect stormwater and discharge to larger drains, eventually flowing into the base's main storm drains described above. Several types of piping are used, including vitrified clay, steel, concrete, and

corrugated steel. In general, the pipes serve individual buildings or groups of buildings, and are between 12 and 24 inches in diameter.

#### 2.1.2.5.2 Ground Water

The Carmel River Watershed and associated aquifer currently supply the majority of the municipal water to the region, including the POM (MPWMD 2004). Two main ground water resources exist near the POM: the Carmel Valley Groundwater Basin, which lies to the south of the POM under the main channel of the Carmel River and is the primary source of potable water for the installation; and the Seaside Basin, a sub-basin of the larger Salinas Valley Groundwater Basin (MPWMD 2012). The Seaside Basin, which partially underlies the OMC, is discussed in Section 2.2.2.5. The Carmel Valley Groundwater Basin (see Figure 2-8) is an unconfined alluvial aquifer underlain by shale and sandstone. The basement rock of the aquifer is composed of igneous and metamorphic rock and is considered non-water bearing (USGS 1984). The aquifer parallels the surface watercourse of the Carmel River and covers about six square miles. The upper alluvial layer is the major water-bearing unit of the aquifer, and yields 200 to 2,000 gallons per minute for municipal wells and three to 200 gallons per minute for domestic wells. The thickness varies from 30 feet in the upper basin to 180 feet near the mouth of the drainage basin. Ground water flow is generally down the valley toward the Pacific Ocean (USGS 1984).

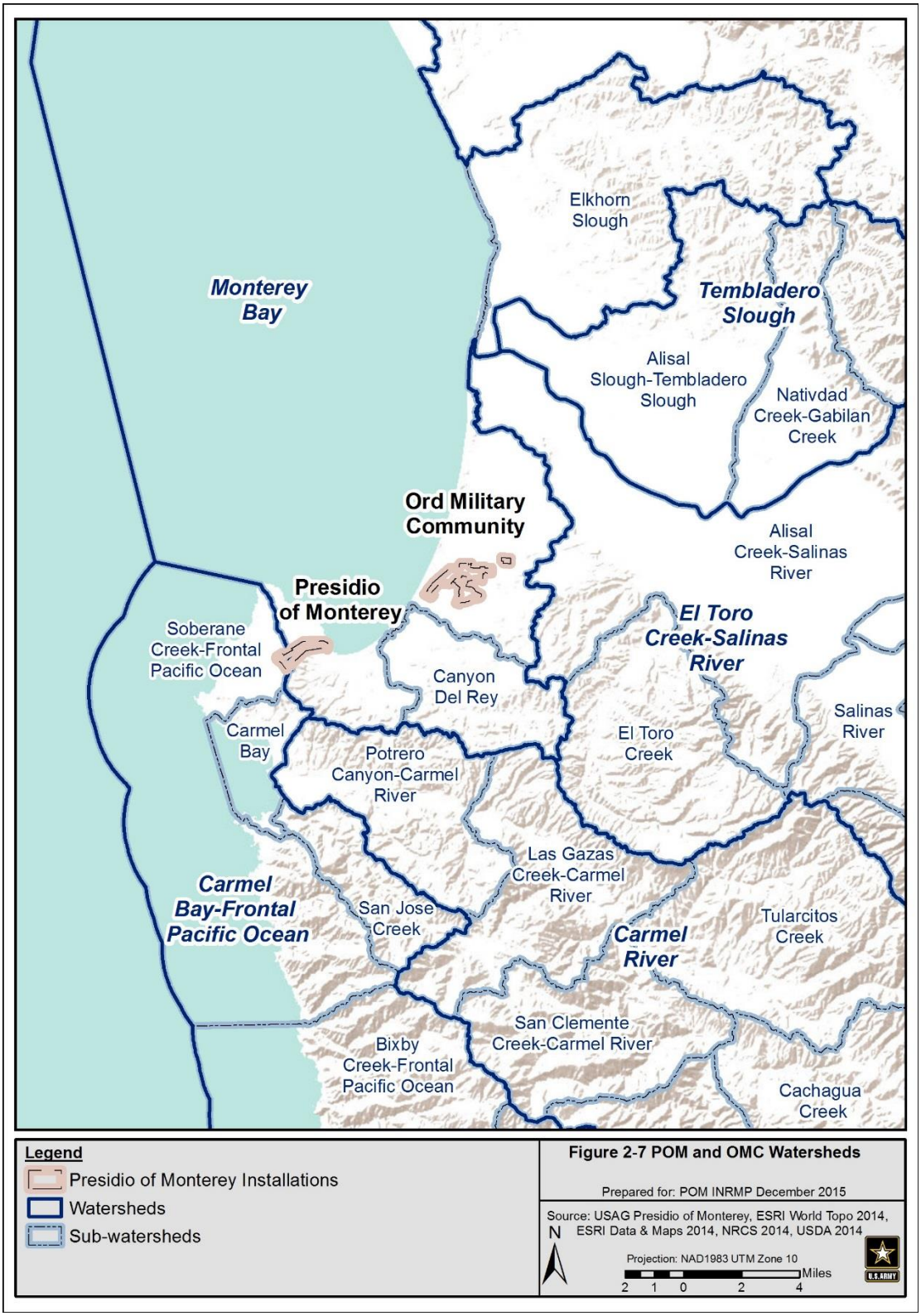
Ground water levels average 15 feet below the land surface after the aquifer has recovered from the dry summer period. Recharge is predominantly from river infiltration, and the recharge rate from the Carmel River is high, potentially reaching 100 cubic ft/s or more (USGS 1984). Pumping from supply wells, evapotranspiration, seasonal river and subsurface flow, outflow from the basin, and reservoir releases affect the ground water levels within the aquifer. Particularly in the dry summer months, well production can cause significant decline in the ground water levels and can reduce surface water flows in the river (MPWMD 2012).

The POM does not contribute to the recharge of the Carmel Valley Groundwater Basin, but currently receives most of its potable water from the aquifer. California American Water Company (CalAm), a private water distribution company, supplies water to the POM and obtains approximately 70 percent of its water supply from the Carmel Valley Groundwater Basin (USACE 2013b). A 1995 state order determined that the ground water was sourced from the Carmel River and, therefore, under jurisdiction of the SWRCB, unlike traditional ground water rights in California. The SWRCB issued a cease and desist order to CalAm in 2009 to stop it from withdrawing excess water from the aquifer beyond its allotted diversions of 3,376 acre-feet per year by 2017 (MPWMD 2012, USACE 2013b).

#### 2.1.2.5.3 Floodplains

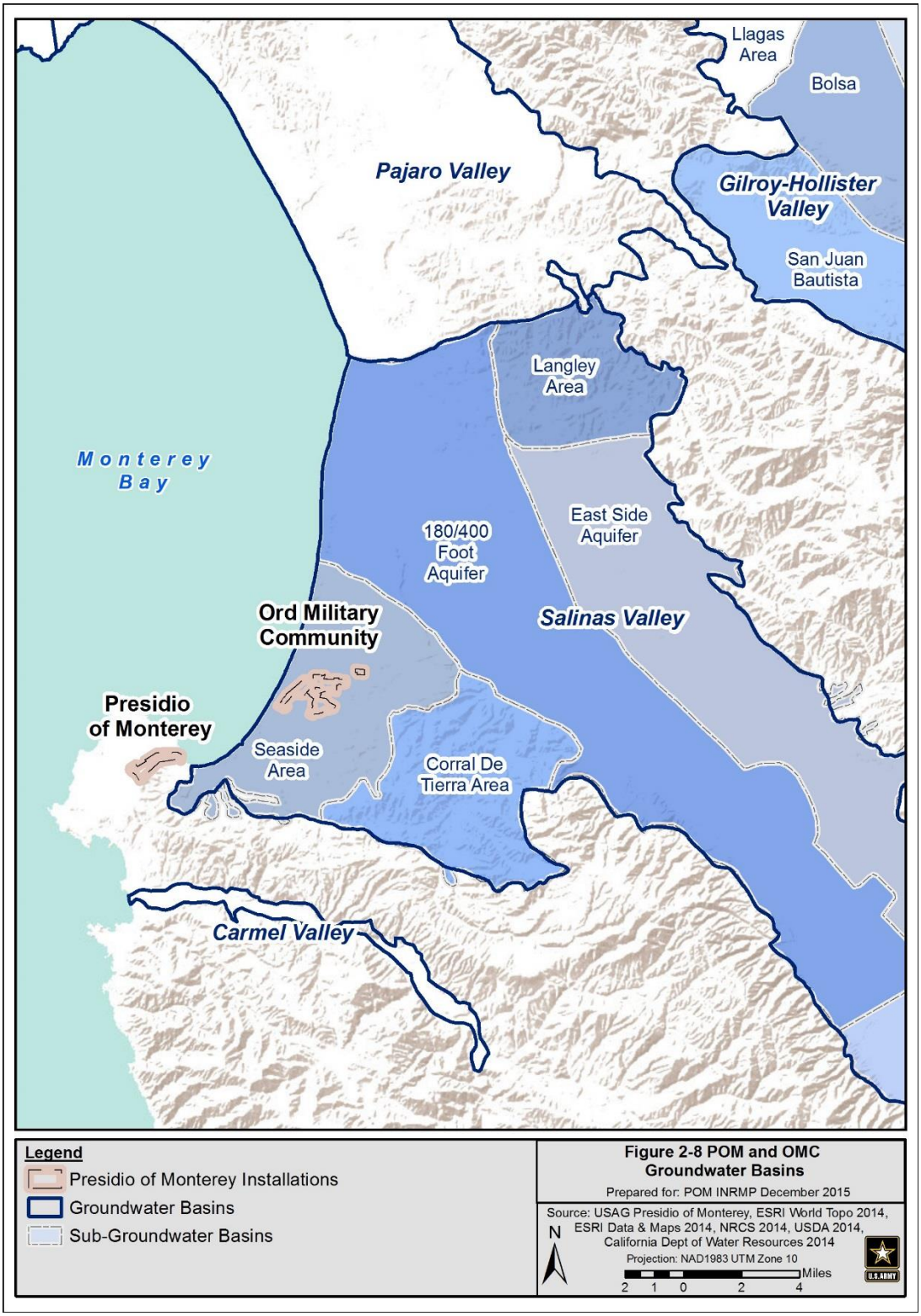
The Federal Emergency Management Agency (FEMA) has developed floodplain maps for land areas occupied by the POM, OMC, SATCOM, and Benicia Army Cemetery. The current flood hazard, updated in 2009, for the POM is Zone D, an area of undetermined flood hazard (FEMA 2009). The POM is outside the 100-year flood zone (HLA 1995).

1 ***Figure 2-7: Watersheds and Sub-Watersheds around Presidio of Monterey and Ord Military***
2 ***Community, Monterey County, California***




3

***Figure 2-8: Groundwater Basins around Presidio of Monterey and Ord Military Community, Monterey County, California***



### 2.1.3 Biological Resources

#### 2.1.3.1 Aquatic Environments

No extensive wetland or marsh areas exist on the POM. There are two intermittent streams and a small area of riparian forest in the southeast corner of the installation, as seen in Figure 2-10.

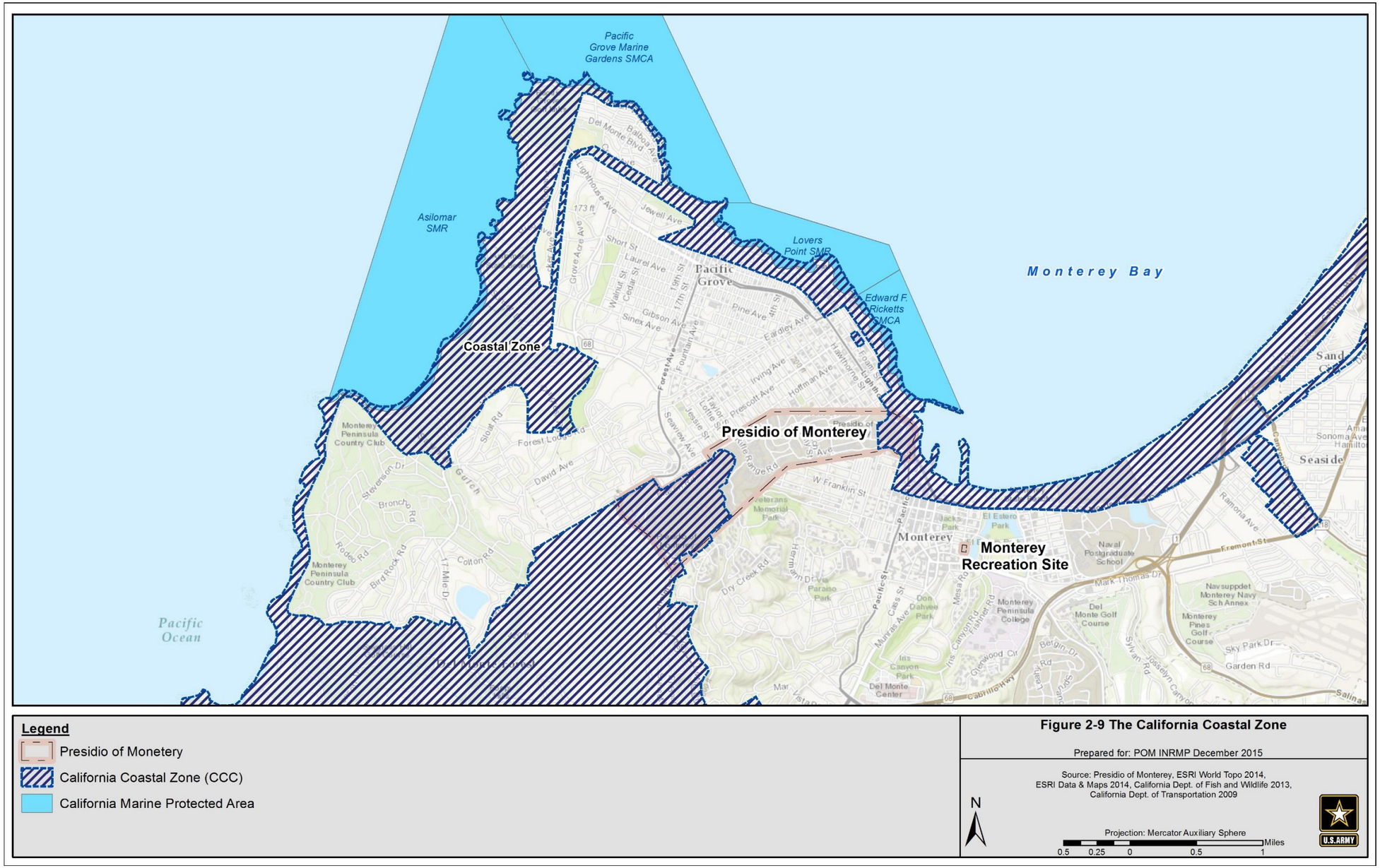
#### 2.1.3.2 Coastal Zone and Nearshore Habitat

The Federal Consistency Unit of the CCC implements the CZMA as it applies to federal activities that affect the coastal zone. Consistancy with enforceable policies of the state's certified program, as included in the *California Coastal Act of 1976*, is required for some activities on the POM and OMC. The review process of federal activites is referred to as Federal Consistancy and includes consistency determinaitons and consistency certification.

As defined through the *California Coastal Act*, the coastal zone "*…extends inland generally 1,000 yards from the mean high tide line of the sea. In significant coastal estuarine, habitat, and recreational areas it extends inland to the first major ridgeline paralleling the sea or five miles from the mean high tide line of the sea, whichever is less, and in developed urban areas the zone generally extends inland less than 1,000 yards."* In addition, the CCC has determined that the Monterey Pine Forest community meets criteria to be protected as an Environmentally Sensitive Habitat Area (ESHA) under the *California Coastal Act*.

INRMP Figure 2-9 shows California's coastal zone boundary. Although the CZMA (16 United States Code §1453) states, "*Excluded from the coastal zone are lands the use of which is by law subject solely to the discretion of or which is held in trust by the Federal Government, its officers or agents*", this does not obviate the need for federal consistency where activites on POM and OMC have effects on the coastal zone. No nearshore habitat exists on the POM.

***Figure 2-9: The California Coastal Zone in Reference to the POM***



1 *This page intentionally left blank*

### 2.1.3.3 Flora

#### 2.1.3.3.1 Vegetative Communities

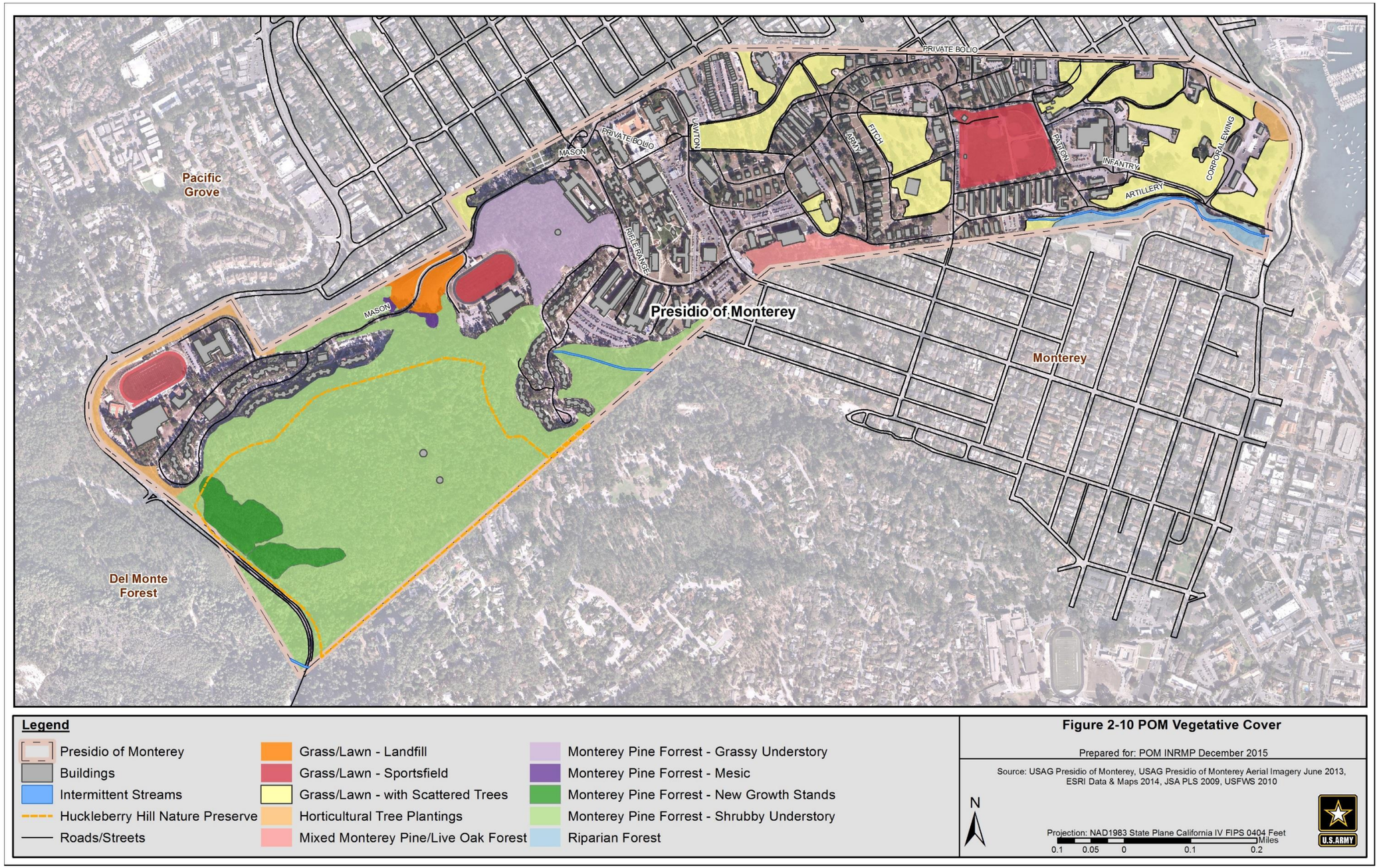
Nine vegetative communities were described in a 2009 PLS (ICF Jones & Stokes 2009). These vegetative communities cover 238.24 acres (60.7 percent) of the total 392 acres of the POM and are identified in Table 2-1 and Figure 2-10. Appendix C contains a full list of plant species identified in these vegetation communities.

***Table 2-1: Vegetative Communities on the POM***

| Vegetative Community | Acres | Percent of POM Land |
|---|---|---|
| Monterey Pine Forest-Shrubby Understory | 144.93 | 37.00 |
| Monterey Pine Forest-New Growth Stand | 7.71 | 1.90 |
| Monterey Pine Forest-Mesic | 0.44 | 0.11 |
| Monterey Pine Forest-Grassy Understory | 13.60 | 3.47 |
| Mixed Monterey Pine/Live Oak Forest | 4.48 | 1.14 |
| Riparian Forest | 4.05 | 1.02 |
| Grass/Lawn (Landfill and Sports field) | 15.04 | 3.83 |
| Grass/Lawn with Scattered Trees | 42.15 | 10.75 |
| Horticultural Tree Planting | 5.84 | 1.49 |
| No defined vegetation (developed or improved areas) | 108.76 | 39.30 |
| **Total** | 392 | 100 |

*This page intentionally left blank.*

***Figure 2-10: Presidio of Monterey Vegetative Cover, Monterey County, California***



*This page intentionally left blank.*

**Monterey Pine Forest**

Monterey pine forest is the dominant vegetative community type on the remaining natural forested areas, or unimproved land, on the POM. The 2009 PLS delineated different Monterey pine forest vegetative communities as described below.

The first, *Monterey pine forest-shrubby understory* community type, dominates the Huckleberry Hill Nature Preserve. The overstory canopy consists of Monterey pine, a special status species (see Section 2.1.3.5) that ranges from nearly closed to quite open. The understory is a mosaic of mostly shrubby areas interrupted by occasional grassy patches. The shrubby component is largely comprised of a closed canopy of sclerophyllous (containing a resistant cuticle designed to prevent water loss as an adaptation for seasonal drought, typical of the Mediterranean climate) shrub species dominated by California huckleberry (*Vaccinium ovatum*), shaggy-barked manzanita (*Arctostaphylos tomentosa*), western poison oak (*Toxicodendron diversilobum)*, sticky monkey flower (*Mimulus aurantiacus*), and sandmat manzanita (*Arctostaphylos pumila*). Species also present are toyon (*Heteromeles arbutifolia*), coast live oak, Hooker's manzanita (*Arctostaphylos hookeri* ssp *hookeri*), California coffeeberry (*Rhamnus californica*), bracken fern *(Pteridium aquilinum*), and holly (*Ilex* sp.). French broom (*Genista monspessulana)* and coyote brush (*Baccharis pilularis*) also occur in open areas along roads and trails (ICF Jones & Stokes 2009). Specific to the western slopes in the Huckleberry Hill Nature Preserve are bishop pine (*Pinus muricata*) and Gowen cypress (*Cupressus goveniana* var. *goveniana*), which grow in select spots (MACTEC 2005).

***Figure 2-11: Huckleberry Hill Nature Preserve Monterey Pine Forest with Shrubby Understory***

*Source: USAG POM*

This habitat additionally hosts three special status species: federally endangered Yadon's piperia (*Piperia yadonii*), small-leaved lomatium (*Lomatium parvifolium*), and Hooker's manzanita (MACTEC 2005; see Section 2.1.3.5).

***Figure 2-12: Hooker's Manzanita with Shaggy-barked Manzanita, Sticky Monkey Flower, and Monterey Pine***

*Source: USAG POM*

The next forest type is the *Monterey pine forest-new growth stand* is on the west side of the Huckleberry Hill Nature Preserve, near Opossum Trail. It exists as a dense stand of young Monterey pine trees, 2–4 inches diameter at breast height (DBH). The few shrubs present are mostly at the margins and are comprised of shaggy-barked manzanita, sticky monkeyflower, and California huckleberry, with coyote brush and French broom beginning to populate open areas (ICF Jones & Stokes 2009).

Next, *Monterey pine forest-mesic* type is immediately adjacent to the Monterey pine forest-shrubby understory community. It is an open stand of Monterey pine in a topographical low area. The understory within this area is dominated by kikuyu grass (*Pennisetum clandenstinum*) and appears to receive runoff from the landfill and/or athletic field located upslope of this area. Because it is relatively small, this community contains few wildlife species compared to the Monterey pine forest-shrubby understory (ICF Jones & Stokes 2009).

Next, *Monterey pine forest-grassy understory* community type occurs east of the Hilltop athletic field. The overstory consists of Monterey pine with a semi-open canopy. A few shrubs are found, but the understory is mostly composed of annual and perennial grasses such as rattlesnake grass (*Briza maxima*), California brome (*Bromus carinatus*), beardless wildrye (*Leymus triticoides*), and Pacific reed grass (*Calamagrostis nutkaensis*), and forbs such as Douglas iris (*Iris douglasii*) and star lily (*Zigadenus* sp.). The federally-endangered Yadon's piperia is known to occur within this area. This community contains similar wildlife habitat uses and species, as compared to the Monterey pine forest-shrubby understory community, though the diversity of species is lower in this area, likely due to its fragmentation from other natural communities and the high level of human disturbance associated with nearby buildings and roads (ICF Jones & Stokes 2009).

Lastly, the *mixed Monterey pine/live oak forest* community occurs south of Army lodging and east of Franklin Gate, adjacent to a small ravine. The canopy consists of coast live oak, with some Monterey pine and an understory of poison oak, French broom, buckbrush (*Ceanothus* sp.), blackberry (*Rubus* sp.), toyon, tall flatsedge (*Cyperus eragrostis*), and panic veldtgrass (*Ehrharta erecta*), as well as English ivy (*Hedera helix*) and Algerian ivy (*Hedera canariensis*).

**Riparian Forest**

Riparian forest habitat is found along an intermittent stream that follows the southeastern boundary of the POM from Franklin Street to Lighthouse Avenue. Approximately 4 acres of riparian forest, comprised of two forest subtypes, covers 1 percent of the total land area. The upper slopes and elevations of the stream corridor are dominated by coast live oak with Monterey pine (ICF Jones & Stokes 2009). Scattered arroyo willows (*Salix lasiolepis*), toyon, and other species constitute less than 10 percent of the canopy cover. The understory is dominated by poison oak, California blackberry (*Rubus ursinus*), California huckleberry, sticky monkeyflower, California coffeeberry, and French broom, with additional herbaceous species such as goose grass (*Galium aparine*), soft chess

(*Bromus hordeaceus*), leather-leaf fern (*Polypodium scouleri*), Bermuda buttercup (*Oxalis pes-caprae*), and three-cornered onion (*Allium tribracteatum*).

***Figure 2-13: Northwest view of a section of ravine within POM PLS plot 5, surrounded by riparian forest***

*Source: USAG POM*

A more truly riparian forest dominates the lower slopes and banks at the lower stream reaches. This riparian forest is dominated by coast live oak covering approximately 80 percent of the native canopy, but French broom is strongly competing for space. Arroyo willow, alder (*Alnus* sp.), and coast redwood (*Sequoia sempervirens*) are also present (ICF Jones & Stokes 2009). The understory is composed of native and non-native species including California blackberry, California wild grape (*Vitis californica*), California manroot (*Marah fabaceus*), poison oak, French broom, California blackberry, Himalayan blackberry (*Rubus discolor*), English ivy, German or Cape ivy (*Delairea odorata*), periwinkle (*Vinca major*), and nasturtium (*Tropaeolum majus*). The most invasive species present include French broom, English ivy, German ivy, and periwinkle. These species often displace native vegetation, and ivies may cause the decline or death of native trees.

**Grass/Lawn (Landfill and Sports field)**

Grass and lawn in the improved areas of the POM are vegetated with native and non-native turf grasses and forbs. Grasses and lawn areas include the landfill area and athletic fields. Typical species associated with this cover type include fescue varieties (*Festuca* spp.), kikuyu grass, hare barley (*Hordeum murinum* spp.), hop clover (*Trifolium campestre*), English daisy *(Bellis perennis*), cutleaf plantain (*Plantago coronopus*), California bur clover (*Medicago polymorpha*), and rattail fescue (*Vulpia myuros*). These areas have fairly low value as habitat for wildlife, particularly because they are regularly mowed or otherwise maintained (e.g., lawns are irrigated) (ICF Jones & Stokes 2009).

**Grass/Lawn with Scattered Trees**

This community includes all areas with grass cover that support scattered trees—usually Monterey pine and Monterey cypress—at less than 20 percent total cover. Grass/lawn with scattered trees occurs throughout the POM, surrounding family housing, barracks, and academic areas. This vegetation type supports the same general composition of grass and forb species as that described above. Grassy areas containing trees provide slightly higher value habitat for wildlife than the grass/lawn areas described above, due to the presence of trees that may support nesting of small birds and tree squirrels. In addition, many of these areas contain larger open grasslands, specifically within the lower POM area, which provide foraging habitat for a variety of birds including raptors (ICF Jones & Stokes 2009). Individuals and small clusters of the federally endangered Yadon's piperia have also been documented in these areas of grass/lawn with scattered trees.

**Horticultural Tree Plantings**

Horticultural tree plantings occur within and around improved areas at the POM. Only relatively large horticultural areas are delineated on Figure 2-10. These areas include Monterey pine and Monterey cypress stands that have an understory of managed turf, bare ground, horticultural plants, or invasive French broom. In some areas, stands of eucalyptus (*Eucalyptus* sp.) plantings also occur. Areas of eucalyptus plantings generally contain sparse understory vegetation because chemicals in the dropped leaves retard germination and growth of other plants. These areas also include mixed tree plantings that include Monterey pine, Monterey cypress, eucalyptus, coast live oak, and acacia (*Acacia* sp.). These areas contain habitat uses, and species, similar to those of the community with grass/lawn with scattered trees that is described above, though they have a lower diversity of species because they are small and fragmented (ICF Jones & Stokes 2009).

#### 2.1.3.4 Fauna

The vegetative communities on the POM support a variety of native and non-native fauna. However, no permanent aquatic environments occur on POM therefore it does not support fish or other aquatic species. A list of fauna species observed on POM and species with the potential to occur can be found in Appendix D. A 2009 PLS described the following fauna species found on site.

##### 2.1.3.4.1 Mammals

Many of the mammals observed on the POM are those that have adapted to living near human-built environments, such as (ICF Jones & Stokes 2009):

- black-tailed deer (*Odocoileus hemionus columbianus*)
- gray fox (*Urocyon cinereoargenteus*)
- feral house cat (*Felis catus*)
- Norway rat *(Rattus norvegicus*)
- raccoon (*Procyon lotor*)
- striped skunk (*Mephitis mephitis*)
- western gray squirrel (*Sciurus griseus*)

- eastern fox squirrel (*Sciurus niger*)
- coyote (*Canis iatrans*)

Additionally, gopher burrows (unknown species) have been observed and wild boar (*Sus scrofa*) scat has been detected, but these species were not directly observed (ICF Jones & Stokes 2009).

***Figure 2-14: Black-tailed deer on lower POM***

*Source: USAG POM*

**Bats**

Bat surveys were conducted using Anabat acoustic recording devices to detect species present at the POM. One bat species, California myotis (*Myotis californicus*), was detected in the riparian forest habitat. The small number of bats detected is likely a result of the lack of open water features within the POM. Most bats search for insects over open water such as lakes, streams, or aquatic environments (ICF Jones & Stokes 2009).

#### 2.1.3.4.2 Birds

A complete listing of bird species found on POM can be found in Appendix D. Bird surveys conducted in fall of 2008 and spring of 2009 detected 68 bird species including mostly common and migratory species such as (ICF Jones & Stokes 2009):

- American crow (*Corvus brachyrhynchos*)
- Anna's hummingbird (*Calypte anna*)
- acorn woodpecker (*Melanerpes formicivorus*)
- band-tailed pigeon (*Patagioenas fasciata*)
- Bewick's wren (*Thryomanes bewickii*)
- bushtit (*Psaltriparus minimus*)
- California thrasher (*Toxostoma redivivum*)
- European starling (*Sturnus vulgaris*)

- house finch (*Carpodacus mexicanus*)
- mourning dove (*Zenaida macroura*)
- western scrub jay (*Aphelocoma claifornica*)
- yellow-rumped warbler (*Dendroica coronate*)

Migratory birds are protected under The MBTA of 1918, as amended. A complete listing of migratory birds found on POM can be found in Appendix D. A little over 100 total bird species protected under the MBTA utilize the POM and OMC during their migratory journey (Reid 1987; Jones & Stokes 1995; U.S Army 2001; MACTEC 2005).

#### 2.1.3.4.3 Reptiles and Amphibians

One amphibian was observed at the POM, the San Lucia slender salamander (*Batrachoseps luciae*). No reptiles were observed (ICF Jones & Stokes 2009).

***Figure 2-15: San Lucia Slender Salamander Found in POM PLS Survey Plot 3***

*Source: USAG POM*

#### 2.1.3.4.4 Invertebrates

Very few invertebrates were found during fauna inventories at the POM and only common species were found. The Monarch butterfly (*Danaus plexippus*), a special status species, has been observed at the POM. A complete listing of invertebrates can be seen in Appendix D.

#### 2.1.3.4.5 Wildlife by Associated Habitats

The land uses on the POM provide various wildlife habitat elements, such as forage, roosts, cover, breeding areas, water sources, and dispersion corridors for species with different habitat needs. Bird diversity on POM is linked to the size of the vegetative community, the density of trees and shrubs, the level of habitat fragmentation, and the surrounding land use (ICF Jones & Stokes 2009).

**Monterey Pine Forest**

The Huckleberry Hill Nature Preserve is surrounded by roads, residential housing, and the POM, yet its Monterey pine forest is high value habitat with a significant diversity of wildlife species. This community's well-developed tree and shrub canopy provide

abundant opportunities for nesting and cover, and woody debris from fallen limbs and branches provide essential escape cover for invertebrates and amphibians. In addition, the ample production of seeds and berries and the abundance of invertebrates and small amphibians, provide plentiful foraging opportunities for wildlife (ICF Jones & Stokes 2009). Although dissected by Highway 68, the Preserve is adjacent to the Del Monte Forest, which is also dominated by Monterey pine forest. Connectivity between the preserve and Del Monte Forest may be important for wildlife dispersal and for supporting plant cross-pollination.

Most of the migratory bird species found on the POM use this habitat during part their migration. Migratory birds observed in this habitat include: Steller's jay (*Cyanocitta stelleri*), red tailed hawk (*Buteo jamaicensis*), California thrasher, Townsend's warbler (*Dendroica townsendi*), western scrub jay, Yellow-rumped warbler, bushtit, purple finch (*Carpodacus purpureus*), Golden-crowned kinglet (*Regulus satrapa*), house wren (*Troglodytes aedon*), warbling vireo (*Vireo gilvus*), and dark-eyed junco (*Junco hyemalis*). Additionally, olive-sided flycatcher (*Contopus cooperi*), a California species of special concern, was also observed within this community. Common mammal species observed include: western gray squirrel, gray fox, black-tailed deer (*Odocoileus hemionus*), brush rabbit (*Sylvilagus bachmani*), desert cottontail (*Sylvilagus audubonii*), black tailed hare (*Lepus californicus*), American badger (*Taxidea taxus*), and raccoon.

Non-native species include wild boar (based on historical sightings and 2009 scat observation), Virginia opossum (*Didelphis virginiana*), domestic feral cat (*Felis catus*), and Norway rat. Historically, California slender salamander (*Batrachoseps attenuatus*) is the only amphibian species observed within this community. Common invertebrate species observed include banana slug (*Ariolimax columbianus*), Monarch butterfly, and echo azure (*Celastrina echo*). Other species less frequently seen include mountain lion (*Puma concolor*) and coyote.

**Riparian Habitat**

Riparian forest communities provide high-value habitat for many wildlife species. The presence of water and a well-developed canopy provide escape cover, foraging, and nesting opportunities for wildlife (ICF Jones & Stokes 2009). Common bird species found in this community include acorn woodpecker, Nuttall's woodpecker (*Picoides nuttallii*), downy woodpecker (*Picoides pubescens*), American robin (*Turdus migratorius*), Anna's hummingbird, barn swallow (*Hirundo rustica*), black phoebe (*Sayornis nigricans*), Bullock's oriole (*Iceterus bullockii*), bushtit, chestnut-backed chickadee (*Poecile rufescens*), spotted towhee (*Pipilo maculatus)*, California towhee (*Melozone crissalis*), song sparrow (*Melospiza melodia*), white-crowned sparrow (*Zonotrichia leucophyrys*), California thrasher, ruby-crowned kinglet (*Regulus calendula*), dark-eyed junco, house sparrow (*Passer domesticus*), and Pacific-slope flycatcher (*Empidonax difficilis*). Common mammal species observed include Norway rat, western gray squirrel, gray fox, raccoon, and black-tailed deer. A 2009 acoustic monitoring survey for bats determined one species, the California myotis, occurs within this community (ICF Jones & Stokes 2009). The only amphibian species observed within this community is the San Lucia slender salamander. Common invertebrate species

observed include Monarch butterfly, honey bees (*Apis mellifera*), centipedes (*Chilopoda* sp.), millipedes (*Diplopoda* sp.), and pill bugs (*Armadillidiidae* sp.). Other species less frequently seen include mountain lion and coyote.

**Grass/Lawn with Scattered Trees**

Grassy areas containing trees provide slightly higher value habitat for wildlife than the grass/lawn areas due to the presence of trees that may support nesting of small birds and tree squirrels. Additionally, many of these areas contain larger open grasslands, specifically within the lower POM area. They were observed to provide foraging habitat for a variety of birds including raptors. Wildlife species observed include American kestrel (*Falco sparverius*), red-shouldered hawk (*Buteo lineatus*), red-tailed hawk (*Buteo jamaicensis*), western meadowlark (*Sturnella neglecta*), dark-eyed junco, house finch, barn swallow, Anna's hummingbird, pygmy nuthatch (*Sitta pygmaea*), ruby-crowned kinglet, darkling beetles (*Eleodes* sp.), and American painted lady (*Vanessa virginiensis*). In addition to common species observed, a Vesper sparrow (*Pooecetes gramineus*), a California species of special concern, was also observed in this habitat (ICF Jones & Stokes 2009). Though the survey area is outside of this species' expected range, the species is likely an occasional visitor to the region.

**Urban Habitat**

The "improved" land use category at the POM approximates the urban residential wildlife habitat categories described by McBride and Reid (1988). These areas contain a mosaic of landscaped areas including grass/lawn areas such as the landfill and sports fields. Some common wildlife species observed in this area include acorn woodpecker, Anna's hummingbird, bushtit, chestnut-black chickadee, band-tailed pigeon, ruby crowned kinglet, pygmy nuthatch, dark-eyed junco, western scrub jay, California towhee, house finch, mourning dove, rock pigeon (*Columba livia*), northern flicker (*Colaptes auratus*), northern mockingbird (*Mimus polyglottos*), oak titmouse (*Baeolophus inornauts*), raccoon, black-tailed deer, feral cat, pill bugs, centipedes, earwigs (*Dermaptera* sp.), and Monarch butterfly.

### 2.1.3.5 Special Status Species

Per DODM 4715.03 POM will provide for the protection and conservation of state protected species when practicable. POM will also provide conservation measures for state-listed species defined under the ESA, as long as such measures are not in direct conflict with the military mission. When conflicts do occur, consultation will be conducted with the appropriate state authority to determine if any conservation measures can be feasibly implemented to mitigate impacts.

Special status species generally include those species federally listed as endangered, threatened, candidate species, or a species of concern; or species-at-risk (SAR); or those designated by a state resource agency as being biologically rare, restricted in distribution, declining throughout their range, or those that have a critical or vulnerable stage in their life cycle that warrants monitoring. Figure 2-17 shows special status species observed at the POM.

#### 2.1.3.5.1 Flora

Special status plants that are located on the POM can be found in Table 2-2. These species are considered "special status" if they fall into the one of the following categories:

- plants listed, or proposed for listing, as threatened or endangered under the federal ESA (50 CFR 17.12 [listed] and various notices in the Federal Register [proposed species])
- plants that are candidates for possible future listing as threatened or endangered under the federal ESA (55 Federal Register [FR] 6184, February 21, 1990)
- plants listed, or proposed for listing, by the State of California, as threatened or endangered under the *California Endangered Species Ac*t (14 CCR 670.5)
- plants listed under the *California Native Plant Protection Act* (California Fish and Game Code, Section 1900 et seq.)
- plants that meet the definitions of rare or endangered under the *California Environmental Quality Act* (CEQA; State CEQA Guidelines, Section 15380)
- plants considered by CNPS to be "rare, threatened, or endangered in California" (Lists 1B and 2 as updated by CNPS) (CNPS 2014)
- plants listed by CNPS
    - more information is needed to determine their status, and plants of limited distribution (List 3 and 4 as updated by CNPS), which may be included as special status species on the basis of local significance or recent biological information (CNPS 2014)
- plant species identified by the DOD as "species-at-risk" (SAR)
    - SAR are defined as native, regularly occurring species in the United States that are not federally listed under federal ESA, but are either (1) candidates for listing under the ESA, or (2) critically imperiled or imperiled across their range, according to the NatureServe conservation status rank criteria (NatureServe 2011)

Four special-status plant species occur at the POM: Monterey pine, Hooker's manzanita, small-leaved lomatium, and Yadon's piperia (also known as Yadon's rein orchid). Two plant species that potentially occur on POM are listed as DOD SAR "imperiled": pine rose (*Rosa pinetorum*) and sandmat manzanita (Madison personal communication 2014).

***Figure 2-16: Special Status Plant Species at the POM***

A) Hooker's manzanita B) small-leaved lomatium C) Yadon's piperia

**Yadon's piperia (*Piperia yadonii*)—Federally Endangered, State Special Plant List, CNPS List 1B.1 species**

Yadon's piperia, also known as Yadon's rein orchid, was listed by the USFWS as endangered in 1998 (USFWS 1998a). Yadon's piperia is a native orchid (Family Orchidaceae) found in a very limited area of central California. It is a small perennial plant that grows from underground tubers. The small leaves emerge in the late fall or winter after the ground is moistened by seasonal rains. A single stalk of flowers, up to 20 inches high, emerges in the late spring and summer months. The flowers are fertilized by moths, and the seed capsules are dispersed by wind. Growth is dependent on association with a mycorrhizal fungi. Not all plant tubers produce leaves or flowers every year. A tuber may remain dormant for one to four years. It may send out leaves but not a flower in some years, and it may send out leaves and flower in other years. They occupy soils that are characterized as sand, fine sand, or sandy loams that are relatively dry and with low levels of organic matter in the soil. They are predominantly found in pine forest, primarily Monterey pine, with a canopy cover of 20 to 70 percent. Additional information on the biology of Yadon's piperia can be found in the USFWS (2004) Recovery Plan for Five Plants from Monterey California.

To protect known populations of Yadon's piperia on the POM, two conservation areas were established as part of the 2013 Real Property Master Plan BO (8-8-13-F-29) (See Figure 2-4). Conservation Area #1 is approximately 12.5 acres and located in the north-central area of the POM between B630 and Hilltop Field. Conservation Area #2 is approximately 3.5 acres and is located north of Mason Road in northwestern area of the POM. These conservation areas encompass approximately 16 acres, which represents 34 percent of the occupied habitat and together with the Huckleberry Hill Nature Preserve, approximately 80 percent of the potential habitat and 75 percent of the individuals identified on the POM (USFWS 2013a). These 16 acres will remain as conservation areas for 20 years, or the life of the Real Property Master Plan, whichever is longer (USFWS 2013a). At the time of listing, the primary threats to Yadon's piperia were habitat loss

from development, habitat fragmentation and isolation, competition from non-native species, and herbivory (USFWS Ventura 2009). As of 2009, habitat loss, fragmentation, and/or degradation from development, and predation through deer herbivory were recognized as the primary threats to the species, with the invasion of non-native plants and fire suppression activities potentially increasing the severity of these threats (USFWS Ventura 2009).

More information can be found in the POM *Endangered Species Management Component Plan (ESMCP)* (Appendix G).

**Hooker's manzanita (*Arctostaphylos hookeri* ssp. *hookeri*)—State Special Plant List, CNPS List 1B.2 species**

Endemic to the Monterey Bay area, Hooker's manzanita is a mat- or mound-forming to erect perennial, evergreen shrub in the Heath family (*Ericaceae*). Within its range, Hooker's manzanita is found in maritime chaparral, coastal scrub, and closed-cone coniferous forests (MACTEC 2005). This species has a California Rare Plant Rank of 1B.2 (Rare, Threatened, or Endangered in California and Elsewhere) and is considered a DOD SAR.

Hooker's manzanita flowers from February to June. Inflorescence are racemes with generally 10 flowers. White to pink flowers are roundish, with corollas 1/4 inch (4–6mm) long. Fruit are egg-shaped or round red drupes, 1/4 inch (4–6mm) long. This species requires fire to regenerate from a soil seedbank. The exact triggers for germination are unknown, but may (as with other manzanitas) include a combination of both heat and chemicals from charred wood or smoke. The necessary fire-return interval for the species is also unknown but is probably between 80–100 years.

Populations are known to exist in Larking Valley, Prunedale Hills, the former Fort Ord (the OMC supports the largest population), the Monterey Peninsula, along the northern end of the Santa Lucia Range, as well as at the POM. At the POM, Hooker's manzanita occurs in the understory of the Monterey pine forest at Huckleberry Hill Nature Preserve and in the Yadon's piperia conservation areas. Hooker's manzanita is also planted in median strips and other landscaped areas throughout the POM. A 2010 update of Global Positioning System (GPS)-collected data shows an area of Hooker's manzanita in the northwestern corner of the Huckleberry Hill Nature Preserve, which is largely consistent with regrowth associated with a 1987 fire (USAG POM 2010). More information can be found in the POM ESMCP (Appendix G).

Overall, the native occurrence of Hooker's manzanita has declined due to habitat loss brought about by coastal development and the suppression of fire (Jones & Stokes 1995). Exotic, invasive weeds also threaten the species, especially jubata grass (*Cortaderia jubata*), iceplant (*Carpobrotus* sp.), French broom, and blue gum eucalyptus (*Eucalyptus globulus*).

**Small-leaved lomatium (*Lomatium parvifolium*)—State Special Plant List, CNPS List 4.2 species**

Small-leaved lomatium is an erect, taprooted perennial forb in the carrot family. Its stem is short, and has 3–15 cm leaves with yellow flowers (UC Berkeley 1993). Its blooming period is from January–June (CNPS 2014). The species is threatened by development and considered "fairly endangered in California" (CNPS 2009). At the POM, it grows in the understory of Monterey pine forest and in chaparral dominated by Hooker's manzanita in the Huckleberry Hill Nature Preserve.

Small-leaved lomatium is found in Monterey, Santa Cruz, and San Luis Obispo counties and occurs in pine forest and chaparral habitats on serpentine outcrops. Elevation for this plant species ranges from 70–150 meters. Small leaved-lomatium populations have declined as a consequence of coastal development in Monterey pine forest and chaparral habitats (Jones & Stokes 1995).

**Pine rose (*Rosa pinetorum*)—State Special Plant List, CNPS List 1B.2 species, DOD SAR Imperiled species**

Pine rose is a dwarf rhizomatous shrub native and endemic to California. It generally grows to less than one meter in height, with gray-brown relatively short stems and abundant straight prickles (Ertter 2001). It has two-to-three leaflets per side, generally 10-40 millimeters long and elliptic, and its blooming period is June to August (Ertter 2001).

Pine rose habitat is predominately Monterey pine understory and canyons less than 300m in elevation. It appears to be highly localized and restricted to the open understory of native stands of Monterey pine from the Monterey Peninsula to Carmel Highlands, Waddell Creek near Año Nuevo State Park, and potentially Cambria. This plant species is highly selective in its habitat; this is a threat to the overall distribution of this species. Without the ability to have a diverse habitat selection, the habitats that are suitable for the pine rose must be monitored and preserved (Ertter 2001).

At the POM, pine rose has not been documented, but has the potential to occur in the Huckleberry Hill Nature Preserve because it has been documented in the adjacent Del Monte Forest (L. Madison, personal communication 2014 and Matthews 1997).

Other special status plant species that have the potential to occur on the POM have been included in Table 2-2.

***Table 2-2: Special Status Plant Species that are Known to Occur or Have the Potential to Occur on the POM***

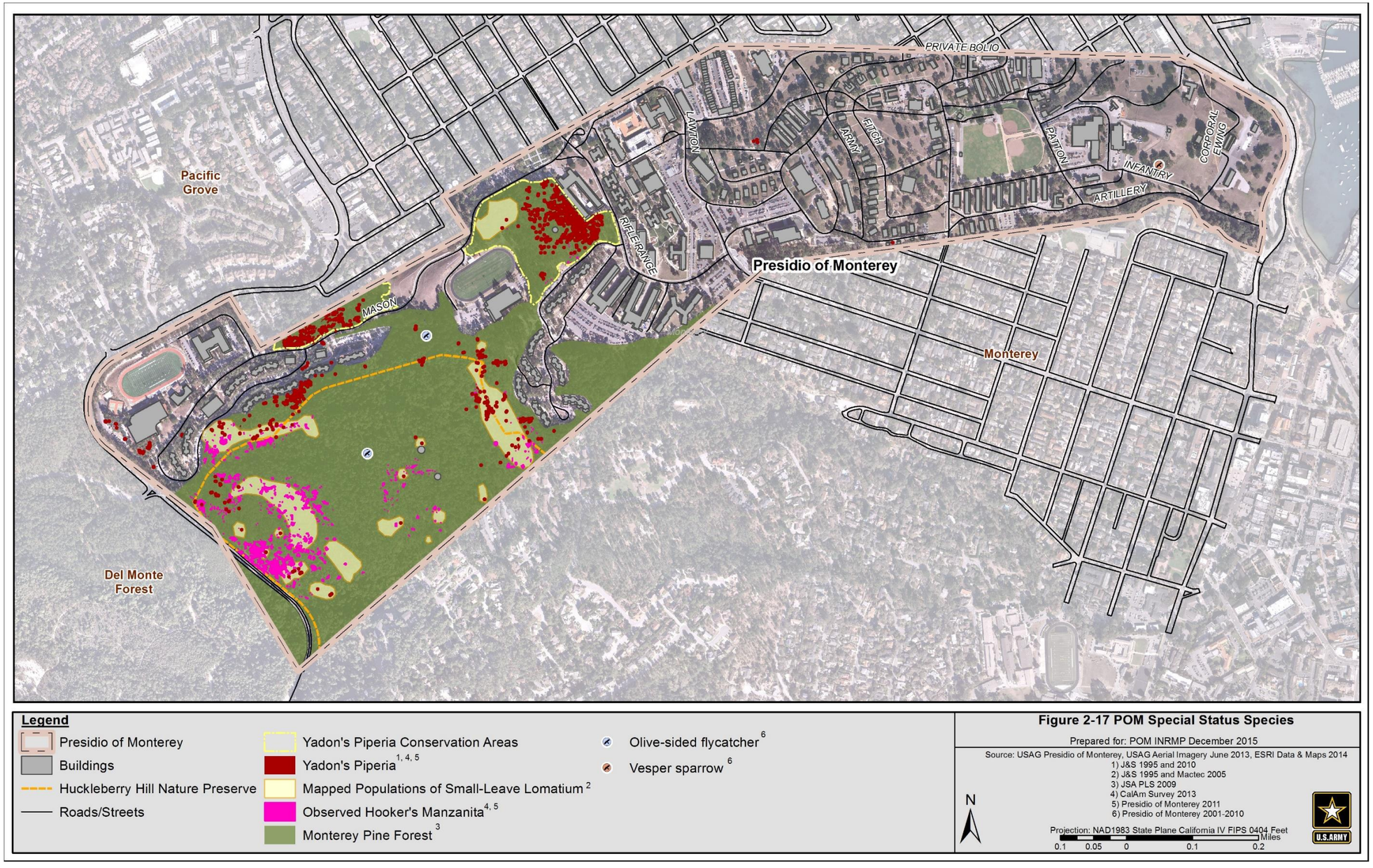
| Common Name | Scientific Name | Federal Status[1] | State Status[2] | CNPS[3] | SAR Status[4] | Occurrence |
|---|---|---|---|---|---|---|
| Hooker's manzanita | *Arctostaphylos hookeri* ssp. | | SP | List 1B.2 | T2 | Present |
| Small-leaved lomatium | *Lomatium parvifolium* | | SP | List 4.2 | G3 | Present |
| Monterey pine | *Pinus radiata* | | | List 1B.1 | G1 | Present |
| Yadon's piperia (Yadon's rein orchid) | *Piperia yadonii* | E | SP | List 1B.1 | G2 | Present |
| Hickman's onion | *Allium hickmanii* | | SP | List 1B.2 | G2 | Potential to occur |
| Sandmat manzanita | *Arctostaphylos pumila* | | SP | List 1B.2 | G2 | Potential to occur |
| Gowen cypress | *Callitropsis goveniana* | T | SP | List 1B.2 | T1 | Potential to occur |
| San Francisco collinsia | *Collinsia multicolor* | | SP | List 1B.2 | G2 | Potential to occur |
| Eastwood's goldenbush | *Ericameria fasciculata* | | SP | List 1B.1 | G2 | Potential to occur |
| Marsh microseris | *Microseris paludosa* | | SP | List 1B.2 | G2 | Potential to occur |
| Michael's rein orchid | *Piperia michaelii* | | SP | List 4.2 | G3 | Potential to occur |
| Pine rose | *Rosa pinetorum* | | SP | List 1B.2 | G2 | Potential to occur |
| Santa Cruz microseris | *Stebbinsoseris decipiens* | | SP | List 1B.2 | G2 | Potential to occur |
| Pacific Grove clover | *Trifolium polyodon* | | SP | List 1B.1 | G1 | Potential to occur |

*[1]Federal ESA status code. E: Federally listed as endangered; T: Federally listed as threatened*
*[2]California ESA and Native Plant Protection Act status code. SP: Species on the special plants list (CDFW 2014b)*
*3California Native Plant Society status code (CNPS 2014)[1]*
*[4]Species-at-Risk on DOD Installation code[2]*

[1]List 1B: Plants rare, threatened, or endangered in California and elsewhere. It is mandatory that they be fully considered during preparation of environmental documents relating to the CEQA; List 4: Plants of Limited Distribution. Plants in this category are found infrequently throughout a broader area in California, and their vulnerability or susceptibility to threat appears low at this time. Although these plants are not "rare" from a statewide perspective, they are uncommon enough that their status should be monitored regularly. The CNPS recommends that List 4 plants be evaluated for consideration during preparation of environmental documents relating to the CEQA; List x.1: Seriously endangered in California (over 80 percent of occurrences are threatened / high degree and immediacy of threat); List x.2 : Fairly endangered in California (20–80 percent occurrences are threatened).

[2]Rounded Global Value from NatureServe Explorer, available at http://www.natureserve.org/explorer/. G1 or T1: Critically imperiled. G2 or T2: Imperiled. G3: vulnerable to extirpation or extinction. G4: apparently secure. G5: demonstrably widespread, abundant and secure.

1 ***Figure 2-17: Special Status Plant and Animal Species Found on Presidio of Monterey, Monterey County, California***




2

*This page intentionally left blank.*

#### 2.1.3.5.2 Fauna

Special status animals are species that fall into the following categories:

- animals listed, or proposed for listing, as threatened or endangered under the federal ESA (50 CFR 17.12 [listed] and various notices in the Federal Register [proposed species])
- animals that are federal candidates for listing by the USFWS
- animals designated by the USFWS as "species of concern" (former federal category 2 candidate) or "birds of conservation concern" (USFWS 2008a), or "migratory nongame birds of management concern" (USFWS 1995)
- animals recommended for candidate status by the USFWS
- animals currently listed by the State of California as threatened or endangered
- animals that are California candidates for listing as threatened or endangered
- animals designated by the CDFW as "species of special concern" (CDFG 2008)"
- animals designated by the California Natural Diversity Database (CNDDB) as a "special animal" (CDFG 2011)
- animals identified by the DOD SAR
    - SAR are defined as native, regularly occurring species in the United States that are not federally listed under the federal ESA, but are either (1) candidates for listing under the ESA, or (2) critically imperiled or imperiled across their range, according to the NatureServe conservation status rank criteria (NatureServe 2011)

Eight special-status animal species are known to occur at the POM: Santa Lucia slender salamander (*Batrachoseps luciae*), Monarch butterfly, oak titmouse, olive-sided flycatcher, Vesper sparrow, Allen's humming bird (*Selasphorus sasin*), chipping sparrow (*Spizella passerine*), and the Sharp-shinned hawk (*Accipiter striatus*). Special status mammals that have the potential to occur on POM include mountain lion, hoary bat (*Lasiurus cinereus*), and American badger. Figure 2-16 shows the general locations or sightings of special status animal species on the POM. No federal or state endangered or threatened animal species exist on the POM, however the California condor (*Gymnogyps californianus*) has the potential to occur. Table 2-4 lists the animal species that occur or have the potential to occur on the POM.

**Santa Lucia slender salamander (*Batrachoseps luciae*)—State Special Animal**

At the POM, the Santa Lucia slender salamander has been observed during surveys within the riparian forest habitat and were incidentally observed in the Monterey pine forest during the 2010 Yadon's piperia surveys by natural resource staff (Madison 2014). Santa Lucia slender salamanders are found mostly along the west slope of the Santa Lucia mountains, from the Monterey area to San Luis Obispo County (Stebbins 2003). The species occur in redwood and mixed conifer forests, woodlands, and open and disturbed habitats (Jockusch et al. 2001). A lungless salamander, Santa Lucia slender salamanders breathe through their skin requiring them to live in damp environments on land (California Herps 2014).

Predominately active underground from April–May until November–December, the Santa Lucia slender salamander increases its surface activity after the first winter rains. Eggs are laid

underground in late fall and winter, and hatchlings emerge during the winter and early spring (Stebbins 1954). Eggs hatch in approximately 78 days. Young slender salamanders hatch fully formed, not into swimming larvae as with other types of salamanders (California Herps 2014).

Adult Santa Lucia slender salamanders are 1.25–1.8 inches long; they are slim with short limbs, a narrow head, a long slender body, and long tail. Costal and caudal groves (approximately 18–19) make the species appear worm-like. Four toes on the front and hind feet are typical of slender salamanders (other California salamanders have five toes on their hind feet). Santa Lucia slender salamanders are dark blackish-brown with a reddish dorsal stripe and some whitish speckling (California Herps 2014).

Threats to Santa Lucia slender salamander are unknown; there are no specific conservation concerns regarding the species (California Herps 2014).

**Monarch butterfly (*Danaus plexippus*)—State Special Animal**

At the POM, monarch butterflies were observed at several sites in riparian and mixed Monterey pine/live oak forests (ICF Jones & Stokes 2009). Monarchs are known for their large migration patterns, with several generations of butterflies completing one migration cycle in a year. Adult butterflies lay eggs on milkweed and the larval stage feeds almost exclusively on milkweed, while the adults feed primarily on nectar from flowers (CEC 2008). Monarchs have been observed to use Monterey pine, eucalyptus, and other trees in Pacific Grove, California for overnight roosting during their migration, with as many as several thousand individuals congregating at one time (Reid 1987). Threats to monarch butterflies include habitat destruction and fragmentation, deforestation, urbanization, and use of toxic- and agrochemicals (CEC 2008; The Xerces Society 2013).

**Olive-sided flycatcher (*Contopus cooperi*)—State Species of Special Concern, USFWS Bird of Conservation Concern, Protected by the MBTA**

On July 6 and 7, 2005, eight olive-sided flycatchers were observed during special status species surveys in the Monterey pine forest at the Huckleberry Hill Nature Preserve (MACTEC 2005). They were heard and seen perched in, and flying among, the Monterey pine trees. The bird was observed again during planning level surveys in 2009 in the Monterey pine forest shrubby understory community of Huckleberry Hill Nature Preserve (ICF Jones & Stokes 2009).

The olive-sided flycatcher breeds in montane and northern coniferous forests, at forest edges and openings such as meadows and ponds. It winters at forest edges and clearings where tall trees or snags are present, similar to its breeding habitat (Altman and Sallabanks 2012). It feeds on flying insects over the forest canopy, and in meadows, forest clearings, or shrub covered slopes. It is a summer resident in forest and woodlands throughout California below 2,800 meters (9,000 feet) (Zeiner et al. 1990a.) This neotropical migrant breeds in habitat along forest edges and openings including natural edges of open water. It prefers tall, prominent trees and snags, which serve as singing and foraging perches with unobstructed air space for foraging. The olive-sided flycatcher arrives in California in the spring, where it breeds and nests, and then typically migrates in September (MACTEC 2005). Significant species decline over the last 30 years has resulted in

the species' being listed by state and federal agencies as a special species, in addition to being placed on the American Bird Conservancy's United States Watchlist of Birds of Conservation Concern (ABC 2007).

Olive-sided flycatcher's threats include logged forests, since these forests look like their suitable habitat—postfire forests. Yet, logged forests do not have the same quality and suitability that postfire habitats have, therefore, the bird chooses the lower quality habitat but cannot sustain life there. Clearcutting is another threat since individuals within the area of the clearcutting will disperse when it begins, creating a disruption in their habitats (Kotlier, N.B. 2007).

**Oak titmouse (*Baeolophus inornatus*)—State Special Animal, USFWS Bird of Conservation Concern**

The oak titmouse was observed in 2009 in mixed Monterey pine/live oak forest south of Army lodging and east of Franklin gate at the POM (ICF Jones & Stokes 2009). A year-round resident in California, oak titmouse occurs in montane hardwood-conifer; montane hardwood; blue, valley, and coastal oak woodlands; and montane and valley foothill riparian habitats in crismontane California (Zeiner et al. 1990a). The oak titmouse nests in natural cavities or woodpecker holes, with a clutch size between six to seven eggs (Cicero 2000). Threats to oak habitats are also immediate threats to the oak titmouse. These threats include conifer encroachment, loss of habitat structure, invasive species, and land use conversion. Some of the additional threats to these habitats include intense wildfires (Natural Resources Conservation Service [NRCS] 2015).

**Vesper sparrow (*Pooecetes gramineus*)—State Species of Special Concern, USFWS Bird of Conservation Concern**

Vesper sparrows occur in sparse or open stands of sagebrush, low sagebrush, and similar habitats, and is uncommon to the Central Valley and bordering foothills (Zeiner et al. 1990a). The Vesper sparrow was observed in a grass/lawn community at the POM, and while out of its expected range, it is likely to be an occasional visitor to the area (ICF Jones & Stokes 2009).

In the western United States, sagebrush habitat loss, degradation, and fragmentation are the largest threats to Vesper sparrows. Also, heavy grazing and range management in shrub and brush habitats are ongoing threats to the species (Colorado Parks & Wildlife 2005).

**Allen's hummingbird (*Selasphorus sasin*)—State Special Animal, USFWS Bird of Conservation Concern**

Allen's hummingbird is a common summer resident along the majority of the California coast from January to July. As a migrant, the species occurs in a variety of woodland and scrub habitats, but breeders are most common in coastal scrub, valley foothill hardwood, and valley foothill riparian habitats (Zeiner et al.1990a.). Allen's hummingbirds were observed on the POM in the Monterey pine forest-shrubby understory in the Huckleberry Hill Nature Preserve, and in the riparian area at the southeast end of the installation (ICF Jones & Stokes 2009).

A restricted range is one of the major threats to Allen's hummingbird, due to habitat loss, use of pesticides, and invasive species within their restricted range (Oiseaux-Birds n.d.).

**Chipping sparrow (*Spizella passerine*)—State Special Animal**

Chipping sparrows are a summer migrant and visitor to California, preferring open, wooded habitats with a sparse or low herbaceous layer and few shrubs (Zeiner et al. 1990a). The chipping sparrow requires trees for nesting, resting, singing, and cover (Grinnell and Miller 1944), and eats mostly insects and spiders (*Araneae* sp.) during the breeding season (Martin et al. 1961). The chipping sparrow was observed on the POM in the Monterey pine forest-shrubby understory in the Huckleberry Hill Nature Preserve (ICF Jones & Stokes 2009). The chipping sparrow is listed as *Apparently Secure/Secure* by the CDFW CNDDB Special Animals List, but nesting chipping sparrows are tracked by the database.

**Sharp-shinned hawk (*Accipiter striatus*)—State Special Animal**

During special-status wildlife species surveys conducted at the POM in 1994 and 1995, a sharp-shinned hawk was observed at the Huckleberry Hill Nature Preserve on 01 December 1994, and one was observed again on 04 May 1995, at the same location (U.S. Army, 1995d). Sharp-shinned hawks are primarily found in riparian forests, conifer forests, and oak woodlands. The observed bird(s) likely used the POM for foraging. Monterey pine forest at the POM is considered potential nesting habitat; however, no nests, pellets, droppings, or other evidence of breeding or frequent use were observed (Jones & Stokes 1995). Additional PLS did not observe the species, or any additional evidence of frequent use (ICF Jones & Stokes 2009). Threats to the sharp-shinned hawk include collision with windows and cars, and loss of young forest habitat (Hawk Mountain 2015).

**California condor (*Gymnogyps californianus*)—Federal Endangered, State Endangered**

The condor has a low potential to occur on the POM as a flyover during migration. However, this may change as the California condor becomes reestablished and its range expands (USACE 2013a).

The California condor is the largest land bird in North America, with adult wingspans of up to 2.8 meters (9.2 feet) and weighing approximately 8.5 kilograms (18.7 pounds) (Snyder and Schmitt 2002). Condors are obligate scavengers that feed primarily on large mammal carcasses (USFWS PSR 2013). Condors reach sexual maturity between five and seven years of age, and are monogamous once paired (Alsop 2001). Adults do not breed every year, and lay one egg when they do breed (Snyder and Schmitt 2002). Incubation of the egg lasts approximately 53–60 days, and both parents share the responsibilities of incubating and rearing the hatchling (Snyder and Schmitt 2002).

California condors were distributed across western North America (British Columbia, Canada to Baja California, Mexico) in the early 19th century, but their range was restricted to southern California by the 1980s (USFWS PSR 2013). Their early decline is likely attributed to collection, and poisoning from dichlorodiphenyltrichloroethane (DDT) and varmint control efforts, with lead poisoning recognized as a contributing factor by 1980 (Snyder and Snyder 2005). Active

conservation began in 1930 with a focus on habitat preservation, and a captive breeding program began in 1982 (USFWS PSR 2013).

Threats to California condors include high voltage power lines, micro-trash from human activities, habitat loss, illegal shootings, and antifreeze or lead poisoning (Defenders of Wildlife 2015). Critical habitat was designated for the California condor on 24 September 1976 (USFWS 1976). POM is not located within the designated critical habitat for the condor.

**Mountain Lion (*Puma concolor*)—State Species of Special Concern**

Mountain lions are widespread throughout California, occurring in nearly all habitats that support deer populations (Zeiner 1990b). Individual cats are often drawn to the POM because of the presence of black-tailed deer, a prey species. Although mountain lions have not been observed during wildlife surveys, various observations have been reported to the POM police in previous years (Reese 2007). Mountain lions likely use the POM for hunting. No evidence of denning or long-term habitation has been documented.

There are two types of threats to mountain lions: intentional and other. Intentional threats include hunting for sport, trophies, or cash, and humans killing or poisoning them due to livestock loss, preying on pets, or to protect people. Other threats include habitat loss, degraded ecosystems, pollution, vehicle collisions, starvation, disease, or orphaning (Mountain Lion Foundation 2015).

***Table 2-3: Special Status Animal Species Sightings or General Locations on the POM***

| Common Name | Scientific Name | General Location or Sighting |
|---|---|---|
| Santa Lucia slender salamander | *Batrachoseps luciae* | In the riparian forest habitat and were incidentally observed in the Monterey pine forest |
| Monarch butterfly | *Danaus plexippus* | In riparian and mixed Monterey pine/live oak forests |
| Oak titmouse | *Baeolophus inornatus* | In mixed Monterey pine/live oak forest south of Army lodging and east of Franklin gate at the POM |
| Olive-sided flycatcher | *Contopus cooperi* | In the Monterey pine forest and shrubby understory at the Huckleberry Hill Nature Preserve |
| Allen's humming bird | *Selasphorus sasin* | In the Monterey pine forest's shrubby understory in the Huckleberry Hill Nature Preserve, and in the riparian area at the southeast end of the installation |
| Vesper sparrow | *Pooecetes gramineus* | In a grass/lawn community at the POM |
| Chipping sparrow | *Spizella passerine* | In the Monterey pine forest's shrubby understory in the Huckleberry Hill Nature Preserve |
| Sharp-shinned hawk | *Accipiter striatus* | In the Huckleberry Hill Nature Preserve |

*This page intentionally left blank.*

***Table 2-4: Special Status Animal Species Known to Occur or with the Potential to Occur at the POM***

| Common Name | Scientific Name | Federal Status[1] | State Status[2] | CDFW Status[3] | USFWS[4] | Migratory Bird[5] | SAR[6] | Occurrence |
|---|---|---|---|---|---|---|---|---|
| **Reptiles and Amphibians** | | | | | | | | |
| Santa Lucia slender salamander | *Batrachoseps luciae* | | | SA | | | G2 | Present |
| **Insects** | | | | | | | | |
| Monarch butterfly | *Danaus plexippus* | | | SA | | | G5 | Present |
| **Birds** | | | | | | | | |
| Oak titmouse | *Baeolophus inornatus* | | | SA | BCC | MBTA | G5 | Present |
| Olive-sided flycatcher | *Contopus cooperi* | | | SSC | BCC | MBTA | G4 | Present |
| Allen's hummingbird | *Selasphorus sasin* | | | SA | BCC | MBTA | G5 | Present |
| Vesper sparrow | *Pooecetes gramineus* | | | SSC | BCC | MBTA | G5 | Present as a Migrant |
| Chipping sparrow | *Spizella passerina* | | | SA | | MBTA | G5 | Present as a Migrant |
| Sharp-shinned hawk | *Accipiter striatus* | | | SA | | MBTA | G5 | Present as a Migrant |
| Loggerhead shrike | *Lanius ludovicianus* | | | SSC | BCC | MBTA | G4 | Potential to occur as a Migrant |
| California brown pelican | *Pelecanus occidentalis californicus* | D | D | SA | | MBTA | T3 | Potential to occur as a fly-over |
| California condor | *Gymnogyps californianus* | E | E | | | MBTA | G1 | Low potential to occur as a fly-over or during foraging |

| Common Name | Scientific Name | Federal Status[1] | State Status[2] | CDFW Status[3] | USFWS[4] | Migratory Bird[5] | SAR[6] | Occurrence |
|---|---|---|---|---|---|---|---|---|
| **Mammals** | | | | | | | | |
| Mountain lion | *Puma concolor* | | | SSC | | | T1 | Potential to occur. |
| Hoary bat | *Lasiurus cinereus* | | | SA | | | G5 | Potential to occur |
| American badger | *Taxidea taxus* | | | SSC | | | G5 | Potential to occur |

[1]Federal ESA status code. D: delisted; E: Federally listed as endangered
[2]California ESA status code. D: delisted; E: State listed as endangered
[3]CDFW status code. SSC: Species of Special Concern; SA: Special Animal (CDFG 2011)
[4]USFWS status code. BCC: Bird of Conservation Concern (USFWS 2008a)
[5]Migratory bird status code. MBTA: Protected by Migratory Bird Treaty Act (USFWS 2013b); Migratory Nongame Bird of Management Concern (USFWS 1995)
[6]Species at Risk on DOD Installation code

1

#### 2.1.3.6 Invasive Species

EO 13112 (1999) defines an invasive species as any species that is not native to an ecosystem and whose introduction does, or is likely to cause, economic or environmental harm or harm to human health. Of particular concern on the POM is the threat of invasive plant species. In 2012, a baseline invasive plant survey was completed to determine the types and extent of invasive plant populations present within the POM's natural vegetative communities (Preston and Holson 2012). The survey identified a total of 28 invasive weed species. Of the weed species found, four are state-listed noxious weeds: Italian thistle (*Carduus pycnocephalus*), Bermudagrass (*Cynodon dactylon*), French broom, and kikuyu grass. French broom is identified as highly invasive by the California Invasive Plant Council (Cal-IPC). See Appendix F for more information concerning the ecology, population status, and distribution of invasive plant species on POM.

No invasive animal species are known occur on POM at this time.

#### 2.1.3.7 Nuisance or Pest Species

Nuisance or pest species that are present at the POM are addressed below.

##### 2.1.3.7.1 Animal Pests

California ground squirrels (*Spermophilus beecheyi*), Botta's pocket gophers (*Thomomys bottae*), raccoons, rats (*Rattus* sp.), house mice (*Mus* sp.), feral cats, and pigeons (*Columba livia*) are the most common animal pests that occur on POM. Ground squirrels and gophers are major pests in landscaped areas on the POM because they damage soils and vegetation. These rodents also create dirt mounds and burrow systems that are hazards to landscaping equipment and personnel. Gophers and squirrels have required control, and occur throughout the installation including the landfill and grounds throughout the developed areas.

Rats and house mice invade buildings and cause damage to equipment, wiring, and other materials through gnawing or nest construction. They require control at the family housing and administrative buildings throughout lower POM. Raccoons damage buildings and lawns and are known to carry diseases and internal parasites. The primary problem with raccoons on the POM is they transmit fleas to residential areas when they den under buildings or in attics. They have overturned sod at the cemetery and have been attracted to outdoor garbage bins. Pets have been severely attacked and mauled by raccoons.

Feral cats pose a risk to wildlife because they are both predators and prey; they are known to hunt birds and other small animals, but they are also attractive prey for coyotes. They are a pest problem throughout the lower POM especially near family housing. Despite the Garrison Commander's policy prohibiting the feeding of wildlife and feral cats, building occupants continue to attract feral cats and other wildlife by putting out bowls of food.

Pigeons, house sparrows, and European starlings roost on buildings. Cliff swallow (*Hirundo pyrrhonota*) nest colonies have been found on infrastructure and can damage equipment and supplies with their droppings. Since cliff swallows are protected under the MBTA, removal of

nests during the reproductive period is not allowed. Cliff swallows are typically managed by removal of partially built nests or removal of nests after the young have fledged and left the nest.

#### 2.1.3.7.2 Plant Pests

**Oak moth (*Thaumetopoea processionea*)**

Oak moth is a caterpillar species that feeds on oaks. The caterpillar is up to an inch long when fully grown. The adult moth is a half-inch long and tan or slivery gray. They feed on oak leaves, most commonly on coast live oak, in San Francisco Bay and Monterey Bay regions. Coast live oak are known to occur at the POM. Oak moth infestations are intermittent, and typically occur on the warmer, non-marine side of the POM, but occur broadly throughout the installation (Morton personal communication 2015). Typically, healthy oaks can withstand defoliation without serious harm; therefore, treatment and control methods are not usually recommended (Swain, Tjosvold, and Dreistadt 2009).

**Pitch canker (*Fusarium circinatum*)**

Pitch canker is the most significant concern in forested and landscaped areas because it commonly infests several conifer species. The fungal disease causes lesions that can encircle branches, exposed roots, and the main stems of pine trees. The girdled branches wilt as a result of obstructed water flow and multiple branch infections can cause extensive dieback of the crown or even tree mortality. Most native pines are susceptible; Monterey pine is particularly susceptible and is the most widely affected host (Swett and Gordon 2013). The fungus was first discovered in Santa Cruz County, California in 1986. Its range now includes 18 coastal and adjacent inland counties from Mendocino to San Diego. In 1992, Pitch canker was found in the Asilomar State Beach and Grounds in Pacific Grove, near the POM (Office of the Agricultural Commissioner 2014). Insects are often the vector for infection. No cure exists for the disease, and thousands of Monterey and Bishop pine trees have succumbed to it. Damage from pitch canker can be managed by removing symptomatic branches and applying fungicides. However, no techniques in using fungicides have proven effective for full control of the disease (Swett and Gordon 2013).

Pine pitch canker is currently a problem in both planted and natural areas at the POM and OMC (Reid 2007).

**Western gall rust (*Peridermium harkessii*)**

Western gall rust is a fungal infestation that generally attacks pine trees that are less than 20 years old (Reid 1987). The infection causes a spherical gall to form on branches. When this forms on a main branch, it can kill the tree. Peak production of spores that spread the disease occurs in February and March.

No controls for this disease exist beyond direct removal of afflicted branches. At Huckleberry Hill Nature Preserve, Western gall rust is widespread and severe.

**Dwarf mistletoe (*Arceuthobium campylopodium*)**

Dwarf mistletoe is a parasitic flowering plant that occurs on pines (Reid 1987). Dwarf mistletoe forms dense clusters of shoots generally on trees larger than four inches in DBH. All sized trees can be damaged or deformed or, in the case of heavy infestations, killed. Control of dwarf mistletoe is through removal of infected branches or trees. The chemical Florel® is registered for use in California to control dwarf mistletoe (Pronos et al 2004). Application of this herbicide at the proper time will cause aerial shoots to fall off the host before seeds can be discharged, to prevent the spread of dwarf mistletoe; however, the internal portion is not killed and will eventually produce new aerial shoots. Dwarf mistletoe is known to occur on Monterey pine, and is considered endemic on the POM (Morton personal communication 2015).

**Red turpentine bark beetle (*Dendroctonus valens*)**

Red turpentine bark beetle is the most destructive insect pest of Monterey pine in the area. The insect is a dark reddish brown and is approximately one-third of an inch long. The insect generally attacks exposed surface roots or the lower trunk of mature trees. Mechanical removal is the method used for advanced infestations (Morton 2007b). Dragnet and Astro insecticide may be used as a prophylactic technique to protect healthy trees from infestation near construction sites. Red turpentine bark beetles are very common on Monterey pines, a species that occurs on the POM. Bark beetles are found on POM largely in the improved and semi-improved areas of POM, at the wildlife-urban interface (i.e., along roads and in neighborhoods) (Morton personal communication 2015).

**Monterey pine engraver beetle (*Ips radiata*)**

Monterey pine engraver beetle is the second most destructive insect pest to Monterey pine trees in the Monterey Bay area. This insect is one-sixteenth to one-eighth of an inch long and is a dark brown color. It infests branches of saplings and mature trees. This insect is known to infest pine trees that are experiencing moisture stress or other problems, and is the major destroyer of Monterey pines planted outside their natural range. To stop a partial infestation, the complete and sanitary removal of all affected limbs is required. If more than two-thirds of the canopy has been affected by this pest, complete removal of the tree is recommended (Reid 1987). Monterey pine engraver beetles are very common on Monterey pines, a species that occurs on the POM. Engraver beetles are found on POM largely in the improved and semi-improved areas of POM, at the wildlife-urban interface (Morton personal communication 2015).

**Sudden oak death (*Phytophthora ramorum*)**

Sudden oak death is a disease in oak tree that is caused by a fungus-like organism that is related to algae. It is primarily a leaf pathogen that thrives in coast tanoak (*Notholithocarpus densiflorus)*, redwood forests, and oak woodlands within the fog belt. The pathogen releases spores which spread through water, rain, plant material, soil, and human activity. Several foliar hosts are considered a predicator of the pathogen including California bay laurel, rhododendron, and camellia; these hosts typically do not die and can infect neighboring oak trees. Susceptible species of oak tree include coast live oak, California black oak, Shreve's oak, and canyon live oak; tanoak is highly susceptible as well. Once infected, *P. ramorum* colonizes the bark tissues

with trunk hosts, like oaks, and kills cells, clogging water and nutrient transport vessels. Cankers may form on stems of infected trees and a black or reddish ooze can bleed from them; however, often no sign of infection is apparent until crown dieback occurs and the tree defoliates. Once this occurs, the tree will usually die within a few weeks, although the tree may have been infected for several years (Alexander and Swain 2010). There is no cure for the disease; however, there are several management techniques including preventative phosphonate treatments, sanitation of tools to minimize spread, removal and proper disposal of infected hosts, removal of non-oak hosts, and ensuring incoming nursery stock is screened (Lee et al. 2011).

Sudden oak death has not been documented on the POM or OMC; however, it has been documented within Monterey County. One case has been documented in Carmel and numerous cases have been confirmed in the mountains south of Carmel River Valley (Kelly et al. 2004; Kelly and Tuxen 2003).

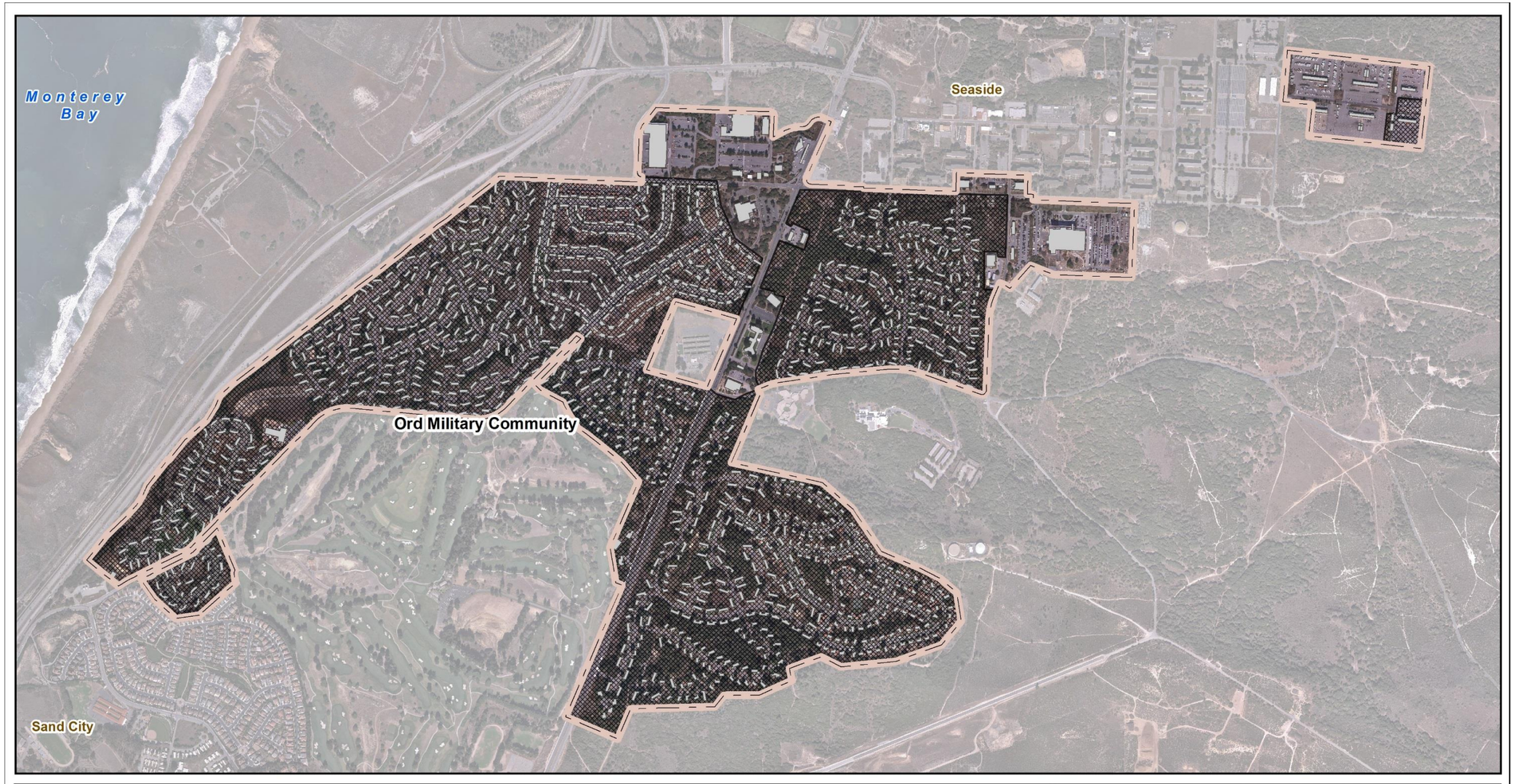
## 2.2 ORD MILITARY COMMUNITY CURRENT CONDITIONS AND USE

### 2.2.1 Installation Description

#### 2.2.1.1 General Location Description

Located in the city of Seaside, California, the 860-acre, OMC is located adjacent to the Monterey Bay (Figure 2-18). OMC is approximately 110 miles south of San Francisco and approximately 10 miles northeast of the POM. The present OMC lands have been retained by the Army following Fort Ord's official closure in 1994 as part of the DOD's BRAC process. Cities adjacent to the OMC include Seaside, located approximately one mile south of the site; Monterey, located approximately three miles southwest of the site; and Marina, located approximately two miles north of the site. Highway 1 (Pacific Coast Highway) and the Union Pacific Railroad Line are located west of the installation. The former Fritzsche Army Airfield is located northeast of the OMC. Local passenger air service is provided by the Monterey Peninsula Municipal Airport, located southwest of the OMC and adjacent to State Route 218 (Jones & Stokes 1992a).

***Figure 2-18: Ord Military Community, Monterey County, California***



1 *This page intentionally left blank.*

#### 2.2.1.2 Abbreviated History and Pre-Military Land Use

The land that became Fort Ord and later the OMC was historically inhabited by the Rumsen Indians (Jones & Stokes 1992b). The Rumsen people are one of eight major groups within the Ohlone Tribe. This group inhabited the southern half of Monterey Bay, the Monterey Peninsula, Carmel Bay, some of Carmel Valley, and the coastal area south of Big Sur. See Section 2.1.1.2 for details of the pre-military land use in the area surrounding OMC and POM.

Fort Ord was established in 1917 when the U.S. Army purchased over 15,000 acres of agricultural land designated as City of Monterey Tract No. 1 and several privately owned ranches. Originally the site was called "Gigling Reservation" and served primarily as a training and staging facility for infantry troops (U.S. Army Fort Ord Cleanup 2014). The reservation was renamed Camp Ord in 1939 in honor of Major General Edward Ord, an important figure in California military history (Jones & Stokes 1992a). Minimal improvements were made at Camp Ord until the late 1930s, when additional agricultural property was purchased and administrative buildings, barracks, mess halls, tent pads, and a sewage treatment plant were constructed using funds from the Works Progress Administration.

In 1940, on the eve of World War II, nearby Camp Clayton and Camp Pacific were consolidated with Camp Ord to create Fort Ord, which became an important staging area for units deployed to the Pacific theater of operations (BLM 2013). At this time, the 7th Infantry, nicknamed the "Bayonets," was reactivated and stationed there. After the war ended, the Fort was used as a processing center for deactivated personnel and began to be repurposed as a training facility. Fort Ord's importance increased dramatically during the years of the Korean and Vietnam Wars because it served a chief training center for tens of thousands of soldiers (BLM 2013). Fort Ord remained an active military installation for the housing and training of the 7th Infantry Division until its deactivation in 1994.

Since closing in 1994, the Army has retained 860 acres of the approximately 28,000 acres of the old Fort Ord. Today the site is known as OMC and includes housing, administrative offices, and facilities such as a commissary, child development center, chapel, gas station, and base exchange for active duty and retired military stationed in the Monterey area.

#### 2.2.1.3 Military Mission

Following Fort Ord's 1994 closure, the land retained by the U.S. Army for the OMC adopted the new mission of providing support to the POM. The POM's primary mission is to provide "first-class infrastructure and services to support mission readiness and enhance the quality of life for the Monterey Military Community and their families."

#### 2.2.1.4 Ecological History

Historical habitat regimes included communities of maritime chaparral and coastal dunes. However, since the U.S. Army's purchase of the land, the majority of the OMC has been converted to permanent infrastructure, including buildings, roads, and recreational facilities,

which support the Army's mission. Today, 97 percent of the OMC is developed. As a result, the OMC's native communities have been disturbed from their natural state. The following direct effects were observed in the most recent PLS: (1) portions of mixed coastal shrub have been disturbed by grading and currently consist of bare, sandy ground; (2) maritime chaparral has been eliminated and replaced by a variety of grasses forbs, and shrubs; and (3) vegetative communities are surrounded by development (ICF Jones & Stokes 2009). Large tracts of what is undeveloped or fragmented between facilities has been inhabited by invasive species, in particular iceplant.

### 2.2.2 Physical Environment

#### 2.2.2.1 Land Use

As with the POM, land at the OMC is categorized as improved, semi-improved, or unimproved (Figure 2-4). See Section 2.1.2.1 for definitions of these land use categories. The OMC is primarily improved, developed land with some unimproved, open space areas. Improved areas consist of residential housing for DOD personnel and U.S. Army administration and support buildings and facilities.

The following administration and support buildings and facilities are located at the OMC:

- DOD Center, which houses the Defense Manpower and Data Center
- Army support facilities, including the General Stilwell Community Center, commissary, post exchange, gas station, and child development center
- BRAC offices and POM police and fire department
- DPW-E offices
- Directorate of Family and Morale, Welfare and Recreation, including the Child Development Center and Child, Youth, and School Services, the main chapel, and the library
- additional facilities that are used by the Directorate of Logistics, FMWR, and Shaw contractors

***Figure 2-19: Ord Military Community Land Improvement Status***

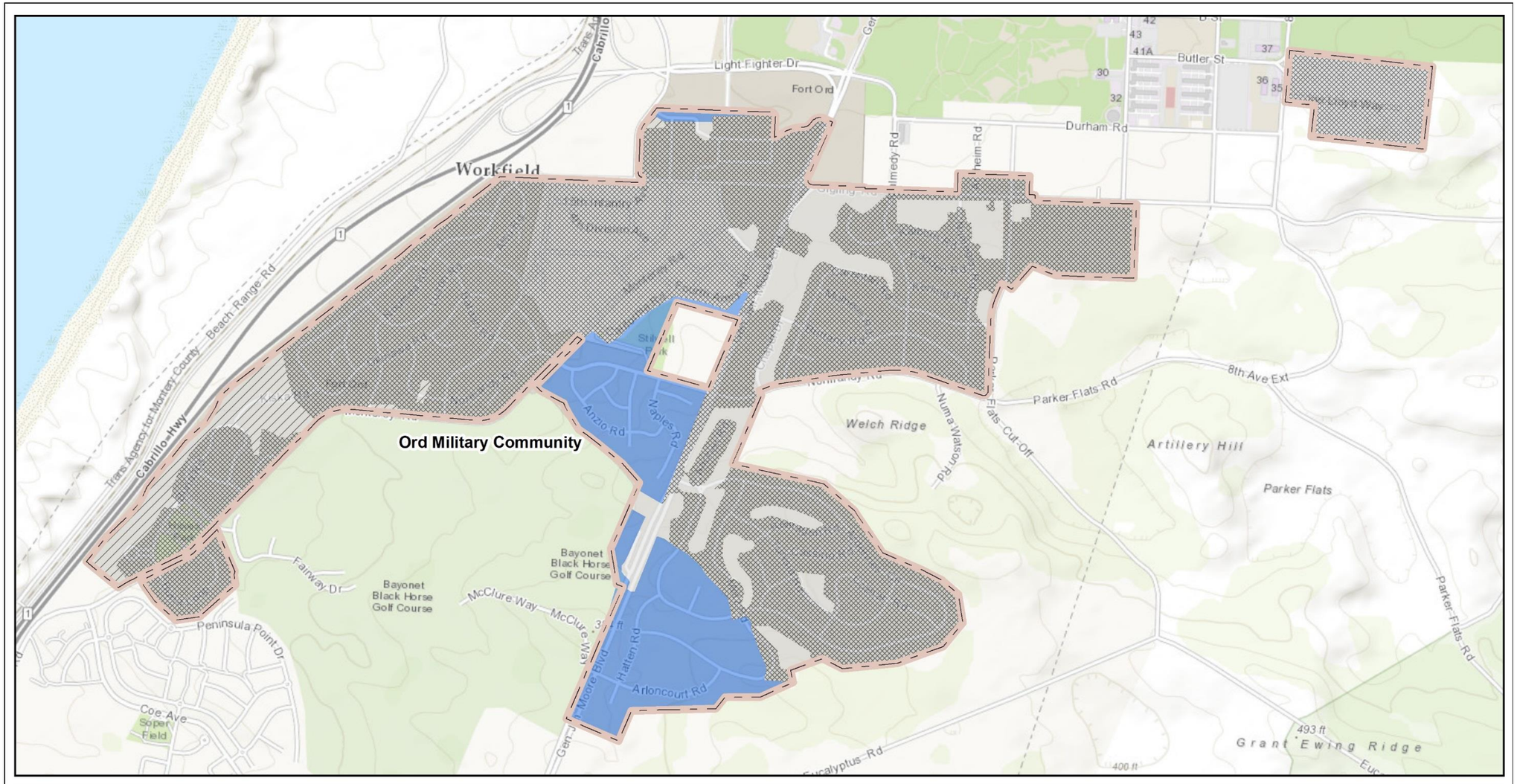



**Figure 2-20 OMC Land Improvement Status**

Prepared for: POM INRMP December 2015

*This page intentionally left blank.*

#### 2.2.2.1.1 Leased Land

**Housing Areas**

Housing areas on OMC are under a Residential Housing Communities Initiative (RCI) grounds lease. Through this lease, the DPW-Housing Directorate partners with Monterey Bay Military Housing to manage military family housing on OMC. Please see Figure 2-18 for the locations of the ground leases on OMC.

**Habitat for Humanity**

Habitat for Humanity leases the Barker Theater, next to the post exchange on the OMC.

#### 2.2.2.1.2 Outdoor Recreation Areas

There are no outdoor recreation lands on OMC.

#### 2.2.2.1.3 Surrounding Land Use

Pacific Coast Highway runs along the western border of the OMC and to the west of the highway is the Fort Ord Dunes State Park. Land south of the OMC in Seaside is zoned recreational/commercial (a golf course) and low-density residential. Land east of the OMC is also part of the city of Seaside and is zoned medium- and high-density residential, public/institutional, and park and open space. To the north of the OMC, land use includes mixed use, public/institutional, and commercial (City of Seaside 2004). The California State University, Monterey Bay campus is located just to the north of the OMC. The Fort Ord National Monument, maintained by the U.S. Bureau of Land Management (BLM), is east of the OMC. It comprises primarily habitat preservation and conservation areas, and has trails open to the public.

### 2.2.2.2 Climate

OMC is also located along the Monterey Peninsula, and as such, the climate is similar to that characterized for the POM in Section 2.1.2.2.

### 2.2.2.3 Ecoregion

The OMC, like POM, falls within the Mediterranean California ecoregion, which extends from Oregon to Baja California (CEC 1997). See Section 2.1.2.3 for further description of the ecoregion.

### 2.2.2.4 Geological Resources

#### 2.2.2.4.1 Geology

The OMC lies within the Coast Ranges mountains—the largest of California's geomorphic provinces. The Coast Ranges series of mountain ranges extends from Humboldt County in northern California to Santa Barbara County in southern California. Sandstone and shale make up the Coast Ranges, but it is difficult to distinguish the sedimentation (CERES n.d.).

#### 2.2.2.4.2 Topography

The OMC lies between the Pacific Ocean and the hilly center of former Fort Ord. Its ground is primarily flat, with some rolling terrain ranging between 100 and 450 feet above msl. The elevation contours on the OMC can be seen in Figure 2-20.

#### 2.2.2.4.3 Soils

Figure 2-20 depicts the soils found on OMC. Description of the two major soil series at OMC follow.

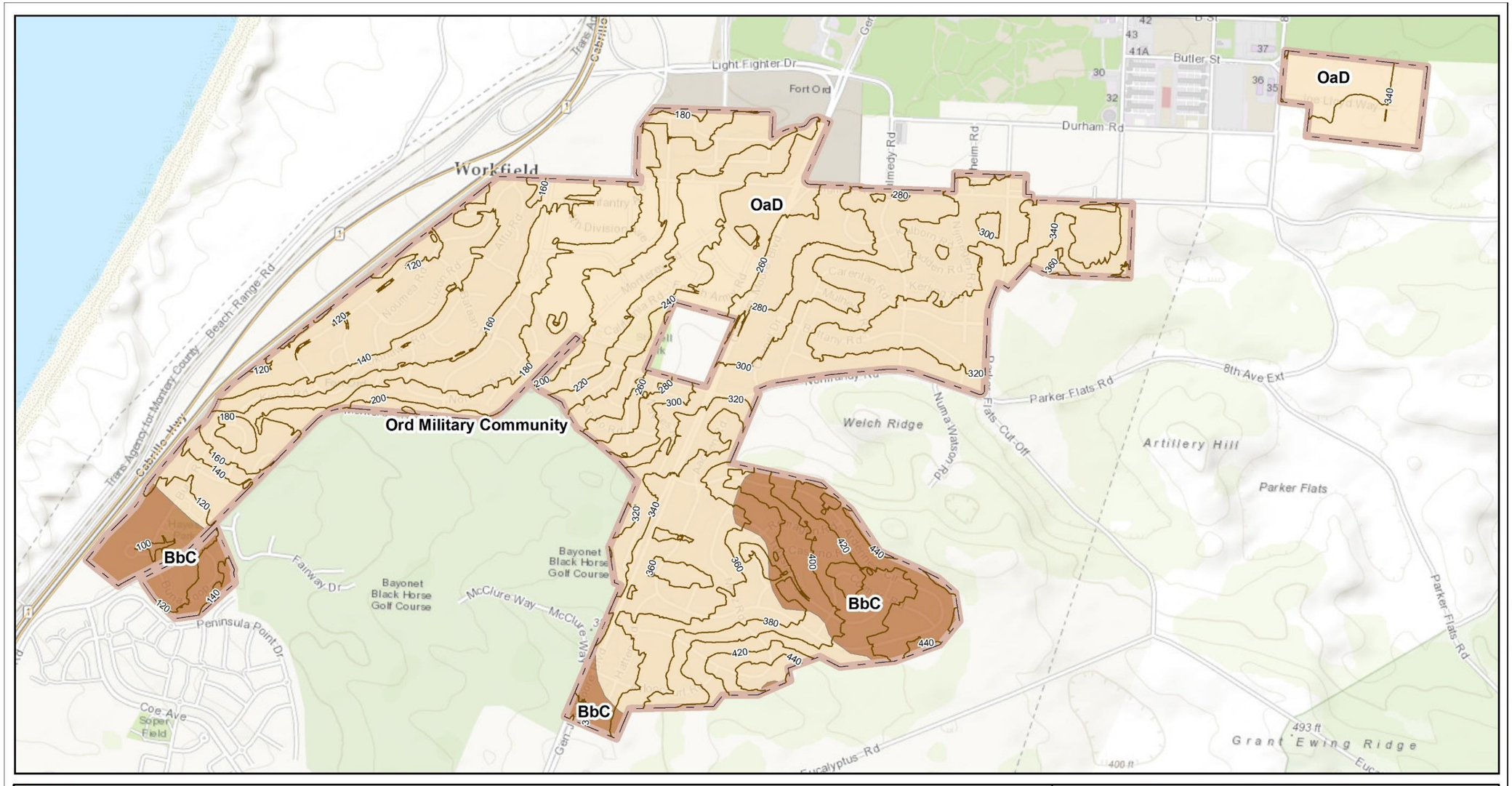
**Oceano Series**

- Consists of excessively drained soils; formed in wind-transported sands on now stabilized dunes. Permeability is rapid, runoff is slow to medium, and erosion potential is high in localized storm drainage areas. Vegetation consists of annual grassland, forbs (flowering plants with non-woody stems such as wildflowers), and some scattered scrub oak or brush (USAG POM 2008).
- Oceano Loamy Sand (OaD) is the predominant soil on OMC. Slopes are 2 to 15 percent. As seen in Figure 2-20, OaD extends from the dunes eastward through nearly all of OMC.

**Baywood Series**

- The Baywood series is similar to the Oceano series, but Baywood series soils drain more slowly than the Oceano series.
- Consists of somewhat excessively drained soils. Permeability is rapid, runoff is slow to medium, and erosion potential is slight to moderate. Wind and water erosion potential increases if the vegetation or soil structure is compromised (USAG POM 2008).
- Baywood Sand (BbC) is found on the gently sloping stabilized dune at the southwestern and southeastern parts of OMC. BbC slopes are 2 to 15 percent.

***Figure 2-20: Ord Military Community Soils and Topography, Monterey County, California***



1 *This page intentionally left blank*

#### 2.2.2.5 Water Resources

##### 2.2.2.5.1 Surface Water

No natural surface waters are found on OMC, beyond stormwater runoff. The OMC, like the POM, is within the Monterey Bay Watershed and runoff drains into the Pacific Ocean. Precipitation, in the form of surface water runoff, is conveyed by drainage systems consisting of natural channels and constructed storm drain systems. Drainage patterns are influenced by the topography of the area; they are not well developed because most rainfall runoff directly infiltrates the sand and gravelly soils that dominate this area (Jones & Stokes 1992a).

The drainage channels and storm drains of OMC collect surface water runoff from the housing and recreational areas, administrative areas, and several small commercial areas. Runoff primarily discharges at an ocean outfall located west of Highway 1. In addition to serving the OMC, the stormwater system serves areas that were transferred to local reuse agencies.

A series of smaller storm drains collect stormwater and discharge from select portions of the OMC and flow into the Pacific Ocean. Two types of piping are used at the OMC: corrugated metal and concrete. In general, the pipes are between 12 and 36 inches in diameter and serve a building or group of buildings.

##### 2.2.2.5.2 Groundwater

The watershed's associated groundwater basin, Salinas Valley Basin, underlies the OMC and is the main source of water for the facility. The El Toro Creek-Salinas River Watershed (see Figure 2-7), which is the largest in Monterey County, is north and east of the OMC. The main stem of the El Toro Creek-Salinas River watershed is the Salinas River with headwaters in the La Panza and Garcia Mountains in San Luis Obispo County. The region predominately relies on groundwater recharged by the Salinas River for its main source of water (Monterey County Water Resources Agency 2006).

The OMC is related to two groundwater resources (shown in Figure 2-8) the Seaside Groundwater Basin and the Salinas Valley Groundwater Basin. The Seaside Groundwater Basin, a sub-basin that lies within the greater Salinas Valley Groundwater Basin, is approximately 24 square miles and adjacent to Monterey Bay. It is separated into four sub-areas; however, the extent to which the basin extends under Monterey Bay is unknown (Yates et. al. 2005). The basin, specifically the Northern Coastal Subarea, underlies most of former Fort Ord and the southern portion of the OMC. The basin consists of a sequence of sedimentary water-bearing deposits that overlie impermeable shales of the Monterey Formation. Two main aquifers compose the basin. The Santa Margarita Aquifer is composed of sandstone, is approximately 200 feet thick, and is the deeper of the two. The Paso Robles Aquifer is made up of younger, interbedded sand, gravel, and clay deposits, which can be 600 feet thick in certain places (Yates et. al. 2005). Water levels have been declining, particularly in the Northern Coastal Subarea, where the majority of the production occurs. The Seaside Groundwater Basin has been adjudicated, prompting a reduction in production to a natural safe yield of 3,000 acre-feet

per year. Saline intrusion is the main risk to the basin, caused by water levels in the Santa Margarita aquifer that are continuously below sea level in the Northern Coast sub-area; however, no indication of intrusion has been noted as of 2012 (MPWMD 2012). The OMC is not supplied with groundwater from the Seaside Basin; rather, over 70 percent of the production from the basin is provided by CalAm for customers in the Monterey Peninsula area.

The southern portion of the OMC's water supply is contracted from the Marina Coast Water District (MCWD), which sources the water from the Salinas Valley Groundwater Basin (Weiner 2013). The aquifers are composed of confined and semi-confined aquifers separated by clay aquitards (Monterey County Water Resources Agency 2006). Three distinct strata form the 180-foot aquifer, the 400-foot aquifer, and the deep aquifer, and limited vertical recharge occurs between the layers. Ground water recharge comes principally from infiltration from the Salinas River, and percolation of rainfall and irrigation water. Horizontal flow that recharges the confined aquifers occurs between subareas toward Monterey Bay. The northern coastal subarea of the Salinas Valley Groundwater Basin is also affected by saline intrusion from overdraft (Monterey County Water Resources Agency 2006).

The MCWD operates three wells to supply the OMC at depths ranging from 300 to 500 feet. Ground water quality on the OMC is affected by saline intrusion in the upper aquifer near the beach, and from four ground water contamination sites on former Fort Ord. The Army has employed several mitigation methods to clean up contaminated ground water that do not threaten the water quality of the supply wells (Weiner 2013; MCWD 2012).

#### 2.2.2.5.3 Floodplains

FEMA designates the OMC as Zone X, or areas of minimal risk for flooding. The southwestern portion of the OMC is within the risk area for a 500-year flood, and the remainder of the OMC is outside both the 100- and 500-year floodplains (Jones & Stokes 1992a; FEMA 2009). No flood control measures are required.

### 2.2.3 Biological Resources

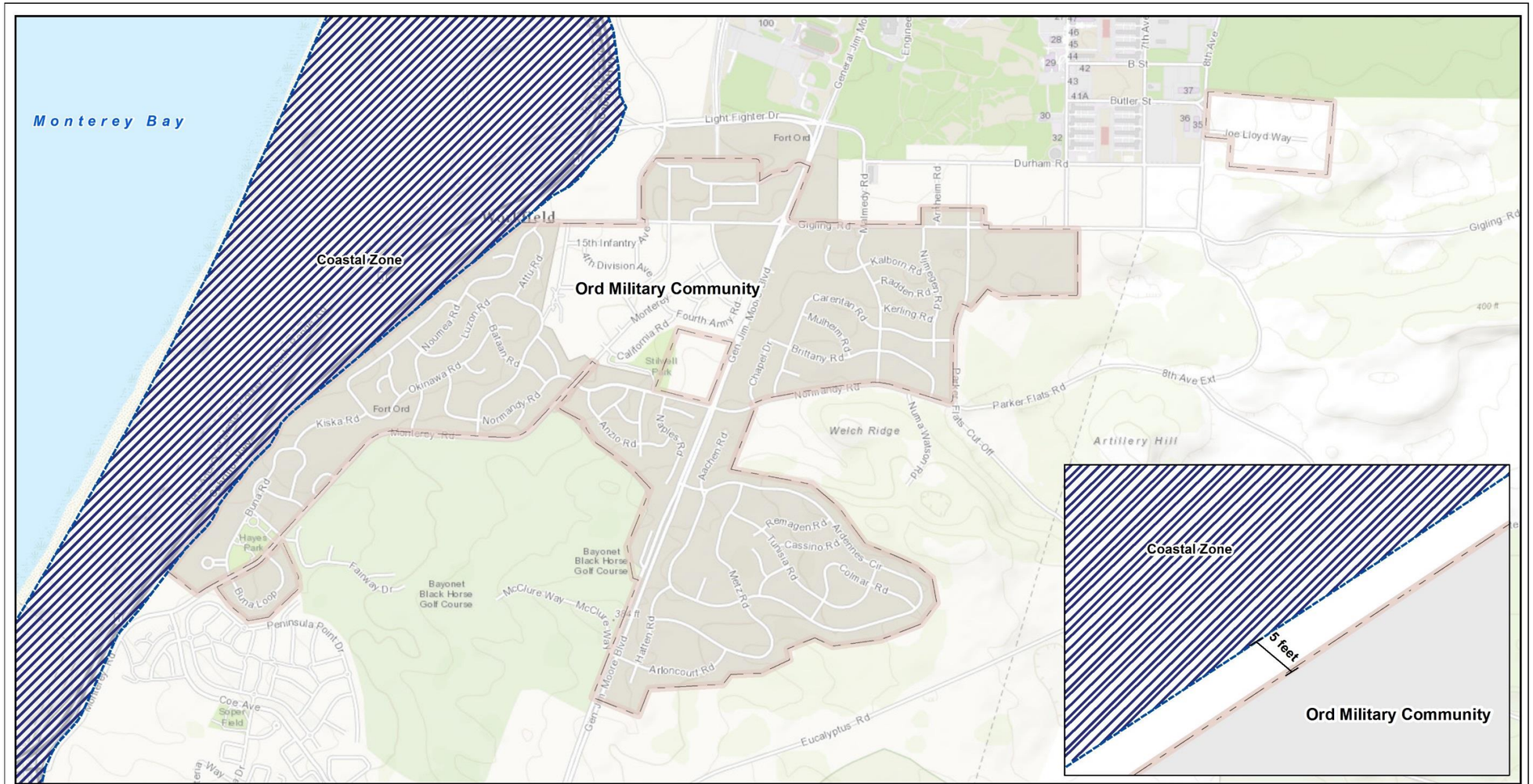
#### 2.2.3.1 Aquatic Environments

No wetlands occur at OMC.

#### 2.2.3.2 Coastal Zone and Nearshore Habitat

California's coastal zone extends inland 1,000 yards from the mean high-tide line of the sea, with exceptions for significant coastal estuarine habitat and/or urban areas (*California Coastal Act of 1972*). OMC lies directly adjacent to the coastal zone boundary as defined by the CZMA (see Figure 2-21) and may have spillover effects into the coastal zone and the Monterey Bay. Spillover effects will require a consistency determination. No nearshore habitat occurs on OMC.

***Figure 2-21: The California Coastal Zone in Reference to the OMC***




**Legend**

- Ord Military Community
- California Coastal Zone (CCC)

**Figure 2-22 The California Coastal Zone and OMC**

Prepared for: POM INRMP December 2015
Source: Presidio of Monterey, ESRI World Topo 2014, ESRI Data & Maps 2014, California Dept. of Fish and Wildlife 2013, California Dept. of Transportation 2009

N

Projection: Mercator Auxiliary Sphere
Miles
0.2 0.1 0 0.2

U.S.ARMY

1 *This page intentionally left blank*

### 2.2.3.3 Flora

#### 2.2.3.3.1 Vegetative Communities

Eight vegetative communities were described in a 2009 PLS, these communities are identified in Table 2-5 and Figure 2-23 and descriptions are provided below.

***Table 2-5: Vegetative Communities of the OMC***

| Vegetative Community | Acres | Percent of OMC Land |
|---|---|---|
| Mixed coastal shrub | 14 | 1.7 |
| Monterey cypress stands | 12 | 1.6 |
| Black sage scrub | 3 | 0.4 |
| Coast live oak woodland | 57 | 6.8 |
| Mixed coast live oak woodland with landscape trees | 3 | 0.4 |
| Mixed grassland/maritime chaparral | 9 | 1 |
| Mixed grassland/shrub with scattered trees | 14 | 1.7 |
| Ruderal | 3 | 0.4 |
| No vegetation/urban | 745 | 86 |
| **Total** | 860 | 100 |

**Mixed Coastal Scrub/Grassland**

Mixed coastal scrub occurs in an area west of Monterey Road, between the golf course and Highway 101, and in the southwestern extent of the OMC. These areas are located within approximately 2,000 feet of the Pacific Ocean. These former sandy dunes communities are surrounded by residential and commercial development. Portions of these area have been disturbed by grading and currently consist of mostly bare, sandy ground. The remainder of this community is a mosaic of shrubs and forbs within a sandy substrate. Shrub species present include mock heather (*Ericameria ericoidies*), bush lupine (*Lupinus arboreus*), common deerweed (*Acmispon glaber),* and California sagebrush (*Artemisia californica*). The invasive ice plant, hottentot fig (*Carpobrotus edulis*), is a significant part of the ground cover in ungraded areas.

Dominant species of coastal scrub are often suffrutescent and, compared to those found in chaparral, relatively soft-stemmed. Herbage can be glutinous, resinous, and pungently scented with volatile oils, however, most species are drought avoiders with malacophyllous (soft, thin), often summer-deciduous leaves, such as black sage (*Salvia mellifera*) and deerweed. Roots are relatively shallow (typically half as deep as those of chaparral species), though this may be due more to soil depth than physiological requirements. Most active growth starts early, immediately following the rainy season in November and December and continues into the spring. Coastal scrub has a fairly large herbaceous component, relative to chaparral (Cal Poly Land n.d.).

**Monterey Cypress Stands**

A windrow of Monterey cypress borders the western and eastern extents of the mixed coastal scrub area described above, with most of this area located adjacent to

Highway 101. This community consists mostly of a dense canopy of Monterey cypress with open areas containing grassland occurring toward the southwestern extent.

Monterey cypress plantations exist in California and throughout the world, however, Monterey County contains the only two native populations of Monterey cypress stands (CNPS 1997). They are normally dependent on fire in coastal sage scrub habitat to cause cones to open and disperse seeds, however, some cones will open under conditions of moderate heat. Regeneration will also readily occur when the trees (including cones) are chipped and used as mulch. When present in mixed stands, its most common counterpart is the Monterey pine (Earle 2013a). With only horticultural plantings existing on OMC, the Monterey cypress is not considered a special status species in this INRMP.

**Black Sage Shrub**

A small, fragmented patch of black sage scrub occurs within the Marshall Park housing area at the OMC. This community is dominated by black sage, California coffeeberry, poison oak, California sagebrush, mock heather, bush lupine, coyote brush, and ice plant.

***Figure 2-22: Black Sage Scrub on the OMC***

*Source: USAG POM*

**Coast Live Oak Woodland**

Coast live oak woodland occurs as large and small patches in the northeastern and southeastern portion of the OMC. This community is characterized by a variable tree cover of the coast live oak with an understory of widely scattered shrub species such as poison oak, coyote brush, shaggybark manzanita, mock heather, common deerweed, and bracken. The understory is largely mixed grasses and forbs comprised of native perennial grasses such as California brome, purple needlegrass (*Nassella pulchra*), and nodding needlegrass (*Nassella cernua*), as well as significant expanses of the invasive ice plant.

Coast live oak is the only California native oak that thrives in the coastal environment. The tree is normally found on well-drained soils of coastal hills and plains, often near

year-round or perennial steams. With approximately 80 percent of oak woodlands in California on private lands, land conversion of oak woodlands for range improvement or development represent one of the largest oak woodland conservation issues (UCANR 2014a). Additionally, sudden oak death is a significant threat to the coast live oak and has killed several coast live oak trees in California (Oak Mortality Task Force 2014). In response to the cumulative threats posed to oak woodlands—including range and urban development, firewood harvesting, and agricultural conversions—the *California Oak Woodland Conservation Act* was passed by the state legislature in 2001 (McCreary 2004). This act established the Oak Woodland Conservation Program to provide $10 million to support the development of local and regional policies and projects to conserve oak woodlands (UCANR 2014b). While the coast live oak is not a special status species, it is given special consideration under CEQA through California Senate Bill 1334 *Oak Woodlands Conservation: Environmental Quality* (2005).

**Mixed Coast Live Oak Woodland with Landscape Trees**

This community is similar to the community described above but contains numerous landscape trees and occurs in a single patch within a residential housing community accessed from Ardennes Circle. The landscaped trees include acacia and eucalyptus. Development in the area has decreased plant diversity.

**Mixed Grassland/Maritime Chaparral**

Mixed grassland/maritime chaparral occurs adjacent to a residential housing community in the southeastern extent of the OMC. This community was likely historically dominated by maritime chaparral like that of an adjacent, relatively impenetrable maritime chaparral community located just outside of the boundaries of the OMC. Development of the residential housing community and an associated recreational trail likely eliminated much of the maritime chaparral within this community allowing a variety of grasses forbs, and shrubs to become established. This area is dominated by ripgut brome (*Bromus diandrus*) and young chaparral consisting of shaggy-barked manzanita, dwarf ceanothus (*Ceanothus dentatus*), common deerweed, and chamise (*Adenostoma fasciculatum*).

This community is characterized by a wide variety of sclerophyllous (hard, drought-adapted leaf) shrubs, dominated by manzanita, occurring in moderate-to-high density. Maritime chaparral is a fire-dependent vegetation type, in that many maritime chaparral species are obligate seeders that require fire in order to reproduce (CNPS 2014). The OMC chaparral community occupies sites that have sandy, well-drained substrates that occur within the zone of coastal summer fog.

**Mixed Grassland/Shrub with Scattered Trees**

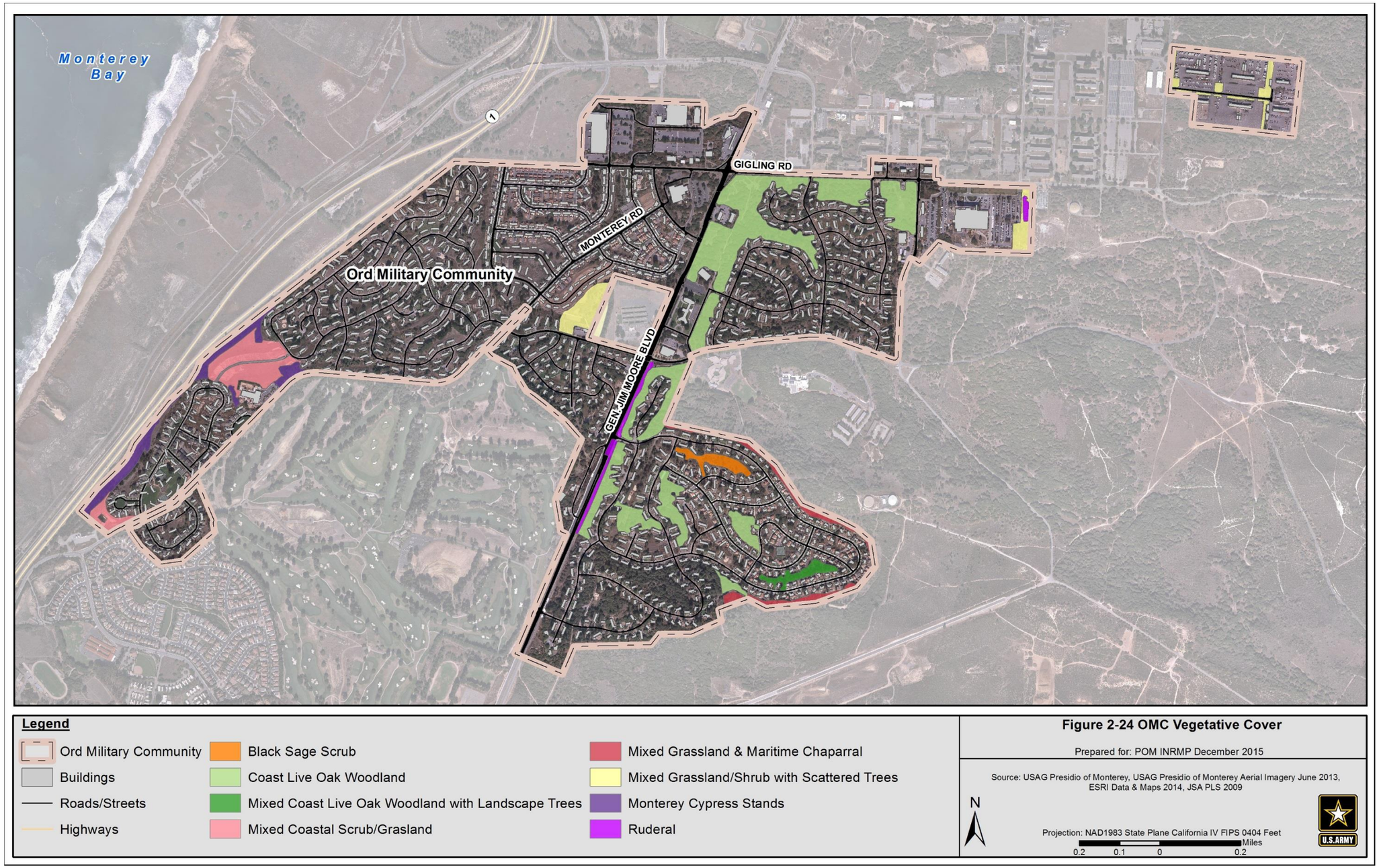
This area is dominated by ripgut brome, common deerweed, coyote brush, and ice plant. Scattered trees within this community include Monterey cypress, Monterey pine, coast live oak, and eucalyptus.

**Ruderal**

Ruderal areas consist mainly of small roadside patches of weeds consisting of non-native annual grasses and forbs.

*This page intentionally left blank.*

1 ***Figure 2-23: Ord Military Community Vegetative Cover, Monterey County, California***




2

*This page intentionally left blank.*

#### 2.2.3.4 Fauna

The vegetative communities on OMC support a wide variety of both native and non-native fauna. No fish or other aquatic species occur on the OMC. Appendix D includes a full list of fauna species observed and those with the potential to occur on the OMC. The 2009 PLS described the following fauna species found on site.

##### 2.2.3.4.1 Mammals

Due to the developed landscape, only common mammals have been observed. Those adapted to living near a human-built environment are most prevalent. The following species have been observed (ICF Jones & Stokes 2009):

- black-tailed deer
- brush mouse (*Peromyscus boylii*)
- California ground squirrel
- California meadow vole (*Microtus californicus*)
- coyote
- deer mouse (*Peromyscus maniculatus*)
- raccoon
- striped skunk

Coyote, mountain lion, and bobcat (*Lynx rufus*) are transient visitors in the surrounding areas and may be observed, but the areas within the OMC are unlikely to provide permanent habitat for these species.

Evidence of fox (unknown species) and rabbit (unknown species) were also observed during the faunal surveys at the OMC in 2008. Wild boar scat was also detected, but the species was not directly observed (ICF Jones & Stokes 2009).

***Figure 2-24: Survey plot 4, small animal trap at the base of scrub oak, within OMC black sage scrub community***

*Source: USAG POM*

**Bats**

Bat surveys were conducted using Anabat acoustic recording devices to detect species present at the OMC (USAG POM Stokes 2009). No bat species were detected during fall and spring surveys, likely because no open water features exist within the OMC. Most bats search for insects over open water such as lakes, streams, or wetlands. Anabat devices are a passive survey; no active bat surveys were conducted (such as mist netting). The fact that bats were not detected at the OMC in these surveys does not verify that bats do not exist in the area. It is possible that night-roosting bats are present at the OMC but are using other habitats for foraging, or did not forage close enough to the Anabat devices to be detected.

### 2.2.3.4.2 Birds

Bird surveys conducted in the fall of 2008 and spring of 2009 found 50 species of birds on the OMC, mostly common species. A complete listing can be seen in Appendix D.

Habitats like those found on the OMC, specifically the oak woodlands and coast live oak trees, provide roosting and perching for native raptor species, including red-tailed hawk, red-shouldered hawk, sharp-shinned hawk, and American kestrel. Red-tailed hawk and red-shouldered hawk were both observed on the OMC during fauna inventories in 2008 (ICF Jones & Stokes 2009). Golden eagles (*Aquila chrysaetos*) have also been observed on the OMC (Madison personal communication July 2014).

#### 2.2.3.4.3 Reptiles and Amphibians

Three reptile species are known to occur on OMC: Pacific gopher snake (*Pituophis catenifer catenifer*), western fence lizard (*Sceloporus occidentalis*), and California tiger salamander (*Ambystoma californiense*) (ICF Jones & Stokes 2009 and Madison personal communication July 2014). Discoveries of individual California tiger salamanders occurred on OMC at the Joe Lloyd Way property in 2006, 2009, and 2013. Locations of these discoveries can be seen in Figure 2-26. For the most recent discovery, in 2013, the salamander was found by a contractor inside of the building. The appropriate staff were notified, a permitted biologist contracted through the BRAC office relocated the animal to a burrow within appropriate habitat, and USFWS was notified, per procedure (Madison personal communication July 2014). The NRP speculates that the salamanders are attracted to the semi-open oil-water separators in the area (Madison personal communication July 2014).

The habitats found on the OMC also have the potential to support the following other reptile species:

- arboreal salamander (*Aneides lugubris*)
- black legless lizard (*Anniella pulchra nigra*)
- coast horned lizard (*Phrynosoma coronatum*)
- silvery legless lizard (*Anniella pulchra pulchra*)
- southern alligator lizard (*Gerrhonotus multicarinatus*)
- western spadefoot toad (*Scaphiopus hammondi*)

#### 2.2.3.4.4 Invertebrates

Very few invertebrates were found during 2009 fauna inventories. A complete listing of invertebrates can be seen in Appendix D.

#### 2.2.3.4.5 Wildlife by Associated Habitats

**Mixed Coastal Scrub**

Though portions of this vegetation community have been disturbed by grading, this community contains abundant breeding, foraging, and escape cover habitat for wildlife. Some common birds found in this community include Anna's hummingbird, barn swallow, cliff swallow, violet-green swallow (*Tachycineta thalassina*), black phoebe, red-shouldered hawk, red-tailed hawk, great horned owl (*Bubo virhinianus*), and turkey vulture (*Cathartes aura*). Invertebrates observed include numerous common butterflies such as Monarch butterfly, coastal green hairstreak (*Callophyrys dumetorum*), Columbian skipper (*Hesperia columbia*), and echo azure.

**Monterey Cypress Stands**

Wildlife species observed in this area consist mainly of birds, such as Bewik's wren, California towhee, dark-eyed junco, yellow-rumped warbler, house finch, white-crowned sparrow, purple finch, ruby-crowned kinglet, Townsend's warbler, Pacific-slope flycatcher, European starling, spotted towhee, red-shouldered hawk, red-tailed hawk, and turkey vulture.

**Coast Live Oak Woodland**

Woodlands provide high-value habitat for wildlife as they contain substantial nesting opportunities for birds and tree squirrels, produce nuts and seeds that provide food sources for numerous mammals and birds, provide escape cover essential to the survival of most wildlife, and contain leaf litter that provides habitat for numerous insect species. Common birds that occur in this community include acorn woodpecker, Nuttall's woodpecker, American crow, European starling, Anna's hummingbird, Bewick's wren, house wren, black phoebe, brown creeper (*Certhis americana*), bushtit, California towhee, spotted towhee, chestnut-backed chickadee, Townsend's warbler, yellow-rumped warbler, dark-eyed junco, golden-crowned sparrow (*Zonotrichia atricapilla*), oak titmouse, western bluebird (*Sialia mexicana*), Hutton's vireo (*Vireo huttoni*), Pacific slope flycatcher, pine siskin (*Carduelis pinus*), rub-crowned kinglet (*Regulus calendula*), and wild turkey (*Meleagris gallpavo*). Within grassy opening in this community species including barn swallow, red shouldered hawk, red-tailed hawk, California ground squirrel, pacific gopher snake, Columbian skipper, and echo azure have also been observed. Striped skunk have also been observed in this community.

**Mixed Grassland/Maritime Chaparral**

Grasslands with chaparral provide high-value habitat for wildlife. The grassland areas contain suitable habitat for small burrow-dwelling mammals and ground nesting birds, and foraging areas for birds, mammals, reptiles, and butterflies, while the chaparral component provides nesting habitat for shrub nesting birds and provides cover habitat essential to wildlife. Examples of common bird species observed within this community include Anna's hummingbird, barn swallow, Bewick's wren, black phoebe, bushtit, yellow rumped warbler, Townsend's warbler, Wilson's warbler (*Cardellina pusilla*), California quail (*Callipepla californica*), golden-crowned sparrow, house sparrow, common poorwill (*Phalaenoptilus nuttallii*), hermit thrush (*Catharus guttatus*), lesser goldfinch (*Carduelis psaltria*), northern flicker, Nuttall's woodpecker, oak titmouse, and wild turkey. Common mammal species observed include black-tailed deer and coyote.

### 2.2.3.5 Special Status Species

Special status plant and animal species generally include those species federally listed as endangered, threatened, candidate species; or a species of concern; or SAR; or those designated by a state resource agency as being biologically rare, restricted in distribution, declining throughout their range, or those that have a critical or vulnerable stage in their life cycle that warrants monitoring. See Section 2.1.3.5 for defining characteristics for "Special Status Species". Figure 2-26 shows where special status species observations at OMC occurred.

#### 2.2.3.5.1 Flora

Five special-status plant species occur at OMC: Monterey spineflower (*chorizanthe pungens* var. *pungens*), Monterey ceanothus (*Ceanothus cuneatus* var. *rigidus*), Michael's rein orchid (*Piperia michaelii*), sandmat manzanita, and Virgate eriastrum (*Eriastrum virgatum*). The full list of TES

and special status plant species that are present, or that have potential to occur, on the OMC are listed in Table 2-6.

***Table 2-6: Special Status Plant Species that are Known to Occur or Have the Potential to Occur at OMC***

| Common Name | Scientific Name | Federal Status | State Status | CNPS | SAR status | Occurrence |
|---|---|---|---|---|---|---|
| Monterey spineflower | *Chorizanthe pungens* var. *pungens* | T | | 1B.2 | T2 | Present |
| Michael's rein orchid | *Piperia michaelii* | | | 4.2 | G3 | Present |
| Sandmat manzanita | *Arctostaphylos pumila* | | | 1B.2 | G1 | Present |
| Virgate eriastrum | *Eriastrum virgatum* | | | 4.3 | G3 | Present |
| Contra Costa goldfields | *Lasthenia conjugens* | E | | 1B.1 | G1 | Potential to occur |
| Monterey ceanothus | *Ceanothus cuneatus* var. *rigidus* | | | 4.2 | G3 | Potential to occur |
| Monterey gilia or sand gilia | *Gilia tenuiflora* ssp. *arenaria* | E | T | 1B.2 | T2 | Potential to occur |
| Yadon's piperia | *Piperia yadonii* | E | | 1B.1 | G2 | Potential to occur |
| *For descriptions of status codes, refer to Table 2-2* | | | | | | |

**Monterey spineflower (*Chorizanthe pungens* var. *pungens*)—Federally Threatened, State Special Plant List, CNPS List 1B.2**

Monterey spineflower is in the Polygonaceae family, also known as the knotweed or smartweed-buckwheat family, and is endemic to California. Its habitat range extends from Monterey County, Monterey Peninsula, northward to extreme southern Santa Cruz County, and inland into the Salinas Valley.

Monterey spineflower is an annual native herb that reaches 5–50 cm at maturity. It flowers from April to July with white to pink flowers that either distinctly or indistinctly aggregate into heads that are about one cm in diameter (Calflora 2014). Monterey spineflower colonizes open or disturbed sandy soils in coastal dune, coastal scrub, grassland, maritime chaparral, and oak woodland communities. It occurs along the coast of southern Santa Cruz and northern Monterey counties and inland to the western edge of the Salinas Valley. The former Fort Ord supports the largest known population of Monterey spineflower (U.S. Army, 1997a).

The species is listed as threatened due to extirpation at a number of historic sites due to agricultural conversion. Existing populations continued to be threatened by development, recreation, and invasive non-native plants (USFWS 2008b). Non-native plants that threaten the

Monterey spineflower include iceplants (both *Carpobrotus edulis* and *Mesembryanthemum crystallinum*), European beach grass (A*mmophila arenaria*), jubata grass, French broom, and invasive annual grasses of European origin, such as wild oats (*Avena* sp.), soft chess, and ripgut brome (USFWS 2008b).

Monterey spineflower critical habitat was designated in 2008 (73 FR 1525 2008). The OMC does not occur within the critical habitat designation.

**Monterey ceanothus (*Ceanothus cuneatus var. rigidus*)—CNPS List 4.2 species**

Monterey ceanothus is a native shrub found between 14 to 2500 meters in elevation and flowers from March to April. Monterey ceanothus is found outside of California but it is confined to the western United States. (Calflora 2014). The flowers can range from white, blue, or lavender and its leaves are evergreen (UC Berkley 2014). The species occurs mostly in coastal areas and it has been identified on the edge of the OMC boundary (USACE 1992).

Threats to this species include habitat loss and degradation, especially since this species is already limited in its distribution (WWF 2015a).

**Michael's rein orchid (*Piperia michaelii*)—CNPS List 4.2 species**

Michael's rein orchid, also called Michael's piperia, is a native, monocot perennial herb. Found between 15 to 590 meters, Michael's rein orchid flowers from April through August (Calflora 2014). The plant grows from 9 to 70 centimeters in height with the upper part of the stem (15–30 cm) showing inflorescence of dense yellow-green flowers. Flowers emit a pleasant fragrance. Basal leaves are up to 30 centimeters long, and 10–40 millimeters wide (Jepson Flora Project 2013).

It is endemic to California, found in a variety of habitats including coastal scrub, chaparral, closed-cone coniferous forest, and cismontane woodland (CNPS 2014). It can co-occur with its close relative Yadon's pipera (USACE 2013a). Michael's rein orchid prefers generally dry sites in coastal scrub, woodland, mixed-evergreen, or closed-cone pine forests (UC Berkley 2013).

Several individuals of Michael's rein orchid have been identified on the northeast edge of the OMC boundary (USACE 2013a). Threats to the species are the same as its close relative Yadon's piperia (see Section 2.1.3.5.1).

**Sandmat manzanita (*Arctostaphylos pumila)*—California Special Plant, CNPS List 1B.2 species, DOD SAR Imperiled species**

The sandmat manzanita is a native, dicot shrub that grows prostrate-to-mounded up to one meter in height. Leaves are spreading, up to two centimeters in length, dark green and shiny, cupped, and tinged with red. It flowers from February through April with ovary, white, nongladular flowers and small (5–6 millimeter) spheric fruits (UC Berkeley 2013).

Sandmat manzanita prefers sandy soils in chaparral, oak woodland, and elevations less than 200 meters. It is endemic to the California Central Coast, around Monterey Bay in Monterey

County (UC Berkeley 2013). Threats to the species are the same as its close relative Hooker's manzanita (see Section 2.1.3.5.1).

Sandmat manzanita has been documented at the OMC and is found behind the Fitch Park housing area along the southeast perimeter of OMC (USACE 2013a).

**Virgate eriastrum (*Eriastrum virgatum*)—CNPS List 4.3 species**

This small annual herb is endemic to California and inhabits coastal habitat (coastal bluff scrub, coastal dunes, and coastal scrub) as well as chaparral habitat. It blooms from May through July (CNPS 2014). Though its status is apparently secure within California (CNPS 2014), it is included in the CNPS Inventory of Rare and Endangered Plants due to its limited distribution (Calflora 2014).

The 2008 INRMP noted that this species occurs east and south of the Fitch Park housing area east of General Jim Moore Road at the OMC (USAG POM 2008).

Threats to the species include competition, grazing, and development (CNPS 2014), with the potential for any future work on the adjacent cantonment fence likely to cause an impact (USACE 2013a).

**Contra Costa goldfields (*Lasthenia conjugens*)—Federally Endangered, CNPS List 1B.1 species**

Contra Costa goldfields was listed by the USFWS as endangered in 1997. It occurs primarily in vernal pools, swales, moist flats, and depressions within grassland, as an annual plant (USFWS 2005). It occurs historically in seven vernal pool regions in California, and has occurred in Contra Costa County outside the defined vernal pool regions.

Seeds of Contra Costa goldfields would be expected to germinate in response to autumn rains, but detailed research of the species' life cycles has not been conducted due to the rarity of the species. Contra Costa goldfields flower from March through June, and flowers are self-incompatible. Pollinators for the species have not been studied, but are expected to be solitary bees (family Andrenidae) (USFWS 2005).

Primary threats to the species are development (leading to decline in quality vernal pool habitat), competition from nonnative plant species (particularly Italian ryegrass [*Lolium multiflorum*] which shades-out the plants and also affects vernal pool hydrology), and soil-disturbing activities that can alter hydrology and microhabitat conditions (USFWS 2005). Current management strategies for Contra Costa goldfields include control of nonnative weed species through grazing, mowing, and burning (USFWS 2005).

Contra Costa goldfields are not present on OMC, but have the potential to occur. Two populations of the species exist at the former Fort Ord site (USFWS 2005).

**Monterey gilia (*Gilia tenuiflora* ssp. *arenaria*)—Federally Endangered, State Threatened, CNPS List 1B.2 species**

Monterey gilia, also known as sand gilia, was listed by the USFWS as endangered in 1992. It is endemic to the Monterey Bay and Monterey Peninsula dune complexes. It is an annual herbaceous plant in the phlox family (Polemoniaceae), typically associated with sandy soils of dune scrub, coastal sage scrub, and marine chaparral (USFWS 2008c). Its blooming period is April to June, and it is believed that its seeds are long-lived, which create a relatively persistent seed bank (USFWS 2008c).

Primary threats at the time of listing was degradation of suitable habitat due to encroachment of nonnative invasive plant species, trampling, habitat removal for development, and off-road vehicle activity (USFWS 2008c). Threats from trampling and off-road vehicles have decreased as a result of fencing, boardwalks, and signage on habitat that is accessible to the public (i.e., state parks). Development remains a primary threat to Monterey gilia (USFWS 2008c).

Monterey gilia are not present on OMC, but have the potential to occur. Populations of the species exist at the former Fort Ord site (USFWS 2008c).

**Yadon's piperia (*Piperia yadonii*)—Federally Endangered, State Special Plant List, CNPS List 1B.1 species.**

Yadon's piperia, also known as Yadon's rein orchid, was listed by the USFWS as endangered in 1998 (USFWS 1998a). Yadon's piperia is a native orchid (Family Orchidaceae) found in a very limited area of central California. A detailed description of Yadon's piperia can be found in Section 2.1.3.5.1, POM Special Status Flora Species.

At the time of listing, the primary threats to Yadon's piperia were habitat loss from development, habitat fragmentation and isolation, competition from non-native species, and herbivory (USFWS Ventura 2009). As of 2009, habitat loss, fragmentation, and/or degradation from development, and predation through deer herbivory were recognized as the primary threats to the species, with the invasion of non-native plants and fire suppression activities potentially increasing the severity of these threats (USFWS Ventura 2009).

The OMC does not occur within Yadon's piperia critical habitat designation, but the species has the potential to occur on the site.

### 2.2.3.5.2 Fauna

One special status animal species is known to occur at the OMC: California tiger salamander.

**California tiger salamander (*Ambystoma californiense*)—Federally Threatened, State Threatened**

The California tiger salamander is a large terrestrial salamander that is typically 7–8 inches long with a broad, rounded snout. California tiger salamanders inhabit valley and foothill grasslands and the grassy understory of open woodlands, usually within one mile of water (Jennings and Hayes 1994). Due to habitat destruction and degradation it is estimated that this species has

declined more than 30 percent over the last three years. Other threats include rodents, vehicle-related mortality, and inability to find wet habitats during the dry seasons (ICUN 2015).

Since 2006 there have been two encounters with California tiger salamanders on the OMC. In December 2006, a California tiger salamander was observed in a concrete maintenance bay at the OMC, approximately 1.9 kilometers from Henneken's Ranch Wetland, the nearest water source. A qualified Army biologist relocated the salamander off-site to a breeding pond. The second encounter was on 13 May 2013, when a California tiger salamander was found inside an industrial building on Joe Lloyd Way. The USFWS was contacted and a permitted biologist weighed, measured, and photographed it. It was then released it into a small burrow in oak woodland habitat, immediately outside of the building.

***Figure 2-25: California tiger salamander being weighed and measured (13 May 2013)***

*Source: USAG POM*

**<u>California condor (*Gymnogyps californianus*)—Federal Endangered, State Endangered</u>**

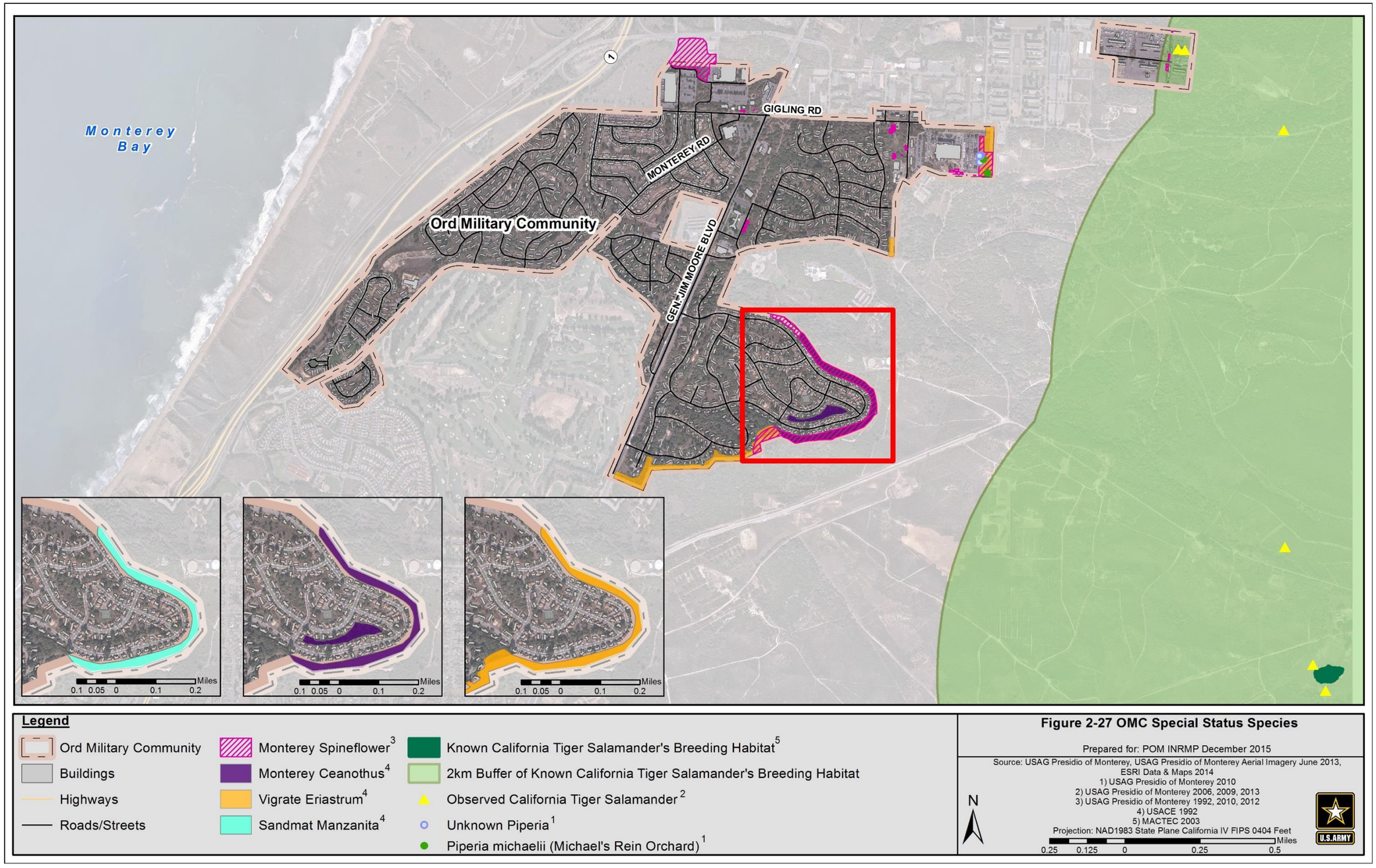
The California condor has potential to occur as it may flyover during foraging at the OMC. See Section 2.1.3.5.2 for life history information. OMC is not located within the designated critical habitat for the condor.

No other special status fauna species are known to occur at OMC. Other special status animal species with the potential to occur on the OMC have been included in Table 2-7.

***Table 2-7: Special Status Animal Species Known to Occur or with the Potential to Occur at the OMC***

| Common Name | Scientific Name | Federal Status | State Status | CDFW Status | USFWS | Migratory Bird | SAR Status | Occurrence |
|---|---|---|---|---|---|---|---|---|
| **Reptiles and Amphibians** | | | | | | | | |
| California tiger salamander | *Ambystoma californiense* | T | | SSC | | | G2 | Present |
| California black legless lizard | *Anniella pulchra nigra* | | | SSC | | | G3 | Potential to occur |
| California silvery legless lizard | *Anniella pulchra pulchra* | | | SSC | | | G3 | Potential to occur |
| Coast horned lizard | *Phrynosoma coronatum* | | | SSC | | | G3 | Potential to occur |
| Blainville's horned lizard | *Phrynosoma blainvillii* | | | SSC | | | G3 | Potential to occur |
| **Birds** | | | | | | | | |
| California condor | *Gymnogyps californianus* | E | E | | | MBTA | G1 | Low potential to occur as a fly-over or during foraging. |
| Loggerhead shrike | *Lanius ludovicaianus* | | | SSC | BCC | MBA | G4 | Potential to occur |
| Western burrowing owl | *Athene cunicularia hypugaea* | | | SSC | | MBA | T4 | Potential to occur |
| **Mammals** | | | | | | | | |
| Monterey dusky-footed woodrat | *Neotoma fuscipes luciana* | | | SSC | | | T3 | Potential to occur |
| Monterey ornate shrew | *Sorex ornatus salarius* | | | SSC | | | T1 | Potential to occur |
| *For descriptions of status codes, refer to Table 2-3* | | | | | | | | |

***Figure 2-26: Special Status Plant and Animal Species Location on OMC, Monterey County, California***



1 *This page intentionally left blank.*

### 2.2.3.6 Invasive Species

Primary invasive species on OMC are non-native, invasive, weed species. Of the invasive plant species identified on OMC, four have been identified as highly invasive by the Cal-IPC: red brome (*Bomus madritensis* ssp. *Rubens*), hottentot fig, pampas grass (*Cortaderia jubata*), and French broom (For more information see Appendix F).

***Figure 2-27: Invasive ice plant in coastal live oak woodland on OMC***

*Source: USAG POM*

### 2.2.3.7 Nuisance or Pest Species

Nuisance or pest species present on OMC are addressed below.

#### 2.2.3.7.1 Animal Pests

Several animal nuisance species occur on OMC including California ground squirrels, Botta's pocket gophers, raccoons, pigeons, mice, and wild turkeys.

Ground squirrels and gophers are major pests in landscaped areas because they damage soils and vegetation. These rodents also create dirt mounds and burrow systems that are hazards to landscaping equipment and personnel. Gophers and squirrels have required control and are common pest problems at the child daycare facilities, Porter Youth Center, as well as grounds throughout developed area. Raccoons live in the sewers in the housing area and encounters between raccoons and humans/pets are frequent. Pigeons have required control in administrative areas and food service facilities. Mice are a pest problem and have required control at family housing areas and administrative buildings.

#### 2.2.3.7.2 Plant Pests

Known or potential plant pest species on OMC include the fungus Pine pitch canker (refer to Section 2.1.3.7.2 for further discussion), the red turpentine bark beetle, the Monterey Pine Engraver beetle, the oak moth, and the western black legged tick (*Ixodes pacificus)*, which can transmit Lyme disease.

## 2.3 SATELLITE COMMUNICATIONS STATION AT CAMP ROBERTS CURRENT CONDITIONS AND USE

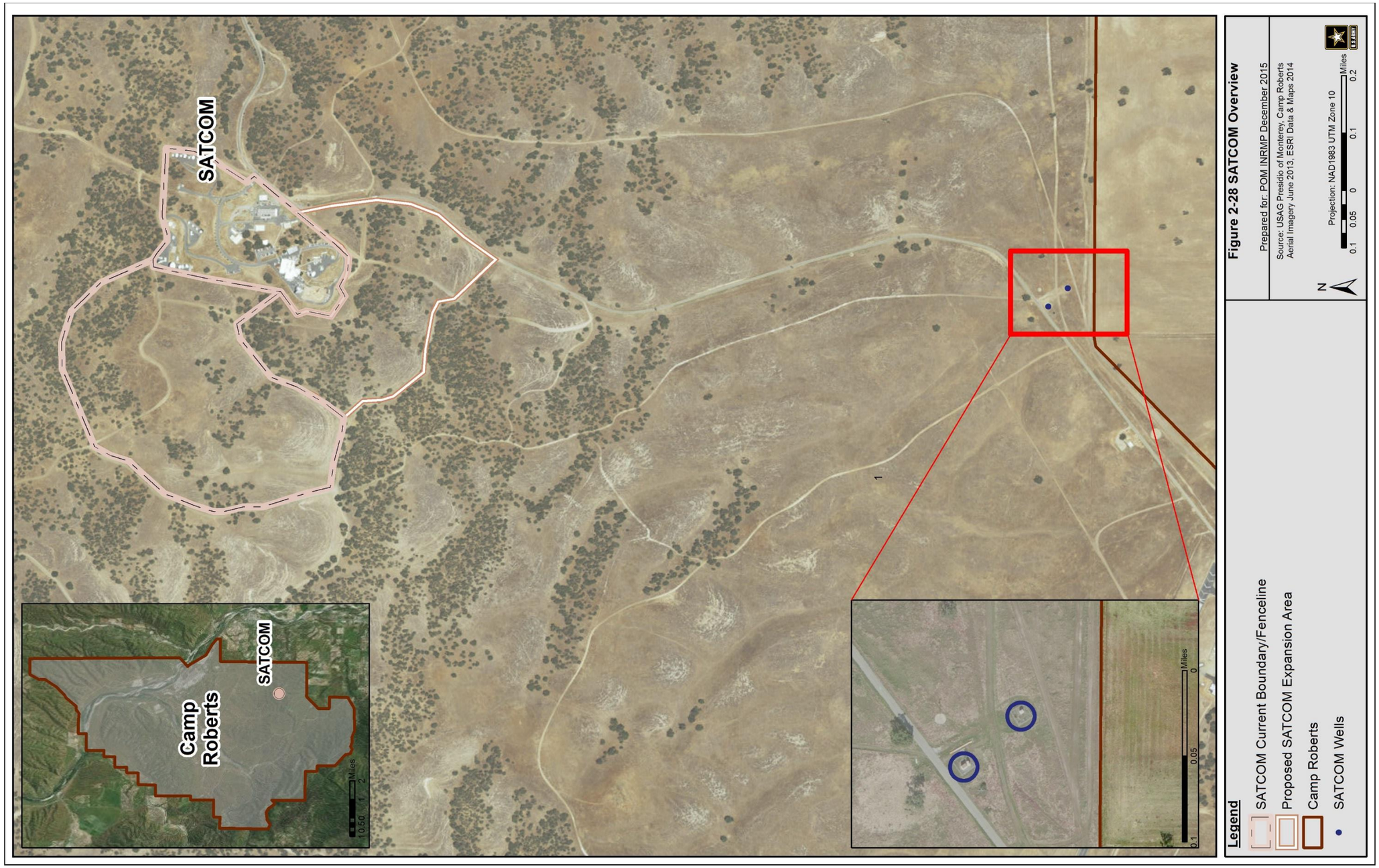
### 2.3.1 Installation Description

#### 2.3.1.1 General Location Description

Located in Monterey and San Luis Obispo counties, the 81.5-acre SATCOM facility occupies the southern end of Camp Roberts, which is a 42,784-acre military installation in west-central California midway between San Francisco and Los Angeles; 25 miles east of the Pacific Ocean and 85 miles southeast of the POM. Camp Roberts is bisected by the Monterey–San Luis Obispo County line and is divided by U.S. Highway 101 into the East Garrison and the Main Garrison. Camp Roberts is federally owned by the U.S. Army and licensed and operated by the CA ARNG. The SATCOM site is on East Perimeter Road within the boundaries of the Main Garrison. It is approximately 5 miles south-southwest of the Camp Roberts' main gate and approximately 1.3 miles north of McMillan Airstrip.

SATCOM's current boundary, 81.5 acres, is surrounded by a security fence (Figure 2-28). A 35-acre expansion is proposed in order to facilitate long-term growth and expansion of the SATCOM facility to respond to new technologies and accommodate additional communications needs associated with an enhanced mission definition and modernized equipment systems.

***Figure 2-28: Overview of Existing Satellite Communications Station and Proposed Expansion Area at Camp Roberts Overview, San Luis Obispo County, California***



1 *This page intentionally left blank.*

#### 2.3.1.2 Abbreviated History and Pre-Military Land Use

Historically, the Chumash Tribe hunted and lived on the land that composes Camp Roberts. Before its purchase by the USACE, the land that comprises Camp Roberts was part of the original holdings of the Mission San Miguel, which was founded in 1797 and one of the most productive missions in grain and livestock. Soon after Mexico declared independence from Spain in 1821, the Mexican government closed down its missions and distributed their vast land holdings to favored individuals and families. One of these land grants became "El Rancho Nacimiento," or "Ranch of the Nativity." Although the property was considered for purchase by the U.S. Army in 1902, as Congress was seeking lands suitable for development of new military posts, the purchase was held off until World War II was on the horizon. In 1940, Congress authorized the purchase of land and training sites, and the land that is now Camp Roberts was acquired by leasing six adjoining ranches, including Rancho Nacimiento. The Army eventually purchased all of the leased parcels plus additional lands, concluding the final purchase in 1943.

In 1961, the SATCOM facility was constructed as a research and development facility for the U.S. Army Advent Program. The SATCOM facility played an integral role during the Vietnam War as a communications link between Washington, D.C. and the far east.

In 1971, an agreement was reached between the Army and the CA ARNG, whereby the CA ARNG assumed management of most of the installation. The SATCOM facility, however, remained to be managed by USAG POM and the U.S. Army Network Enterprise Technology Command/9th Army Signal Command (NETCOM). Currently, NETCOM and the U.S. Army Strategic Command (STRATCOM) own the existing above ground structures and equipment at the SATCOM site and the USAG POM NRP manages the biological resources for the site.

In 2005, the USACE, on behalf of NETCOM prepared an ADP EA to address the environmental effects of expanding the SATCOM facility by 57.5 acres (MACTEC 2005). As a supplement to the 2005 ADP EA, a focused analysis of the proposed perimeter fence was conducted in the 2013 Anti-Terrorism Force Protection Measures EA (U.S. Army 2013a). In 2014 a real estate use agreement provided the U.S. Army exclusive use of the expansion area totalling approximately 81.5 fenced acres (shown as SATCOM's current boundary in Figure 2-28) (U.S. Army 2015).

In 2015, an EA was developed for multiple construction projects at SATCOM as part of the planned expansion (U.S. Army 2015). Projects detailed in the EA include expansion to the south for construction of a Naval Research Lab (NRL) antenna pad and security fence, a parking lot along Perimeter Road for NETCOM, a discharge system for the cooling towers for Building 18000, and a Modernization of Enterprise Terminals site expansion for NETCOM. The expansion projects will facilitate long-term growth at the SATCOM site to respond to new technologies and accommodate additional communications needs.

#### 2.3.1.3 Military Mission

The Camp Roberts SATCOM facility serves as home of The Roberts Operation Center, 1st Satellite Control Battalion and 302nd Signal Battalion (Pike 2014). SATCOM is part of the Defense Satellite Communication System and the Wideband Global SATCOM facilities. It provides communications capabilities around the globe for U.S. forces and allies (Farr 2014). SATCOM is the main U.S. Army communications facility on the west coast, and provides worldwide communications between the U.S. National Command Authority and deployed military units.

#### 2.3.1.4 Ecological History

Livestock grazing and agriculture occurred on the land prior to the purchase by the Army, in 1943. After Camp Roberts was constructed, major landscaping efforts were conducted that introduced native oaks, sycamores, elms, black locusts, and various shrubs. Although minimal historical data exists on the conversion's impacts on the area's biological structure and ecological processes, Camp Roberts and SATCOM have historically had an impact on land use that would have altered the natural vegetation communities. However, most of the land on Camp Roberts, within the current boundary of the SATCOM site, and within the proposed expansion area are undeveloped.

In the late 1700s, when these lands were privately owned, this region was logged and converted into agricultural use (i.e., grain and livestock). Even under Army ownership, cattle and sheep grazing occurred, although the levels of grazing under the Army are several magnitudes lower than the historical levels. Sheep have been the dominant livestock, and a high of roughly 9,000 sheep have been allowed to range on Camp Roberts, higher than the determined carrying capacity of 5,400 sheep (CA ARNG 2012). During times of drought, sheep denuded the lands even though a grazing management plan was in existence at Camp Roberts, since the plan was not always adhered to. The sheep also contributed to soil compaction challenges on Camp Roberts (D. Applegate personal communication, 25 March 2014). Although grazing was suspended in 2007 on Camp Roberts, it is expected to be reinstated in the near future (CA ARNG 2012). Livestock is not allowed on SATCOM property, and livestock are typically blocked from the SATCOM by a fence.

### 2.3.2 Physical Environment

#### 2.3.2.1 Land Use

Approximately nine acres, or 11 percent, of SATCOM's current 81.5-acre cantonment land is developed. SATCOM's current boundary, seen in Figure 2-28, is a security fence that surrounds two main hills. The southern hill is largely an operational area that contains operations buildings, communications antennas, machine shop, substations, utility building, propane tanks, Ka-band terminal, and parking lots. The northern hill has a smaller operational area and an industrial area that contain teleport terminals and dishes, a water tank and pumps, a substation, and an equipment shelter. An industrial area (powerhouse, utility building, and two warehouses) and a fitness center are also located

on the site. The second hill includes a number of modifications and changes within the current 81.5-acre site.

Constructed over a 20-year plan period, the proposed SATCOM expansion plan includes demolishing existing buildings, expanding existing buildings and parking areas, and constructing a new administration, repair, and utilities building (U.S. Army 2015).

#### 2.3.2.1.1 Surrounding Land Use

Camp Roberts is bordered by largely undeveloped lands that are used for agriculture, recreation, and rural residences (CA ARNG 2012). The SATCOM site is located at the southern end of Camp Roberts (Figure 2-28). The land surrounding the SATCOM is used for military training activities and for grazing sheep (ICF International 2010).

Outside of Camp Roberts, the land closest to the SATCOM facility in San Luis Obispo County is zoned for agriculture (San Luis Obispo County 2008).

#### 2.3.2.1.2 Outdoor Recreation Areas

There are no outdoor recreation lands on SATCOM.

### 2.3.2.2 Climate

The SATCOM site is found within a Mediterranean climate characterized by hot, dry summers and cool winters. Temperatures range from an average annual maximum of 76°F to average annual minimum of 43°F. Average total precipitation is 12.5 inches (WRCC 2013b). The SATCOM site may be affected periodically by Pacific Coast storms that move inland during the winter, and may experience greater temperature extremes than occur along the coastline (CA ARNG 2012).

### 2.3.2.3 Ecoregion

The SATCOM facility, like all of the USAG POM sites, falls within the Mediterranean California ecoregion, which extends from Oregon to Baja California (CEC 1997). See Section 2.1.2.3 for more details.

### 2.3.2.4 Geological Resources

#### 2.3.2.4.1 Geology

SATCOM falls within the California Coast Ranges. The Coast Ranges series of mountain ranges extends from Humboldt County to Santa Barbara County, in Southern California (CERES n.d.). The northern portion of the Coast Ranges primarily consists of redwood and mixed-hardwood forest, which transitions to southern oak forests in the southern portion. Inland, slopes tend to experience hotter temperatures, and are primarily vegetated with chaparral and blue-oak foothill pine woodland.

The SATCOM and Camp Roberts region geologic formations primarily consist of sandstone and shale, made up of seafloor sediments. The region is scattered with hills and valleys of varying slopes (CA ARNG 2012).

#### 2.3.2.4.2 Topography

The geology of the region has resulted in the SATCOM site being composed of hills and valleys. The elevation is approximately 900-950 feet above msl (ICF International 2010). Elevation contours can be seen in Figure 2-29.

#### 2.3.2.4.3 Soils

Figure 2-29 depicts the two distinct soil series found at SATCOM:

**Nacimiento Series**

- Consists of well-drained soils on uplands, typically underlain by sandstone or shale. Slopes range from 9 to 75 percent. Permeability is moderately slow.
- Nacimiento-Los Osos complex, 30 to 50 percent (NbF), comprises the majority of the SATCOM. It consists of steep soils on wetlands. Runoff is rapid and the erosion hazard is high. NbF has the potential to develop landslips (USDA 1978).

**Balcom Series**

- Consists of well-drained soils, formed in material from weathered sandstone and shale. Slopes range from 5 to 75 percent. Permeability is moderate-to-moderately-slow. Runoff is low-to-high (NRCS 2001).
- Balcom-Callegas-Nacimiento complex, 30 to 50 percent (BmF), is found within the SATCOM site along the western edge.

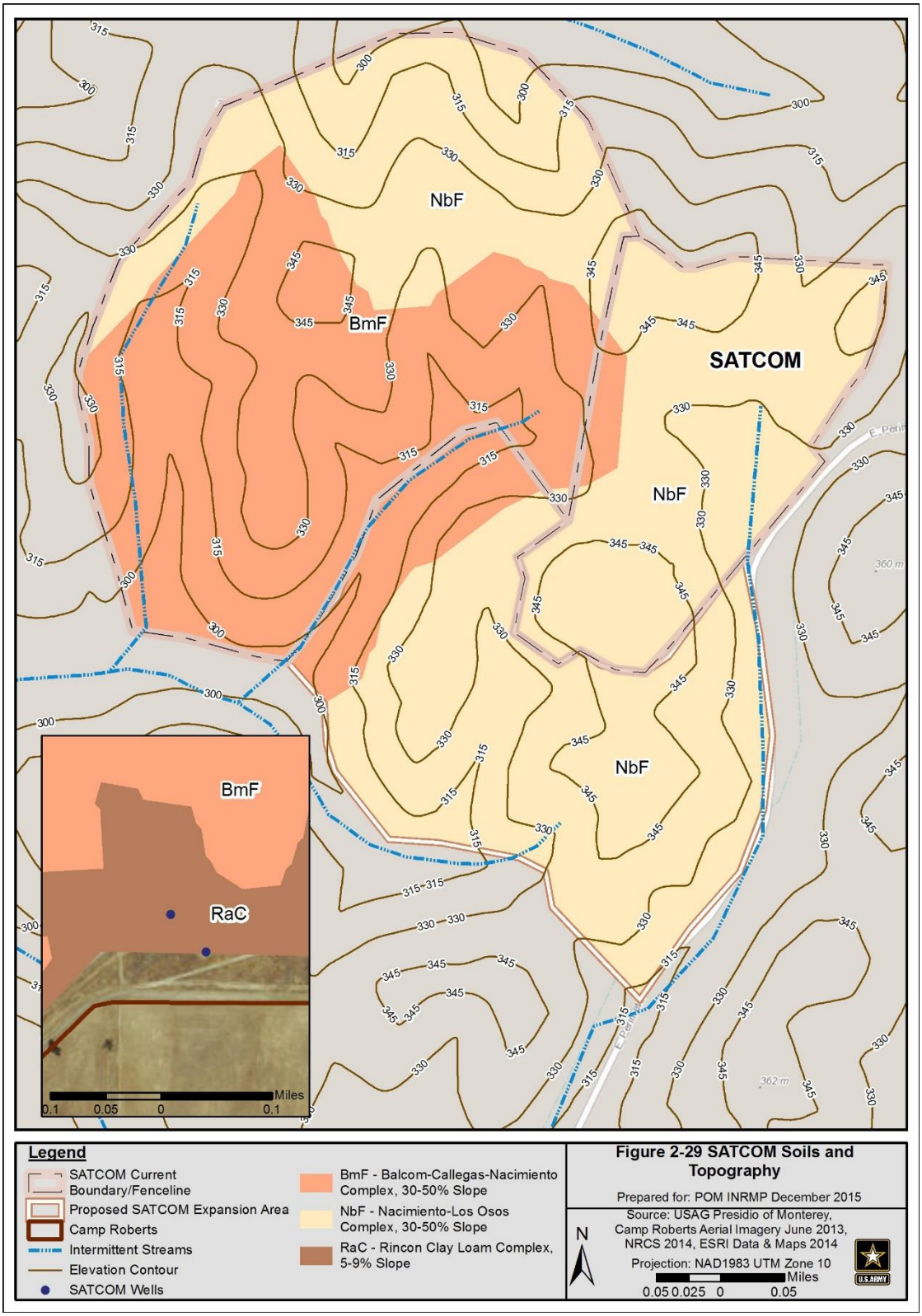
Both NbF and BmF are formed from weathered sandstone and shale. They have a high shrink-swell potential due to their clay-loams to shale-clay-loams composition. The soils at the SATCOM have a high potential for erosion, particularly from water, as evidenced by the eroded gullies from air conditioning unit discharge water on the site (U.S. Army 2013a).

The SATCOM well sites are located on the following soil series:

**Rincon Series**

- Consists of well drained soils that formed an alluvium of sandstone and shale. Slopes range from 0 to 30 percent. Permeability is low. (USDA 1978)
- Rincon Clay Loam complex, 2 to 9 percent (RaC) is found at the SATCOM well site. RaC is a gently and moderately sloping soil with slow runoff and slight erosion hazard (USDA 1978).

***Figure 2-29: SATCOM Soils and Topography, San Luis Obispo County, California***



#### 2.3.2.5 Water Resources

##### 2.3.2.5.1 Surface Water

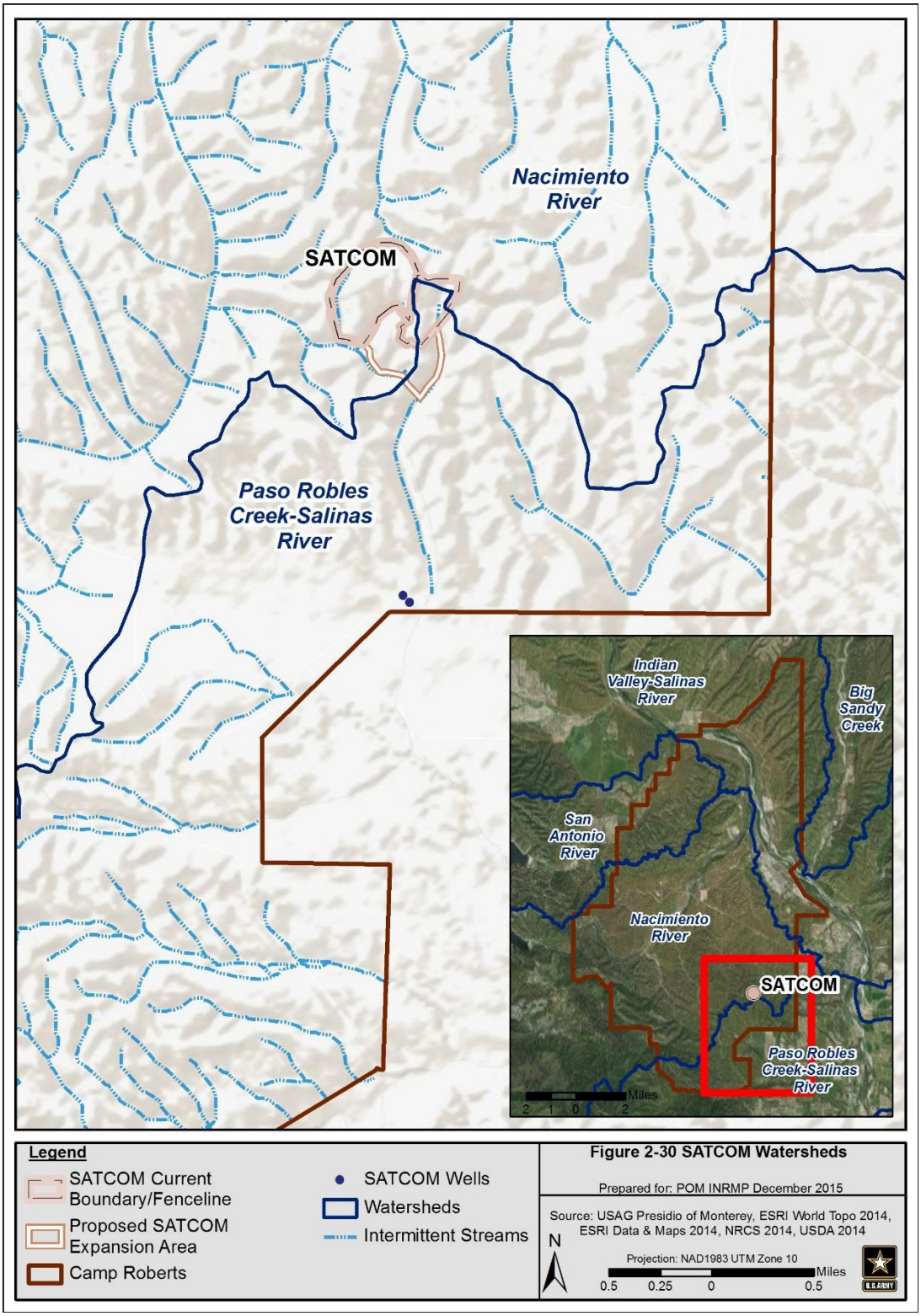
Surface water on SATCOM includes four intermittent streams within the 81.5-acre SATCOM facility, and six natural and one artificial ephemeral drainage, outside the existing fence, in the proposed expansion area. The natural ephemeral drainages convey surface runoff for a short time following rainfall (Tetra Tech, Inc. and ICF International 2014).

Five ephemeral drainages (drainages 2 through 6) are located within SATCOM's current boundary, one ephemeral drainage (drainage 1) is located within SATCOM's proposed boundary, and the one artificially perennial drainage (drainage 7) is located immediately adjacent to the south of SATCOM's current boundary (Figure 2-32).

Drainage 1, at the east boundary, originates at a 12-inch culvert from the SATCOM facility and becomes a 2-foot wide channel. This channel drains to a natural unvegetated drainage that exhibits severe erosion and head cutting. Drainages 1 through 6 are V-shaped valleys between hills that very in width from approximately 2 to 3 feet. Downslope of the mapped drainages shown in Figure 2-32; the channels widen into swales without defined boundaries and the water spreads to an overland flow. Drainages 1 through 6 support annual grassland vegetation.

Drainage 7 is an artificial drainage abutting, but outside of, the southern boundary. There were 1 to 2 inches of water in the drainage (flowing from a 6 inch PVC pipe) during both May and October surveys in 2014 (Tetra Tech, Inc. and ICF International 2014). The source of water is runoff from air-conditioning systems at the SATCOM facility. The west end of the mapped part of this drainage widens to an unvegetated pooled area that was apparently created by wild boar trampling. The pool is approximately 20 feet long and 40 feet wide, with water ponded to a depth of four to seven inches. The drainage continues west of the pool. Because Drainage 7 contained water during both the May and October 2014 surveys, when no rain had fallen for some time, it is assumed that the flow in this drainage, though artificial, is perennial. Because this artificial drainage is the only source of water in or near the SATCOM site, it has high value for wildlife as drinking water. In addition to providing habit for aquatic invertebrates, several species of birds and elk (*Cervus elaphus*) were observed drinking from the drainage (Tetra Tech, Inc. and ICF International 2014).

***Figure 2-30: Watersheds and Sub-Watersheds around SATCOM, San Luis Obispo County, California***



The four intermittent streams are within the current SATCOM site boundaries. The intermittent streams along the southern boundary and within the central portion of the SATCOM site drain into the Nacimiento River Watershed and the stream along the eastern boundary drains into San Marcos Creek Sub-Watershed (CA ARNG 2012). The SATCOM facility sits on the south-eastern edge of the Nacimiento River Watershed, and the eastern border of the station lies in the San Marcos Creek Sub-Watershed within the Paso Robles Creek-Salinas River Watershed, as illustrated in Figure 2-30.

Average annual precipitation (1961-1990) is 12.5 inches at the nearby Paso Robles Federal Aviation Administration Airport, with 95 percent of the area's precipitation occurring from October through April (CA ARNG 2012). At SATCOM, a storm water infrastructure system around building 1800 manages surface water from precipitation in order to reduce soil erosion and to limit runoff from leaving the SATCOM facility. As part of the proposed expansion, 300 feet of storm line will be constructed (Jones & Stokes 2005). The storm water drainage system will be designed to avoid the erosion problems evident at existing drainage sites at the facility.

#### 2.3.2.5.2 Ground Water

Camp Roberts is within the upper portion of the Salinas River Watershed. Within the installation, the watershed is subdivided into the main drainage area for the Salinas River and its tributary watersheds, including the San Antonio Watershed, Nacimiento River Watershed, and the Paso Robles Creek-Salinas River Watershed. The main perennial surface waters on Camp Roberts are the Salinas River and the Nacimiento River. The San Antonio River skirts the northwestern border of the installation before joining with the Salinas River. The majority of the installation drains into the Nacimiento River Watershed (CA ARNG 2012). The channel flow of the San Antonio and Nacimiento rivers through Camp Roberts is regulated by the respective outflow from their associated dams upstream of the installation.

The SATCOM facility and the southern portion of Camp Roberts are underlain by the Paso Robles Groundwater Basin (CA ARNG 2012; Monterey County Water Resources Agency and SWRCB 2008), as seen in Figure 2-31. The basin encompasses approximately 505,000 acres in northern San Luis Obispo and southern Monterey counties and is divided into subareas, although they are not hydrologically distinct. Most of Camp Roberts is within the subarea Bradley (PRGAC2010a; PRGAC 2011). The Bradley subarea is located in the northwestern corner of the Paso Robles Groundwater Basin and composes about 11 percent of the area (PRGAC 2011). SATCOM lies near the boundary of the Bradley subarea within the Estrella subarea, which constitutes 16 percent of the greater basin (PRGAC 2010b). Estrella subarea is the main water source for the City of Paso Robles. Increasing groundwater pumping in the area has led to a steady decline in groundwater levels in the subarea, with a pumping depression forming near the city (PRGAC 2010b).

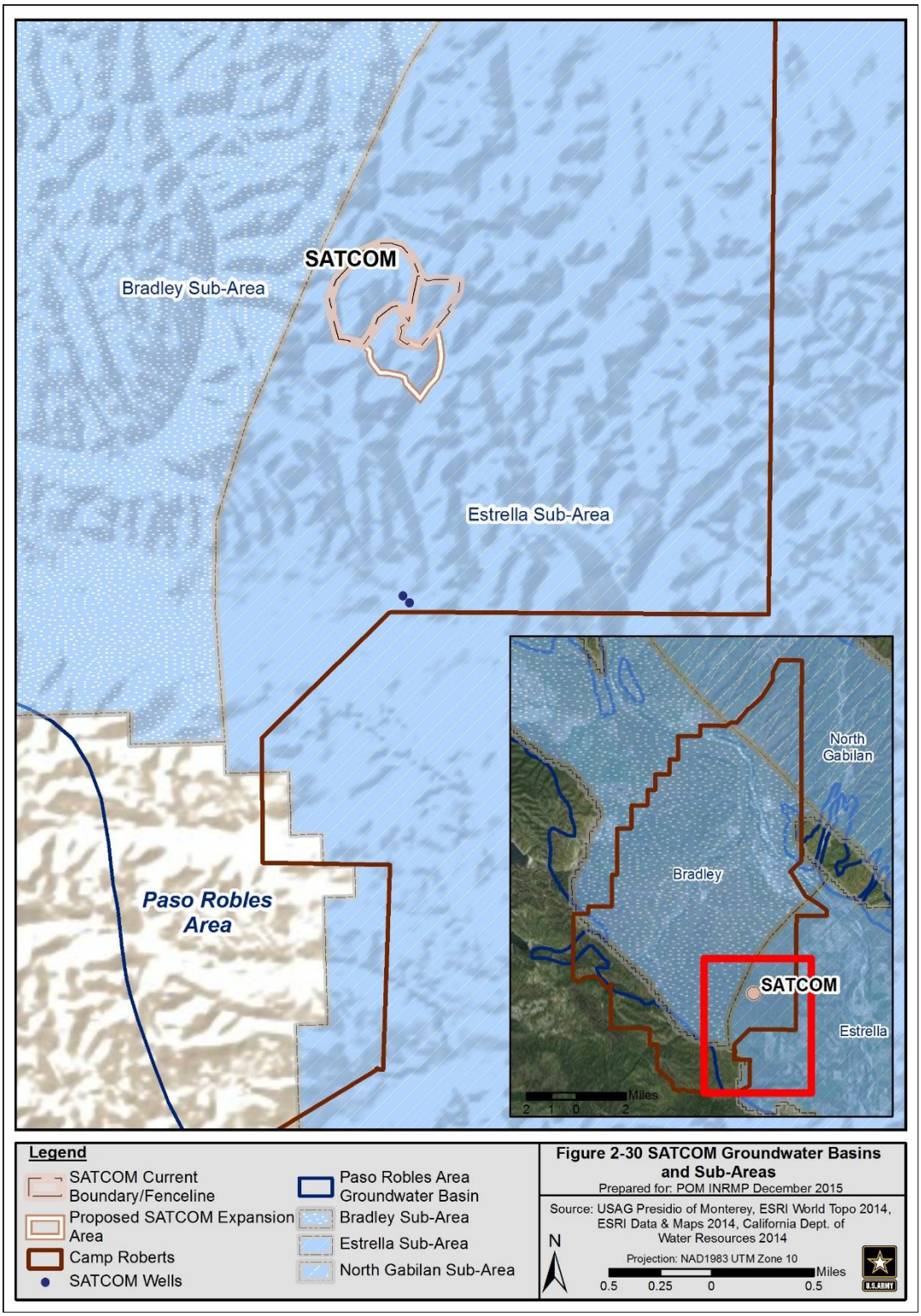
Camp Roberts utilizes ground water through a series of wells to meet the installation's water demand (PRGAC 2011). Most wells are located along the Nacimiento River Valley, and generally produce about 300 to 1,000 gallons per minute (PRGAC 2010a).

Figure 2-28 shows two of the main wells that SATCOM utilizes for ground water. Ground water quality in the basin is generally good; some areas have rising concentrations of total dissolved solids, chloride, and nitrate. Wastewater discharge, agricultural practices, abstraction or upwelling from poor quality deep aquifers, and recycled water for irrigation could affect the ground water quality in the basin (PRGAC 2011).

The ground water system in the basin is composed of the Paso Robles Formation and shallow alluvial aquifers associated with river or stream channels. The unconfined alluvial deposits occur in flood plains and can reach a depth of 100 feet below ground surface (PRGAC 2011). The alluvial aquifers, which consist of only two percent of the storage in the basin, are vital sources of recharge for the Paso Robles Formation (PRGAC 2010a).

The primary aquifer for most municipal and agricultural users is the Paso Robles Formation, which consists of interbedded deposits of sand and gravel layers with strata of silt and clay, and is less permeable than the alluvial aquifers (PRGAC 2010b). This aquifer is generally 700 to 1,200 feet thick and extends, under semi-confined-to-confined-conditions, from the ground surface. Older sedimentary, metamorphic, and granitic formations underlie the Paso Robles Formation and have limited, and often poor quality yields (PRGAC 2011). Infiltration from precipitation and percolation from stream flow into alluvial aquifers that infiltrate the Paso Robles Formation are the two primary sources of recharge (PRGAC 2010b; CA ARNG 2012).

1 ***Figure 2-31: Groundwater Basins around SATCOM, San Luis Obispo County, California***




2

#### 2.3.2.5.3 Floodplains

FEMA has designated SATCOM and the southern portion of Camp Roberts as Zone D, an area of undetermined flood hazard (FEMA 2009). The areas surrounding the installation and northern Camp Roberts are designated as Zone X, areas of minimal risk for flooding. Areas located along the river channels of the Nacimiento and the Salinas River are at high risk for flooding (FEMA 2009).

### 2.3.3 Biological Resources

#### 2.3.3.1 Aquatic Environments

No wetlands occur at the current SATCOM site or within the proposed expansion area. However, several small vernal pools have been documented and mapped within 150 meters (492 feet) and 445 meters (1,460 feet) of the SATCOM well sites. Vernal/seasonal pools are landscape depressions that pond water during winter and spring, and remain dry during the rest of the year. They support a unique plant association that is adapted to inundation during winter and extreme drought during summer. Because it is nearly impossible to differentiate between natural vernal pools and artificially created pools, and because they function in the same way, they are discussed as one community type. Natural vernal pools occur on stream terraces, alluvial fans, and alluvial terraces at Camp Roberts (Jones & Stokes 1996b). Artificially created seasonal vernal pools consist of borrow pits, shell craters, and vehicle tire ruts created during training activities.

#### 2.3.3.2 Coastal Zone and Nearshore Habitat

There is no coastal or nearshore habitat on SATCOM.

#### 2.3.3.3 Flora

#### 2.3.3.3.1 Vegetative Communities

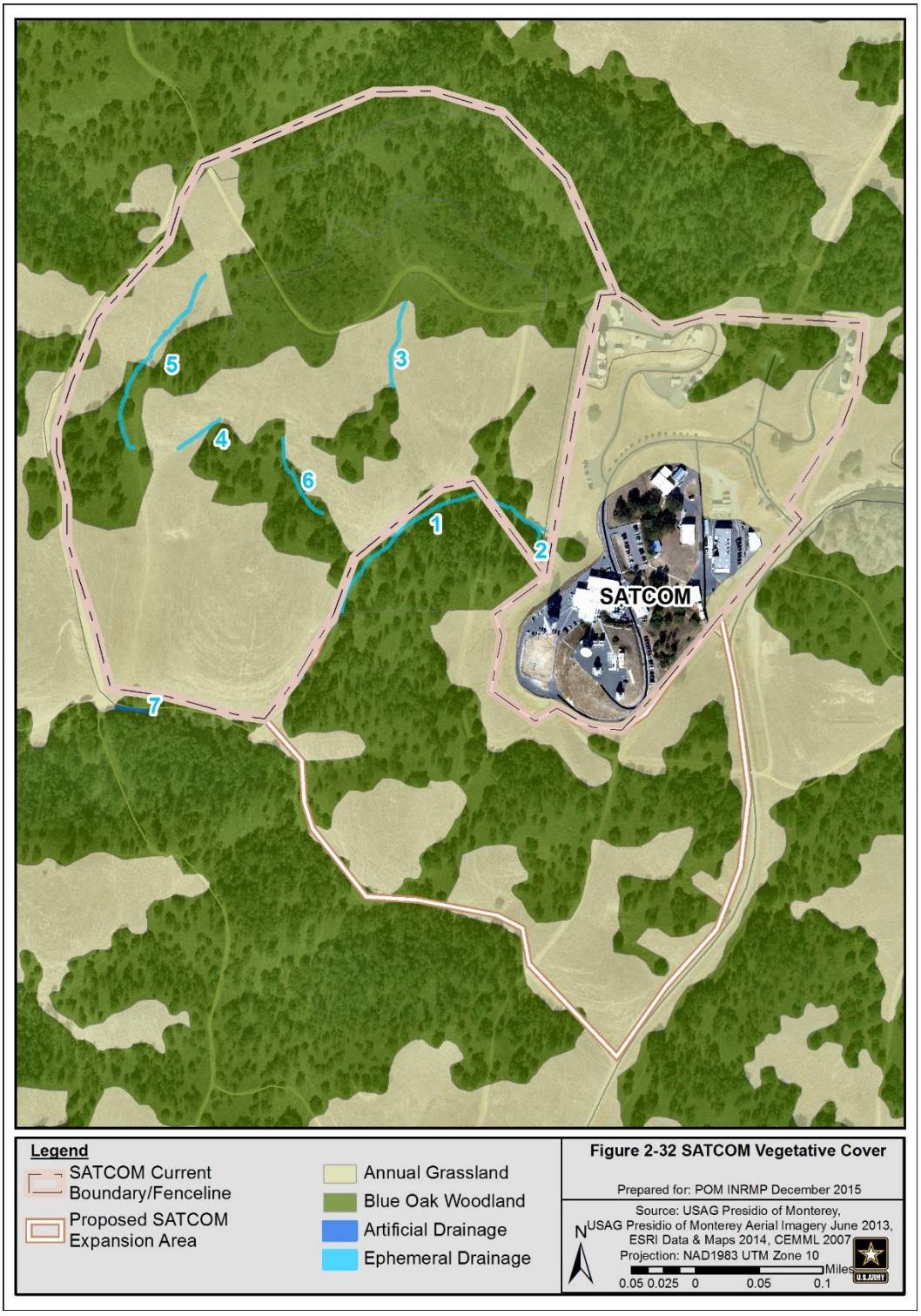
Based on the 2014 PLS Report for SATCOM's current boundary, there are three vegetative communities identified: annual grassland, blue oak (*Quercus douglasii)* woodland, and ephemeral drainages. There is also 11 percent of the existing acreage that has been developed, and any landscaping associated with the built infrastructure is nonnative ornamental trees and shrubs (Tetra Tech, Inc. and ICF International 2014). These communities are shown in Figure 2-32 and Table 2-8.

In SATCOM's proposed expansion area there are two major types of vegetation, annual grassland and blue oak woodland, and a small amount of ephemeral drainages, as seen in Figure 2-32 and Table 2-8.

***Table 2-8: Vegetative Communities of the SATCOM***

| Vegetative Community | Acres on Existing SATCOM Land | Acres on Proposed Expansion Land | Percent of Existing SATCOM Land | Percent of Proposed Expansion Land |
|---|---|---|---|---|
| Annual grassland | 41 | 14.7 | 50.3 | 40 |
| Blue oak woodland | 31.4 | 21.9 | 38.5 | 59.7 |
| Ephemeral drainages | 0.1 | 0.03 | 0.2 | 0.3 |
| Ornamental trees and shrubs | 9 | 0.0 | 11 | 0.0 |
| **Total** | 81.5 | 36.63 | 100 | 100 |

1 ***Figure 2-32: SATCOM Vegetative Cover, San Luis Obispo County, California***




2

### Annual Grassland

One of the dominant communities SATCOM's current boundary is annual grassland, which also occurs throughout the region. Annual grassland is dominated by introduced annual grasses and forbs that germinate in winter rains and that, in a typical year, flower, fruit, and dry by mid-summer. Dominating species are oat grass (*Avena* spp.), ruipgut brome (*Bromus diandrus*), red brome, wall barley (*Hordeum murinum*), soft chess, and longbeak stork's bill (*Erodium botrys*). Annual grassland on the west-facing slopes on the east side of the expansion area appear to support more native species than elsewhere in the expansion area, including blow wives (*Achyrachaena mollis*), California burclover (*Medicago polymorpha*), naked buckwheat (*Eriogonum nudum*), shining pepperweed (*Lepidium nitidum*), downy pincushion plant (*Navarretia pubescens*), and dotseed plantain (*Plantago erecta*). Annual grassland in the expansion area is disturbed and densely marked by wild boar hoof prints (Tetra Tech, Inc. and ICF International 2014).

The grassland in SATCOM's currently boundary contains more invasive non-native species (i.e., tocalote [*Centaurea melitensis*], Russion thistle [*Salsola tragus*]) than the grassland outside the current boundary. Annual grassland outside SATCOM's current boundary is occasionally grazed by sheep or used for training activities by National Guard troops.

### Blue Oak Woodland

Blue oak woodland is the other dominant vegetation community in SATCOM's current boundary, and is characterized by a sparse to moderately dense cover of blue oak. Canopy cover ranges from approximately 30 to 90 percent (Tetra Tech, Inc. and ICF International 2014). The species composition of the herbaceous layer is generally similar to that of annual grasslands. There is no shrub layer. Blue oaks woodland occurs in a mosaic with patches of annual grassland. The 2014 PLS noted that in the northern portion of the proposed expansion area, many of the blue oaks were cut and the downed trees were left in place. The remaining trees surrounding the cut area were leafless and in poor health. No oak regeneration was observed on the site; this is possibly because of the large amount of soil disturbance by wild boars (Tetra Tech, Inc. and ICF International 2014).

***Figure 2-33: SATCOM Blue Oak Woodland***

*Source: USAG POM*

**Ephemeral Drainages**

There are six natural ephemeral drainages labeled Drainage 1–6 on Figure 2-32 (Tetra Tech, Inc. and ICF International 2014). Drainage 1, conveys some flowing water from a 12-inch culvert into 2-foot wide channel with some hydrophytic vegetation. This channel flows into a natural, unvegetated drainage feature that exhibits severe erosion and head cutting. Below the channel is an area of tall herbaceous vegetation dominated by Italian thistle and ripgut brome, both of with are non-hydrophytic species. The artificial drainage (Drainage 7 on Figure 2-32), flows from a 6-inch PVC pipe and can carry up to one to two inches of water.

***Figure 2-34: An Ephemeral Drainage on SATCOM***

*Source: USAG POM*

**Ornamental Trees and Shrubs**

Ornamental trees and shrubs, termed as the "urban" plant community in the Draft Camp Roberts INRMP (CA ARNG 2012), is associated with the built infrastructure of the SATCOM facility within the current boundary and consists of primarily nonnative ornamental trees and shrubs.

### 2.3.3.4 Fauna

Fauna species described below are based on the 2005 ADP EA and the 2014 PLS Report for the proposed SATCOM expansion area. A full list of fauna species observed can be found in Appendix D.

Wildlife diversity observed during the SATCOM expansion area PLS was at the level expected for natural vegetation communities located adjacent to a developed area and with a single nearby source of water (Tetra Tech, Inc. and ICF International 2014). Due to the developed nature of the SATCOM, and plans for expansion development, combined with the SATCOM boundary fence, the SATCOM and its expansion area provide limited wildlife habitat, particularly for medium to large mammals.

#### 2.3.3.4.1 Mammals

Common mammal species detected and observed include desert cottontail, California ground squirrel, wild boar (also known as feral hog), elk, and mule deer *(Odocoileus*

*hemionus).* Broad-foot mole (*Scapanus latimanus)* was detected by the presence of trails and mounts. Coyotes were heard howling (Tetra Tech, Inc. and ICF International 2014).

**Bats**

Acoustic surveys for bats detected four species: pallid bat (*Antrozous pallidus*), western red bat (*Lasiurus blossevillii*), hoary bat, and California myotis. A pallid bat roosting box is located nearby on Camp Roberts.

#### 2.3.3.4.2 Birds

Twenty-six bird species were detected during surveys, most of which are common to oak woodlands habitat. Common species observed on the site included western scrub jay, oak titmouse, mourning dove, western bluebird, and acorn woodpecker (Tetra Tech, Inc. and ICF International 2014). A full list of all birds observed on the site can be found in Appendix D.

#### 2.3.3.4.3 Reptiles and Amphibians

Because the SATCOM site has very little water sources, very few amphibians and reptiles are present. Only one amphibian was detected on the site, the Sierra tree frog (*Pseudacris sierra*). Three reptiles were observed during the surveys: western fence lizard, southern alligator lizard, and western rattlesnake (*Crotalus viridis*). It is likely that lack of prey on the site limited the number of reptiles observed during the surveys (Tetra Tech, Inc. and ICF International 2014).

#### 2.3.3.4.4 Invertebrates

Only a small number of common invertebrates were observed during the surveys, such as honey bees, grasshoppers (*Caelifera* sp.), crickets (*Gryllidae* sp.), dragonflies (*Anisoptera* sp.), and spiders (Tetra Tech, Inc. and ICF International 2014). A full listing of invertebrates found on the site is located in Appendix D.

### 2.3.3.5 Special Status Species

See Section 2.1.3.5 for defining characteristics of “Special Status Species".

There are 14 special status plant species that have the potential to occur at SATCOM; however, to date, there have been no documented occurrences of any special status plant species at SATCOM or the proposed expansion area. Of the 14 special status plant species that have the potential to occur on SATCOM, 10 have been documented to occur on Camp Roberts (Tetra Tech, Inc. and ICF International 2014). Table 2-9 lists all 14 species that have the potential to occur at the site and identifies what species have been found on Camp Roberts.

In addition, the potential exists for 23 special status animal species to occur at SATCOM. To date, only two special-status bat species have been documented to occur in the

proposed SATCOM expansion area, the Pallid bat (*Antrozous pallidus)* and Western red bat *(Lasiurus blossevillii)*. The federal endangered and state threatened San Joaquin kit fox (*Vulpes macrotis mutica*) and the federal endangered vernal pool fairy shrimp (*Branchinecta lynchi*) both have a high potential to occur at the site because the San Joaquin kit fox has been documented on Camp Roberts and the vernal pool fairy shrimp are likely to occur in vernal pools near the SATCOM water well sites. Of the remaining species that have the potential to occur, 10 are birds that may be occasional migrants or forage at the site. Table 2-10 lists all special status animal species that have the potential to occur at the site and identifies what species have been found on Camp Roberts. Figure 2-35 shows special status plant and animal species found in the immediate vicinity of the SATCOM site.

Appendix C contains a list of all special status species known and with the potential to occur at SATCOM.

***Table 2-9: Special Status Plant Species with the Potential to Occur at SATCOM***

| Common Name | Scientific Name | Federal Status | State Status | CNPS | SAR | Occurrence |
|---|---|---|---|---|---|---|
| Purple amole | *Chlorogalum purpureum* var. *purpureum* | T | SP | List 1B.1 | T2 | Potential to occur. Known to occur at Camp Roberts. |
| Dwarf calycadenia | *Calycadenia villosa* | | SP | List 1B.1 | G2 | Potential to occur. Known to occur at Camp Roberts. |
| San Luis Obispo owl's-clover | *Castilleja densiflora* ssp. *obispoensis* | | SP | List 1B.2 | T2 | Potential to Occur. Known to occur at Camp Roberts. |
| Lemmon's jewelflower | *Caulanthus lemmonii* | | SP | List 1B.2 | G3 | Potential to Occur. Known to occur at Camp Roberts. |
| Straight-awned spineflower | *Chorizanthe rectispina* | | SP | List 1B.3 | G1 | Potential to Occur. Known to occur at Camp Roberts. |
| Small-flowered gypsum-loving larkspur | *Delphinium gypsophilum* ssp. *parviflorum* | | SP | List 3.2 | T3 | Potential to Occur. Known to occur at Camp Roberts. |
| Koch's cord moss | *Entosthodon kochii* | | SP | List 1B.3 | G1 | Potential to Occur. Known to occur at Camp Roberts. |
| San Benito poppy | *Eschscholzia hypecoides* | | SP | List 4.3 | G3 | Potential to Occur. Known to occur at Camp Roberts. |
| Pale-yellow layia | *Layia heterotricha* | | SP | List 1B.1 | G2 | Potential to Occur. Known to occur at Camp Roberts. |

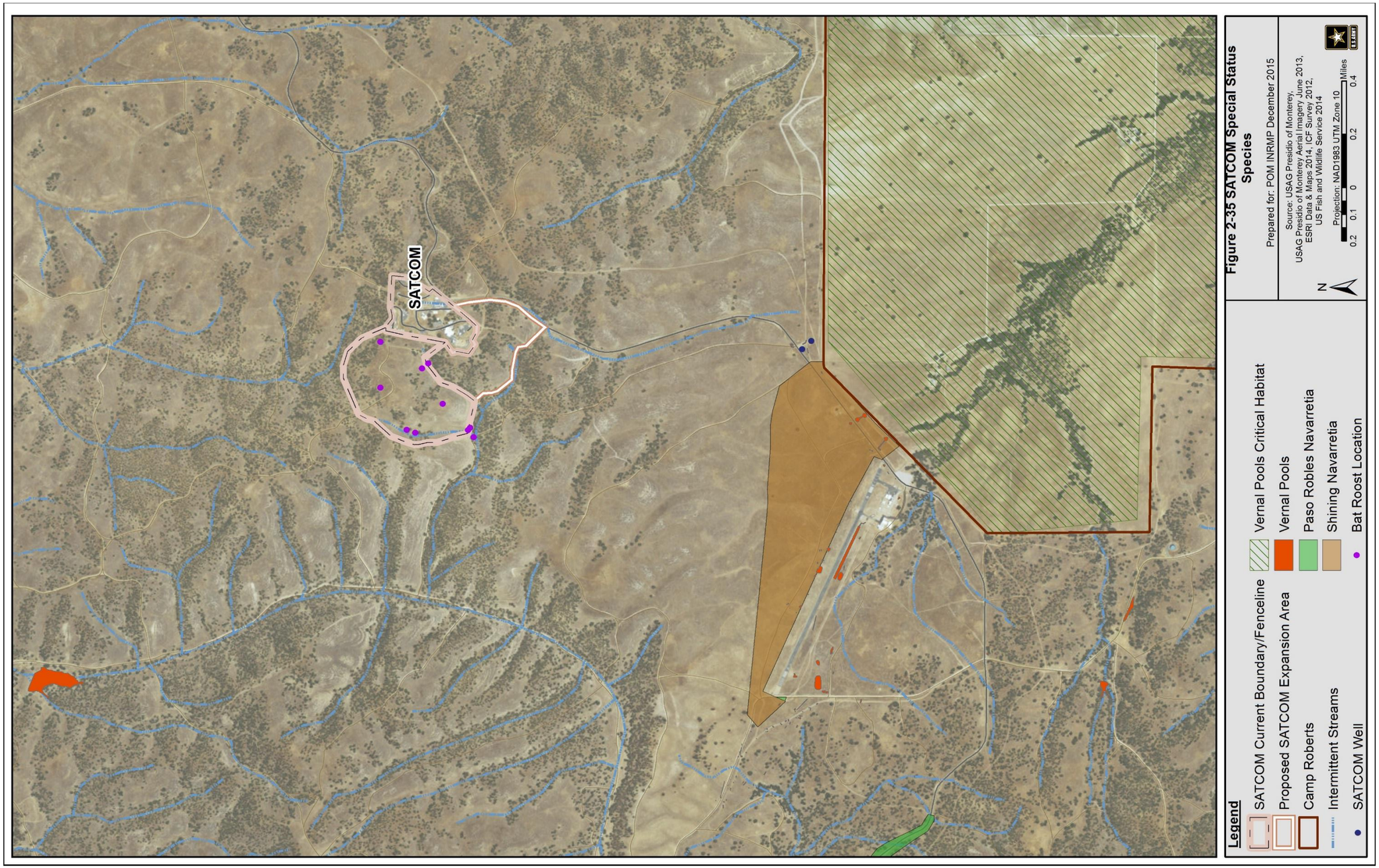
| Common Name | Scientific Name | Federal Status | State Status | CNPS | SAR | Occurrence |
|---|---|---|---|---|---|---|
| Shining navarretia | *Navarretia nigelliformis* ssp. *radians* | | SP | List 1B.2 | T2 | Potential to Occur. Known to occur at Camp Roberts. |
| Round-leaved filaree | *Erodium macrophyllum* | | | List 1B.1 | G2 | Potential to Occur. |
| Umbrella larkspur | *Delphinium umbraculorum* | | | List 1B.3 | G2 | Potential to Occur. |
| Jones' bush mallow | *Malacothamnus jonesii* | | SP | List 4.3 | G3 | Potential to Occur. |
| Rattan's cryptantha | *Cryptantha decipiens (C. rattanii)* | | SP | List 4.3 | G3 | Potential to Occur. |
| *For descriptions of status codes, refer to Table 2-2*<br>**All special status plant species in this table have the potential to occur at SATCOM, but none have been documented.* | | | | | | |

***Table 2-10: Special Status Animal Species that are Known to Occur or Have the Potential to Occur at SATCOM***

| Common Name | Scientific Name | Federal Status | State Status | CDFW Status | USFWS BCC | Migratory Bird | SAR | Occurrence |
|---|---|---|---|---|---|---|---|---|
| **Invertebrates** | | | | | | | | |
| Vernal pool fairy shrimp | *Branchinecta lynchi* | E | | | | | G3 | Potential to occur. Known to occur at Camp Roberts. |
| **Reptiles and Amphibians** | | | | | | | | |
| Silvery legless lizard | *Anniella pulchra pulchra* | | | SSC | | | G3 | Potential to occur. Known to occur at Camp Roberts. |
| San Joaquin whipsnake | *Masticophis flagellum ruddocki* | | | SSC | | | T2 | Potential to occur. Known to occur at Camp Roberts. |
| **Birds** | | | | | | | | |
| Golden eagle | *Aquila chrysaetos* | | | SA | BCC | MBTA | G5 | Potential to occur. Known to occur at Camp Roberts. |
| Long-eared owl | *Asio otus* | | | SSC | | MBTA | G5 | Potential to occur. Known to occur at Camp Roberts. |
| Burrowing owl | *Athene cunicularia hypugaea* | | | SSC | BCC | MBTA* | G4 | Potential to occur. Known to occur at Camp Roberts. |

| Common Name | Scientific Name | Federal Status | State Status | CDFW Status | USFWS BCC | Migratory Bird | SAR | Occurrence |
|---|---|---|---|---|---|---|---|---|
| Sharp-shinned hawk | *Accipiter striatus* | | | SA | | MBTA | G5 | Present as a migrant. |
| Ferruginous hawk | *Buteo regalis* | | | SA | BCC | MBTA* | G4 | Present as a migrant. |
| Swainson's hawk | *Buteo swainsoni* | | T | SA | BCC | MBTA | G5 | Present as a migrant. |
| White-tailed kite | *Elanus leucurus* | | | SA | | MBTA | G5 | Present as a forager/migrant. |
| Merlin | *Falco columbarius* | | | SA | | MBTA | G5 | Present as a forager/migrant. |
| Prairie falcon | *Falco mexicanus* | | | SA | BCC | MBTA | G5 | Present as a forager/migrant. |
| California condor | *Gymnogyps californianus* | E | E | | | MBTA | G1 | Present as a forager/migrant. |
| Bald eagle | *Haliaeetus leucocephalus* | D | E | | BCC | MBTA | G5 | Present as a forager/migrant. |
| Loggerhead shrike | *Lanius ludovicianus* | | | SSC | BCC | MBTA* | G4 | Present as a forager/migrant |
| Osprey | *Pandion haliaetus* | | | SA | | MBTA | G5 | Present as a forager/migrant. |
| Cooper's hawk | *Accipiter cooperii* | | | SA | | MBTA | G5 | Potential to occur. |
| California horned lark | *Eremophila alpestris actia* | | | SA | | MBTA | T3 | Potential to occur. |
| **Mammals** | | | | | | | | |
| Pallid bat | *Antrozous pallidus* | | | SSC | | | G5 | Present. |
| Western red bat | *Lasiurus blossevillii* | | | SSC | | | G5 | Present. |
| Salinas pocket mouse | *Perognathus inornatus psammophilus* | | | SSC | | | T2 | Potential to occur. Known to occur at Camp Roberts. |
| American badger | *Taxidea taxus* | | | SSC | | | G5 | Potential to occur. Known to occur at Camp Roberts. |
| San Joaquin kit fox | *Vulpes macrotis mutica* | E | T | | | | T2 | Potential to occur. Known to occur at Camp Roberts. |
| Townsend's big-eared bat | *Corynorhinus townsendii* | | | SSC | | | G3 | Present as forager/migrant. |
| *For descriptions of status, codes refer to Table 2-3* | | | | | | | | |

1 ***Figure 2-35: Special Status Plant and Animal Species Found in the Vicinity of SATCOM, San Luis Obispo County, California***




2

*This page intentionally left blank.*

#### 2.3.3.5.1 Flora

**Purple Amole (*Chlorogalum purpureum* var. *purpureum*)—Federal Threatened, State Special Plant List, CNPS List 1B.2**

Purple amole is a member of the century plant family (*Agavaceae*) (formerly in the lily family) and endemic to clay soils in the south Coast Ranges of Monterey and San Luis Obispo counties. Purple amole occurs on the eastern side of the Santa Lucia Range, in southern Monterey County, at Fort Hunter Liggett; and in northern San Luis Obispo County, at Camp Roberts. Known populations of the purple amole exist primarily in open grassland communities, with fewer individuals in scattered oak woodland communities and open areas in shrubland communities. Only little cover of herbaceous species is present, possibly reducing competition for resources. Cryptogamic crusts frequently occur, and purple amole grow in areas that have had little to no disturbance (USFWS 2002). Guretzky et al. (2005) observed positive correlations of purple amole and cover of native plant species with cryptogamic crusts.

Purple amole is a low-growing perennial herb with a rosette at its base, composed of linear and flat, bright green leaves. It is the only member of the genus with bluish-purple flowers that open during the day (USFWS 2001). Purple amole is dormant during the summer, and the period that above-ground structures are not produced often exceeds one year and may extend to four years (Guretzky et al. 2005). Flowering and fruit development occur during May and June. Reproduction is primarily by seed, and the seed set increases with insect pollination (USFWS 2008c).

Threats to purple amole and reasons for the listing of the species include construction and use of military training facilities and military training activities, displacement by nonnative annual grasses, and potentially alteration of fire cycles due to military training. Livestock was mentioned as a potential threat (USFWS 2000). Critical habitat was designated in 2002 (USFWS 2002), exempting the populations on Camp Roberts due to management of this species through an INRMP.

**Shining navarretia (*Navarretia nigelliformis* ssp. *radians*)—State Special Plants List, CNPS listed 1B.2 species**

Shining navarretia (*Polemoniaceae*/phlox family) is an annual herbaceous plant that occurs in vernal pools, grasslands, and cismontane woodlands. Shining navarretia is known to occur at elevations of 76–1,000 meters (249–3,280 feet) above msl (CNPS 2014). Shining navarretia has been mapped on Camp Roberts within 80 meters of the SATCOM well sites.

Threats against this species are urban development, grazing pressure, and competition from non-native species (CNPS 2014).

**Dwarf calycadenia (*Calycadenia villosa*)—State Special Plants List, CNPS listed 1B.1 species**

Dwarf calycadenia (*Asteraceae*/sunflower family) is an annual herbaceous plant that grows in rocky, fine soils in chaparral, grasslands, meadows, seeps, and cismontane

woodlands (e.g., oak woodlands). Dwarf calycadenia is known to occur at elevations of 240–1,350 meters (787–4,429 feet) above msl (CNPS 2014).

Threats to this species include habitat loss due to construction and urbanization, feral pigs, vehicles and transportation construction, and competition from non-native species (CNPS 2014).

**San Luis Obispo owl's clover (*Castilleja densiflora* ssp. *obispoensis*)—State Special Plants List, CNPS listed 1B.2 species**

San Luis Obispo owl's clover (*Orobranchaceae*/broomrape family) is a hemiparasitic, annual herbaceous plant that inhabits grasslands, meadows, and seeps (sometimes in serpentine subtrates) at elevations of 10–400 meters (33–1,312 feet) in San Luis Obispo County (CNPS 2014).

Threats to the San Luis Obispo owl's clover include urban development and grazing (CNPS 2014).

**Lemmon's jewelflower (*Caulanthus lemmonii*)—State Special Plants List, CNPS listed 1B.2 species**

Lemmon's jewelflower (*Brassicaceae*/mustard family) is an annual herbaceous plant that occurs in grasslands and pinyon-juniper woodlands. Lemmon's jewelflower is known to occur at elevations of 80–1,220 meters (262–4,003 feet) above msl (CNPS 2014).

This species is threated by urban development, grazing, and vehicles (CNPS 2014).

**Straight-awned spineflower (*Chorizanthe rectispina*)—State Special Plants List, CNPS listed 1B.3 species**

Straight-awned spineflower (*Polygonaceae*/buckwheat family) is an annual herbaceous plant that inhabits chaparral, coastal scrub, and cismontane woodlands. Straight-awned spineflower is known to occur at elevations of 85–1,035 meters (279–3,396 feet) above msl (CNPS 2014).

Possible threats to this species include urban development and competition from non-native species (CNPS 2014).

**Small-flowered gypsum-loving larkspur (*Delphinium gypsophilum* ssp. *parviflorum*)—State Special Plant List, CNPS listed 3.3 species**

Small-flowered gypsum-loving larkspur (*Ranunculaceae*/buttercup family) is a perennial herb that inhabits valley and foot hill grasslands, and cismontane woodland. Small-flowered gypsum-loving larkspur is known to occur at elevations of 190–350 meters (623–1,148 feet) above msl (CNPS 2014).

One threat to this species is grazing. There is a possible threat by roads, and their need to be widened, but there needs to be further studies need to be conducted (CNPS 2014).

**Koch's cord moss (*Entosthodon kochii*)—State Special Plants List, CNPS listed 1B.3 species**

Koch's cord moss (*Funariaceae*/moss family) is a moss that grows on soil in cismontane woodlands. Koch's cord moss is known to occur at elevations of 180–1,000 meters (590–3,281 feet) above msl. The immediate threats to this species are unknown. (CNPS 2014).

**San Benito poppy (*Eschscholzia hypecoides*)—State Special Plants List, CNPS listed 4.3 species**

San Benito poppy (*Papaveraceae*/poppy family) is an annual herbaceous plant that occurs in serpentine clay in chaparral, cismontane woodlands, and valley and foothill grasslands. San Benito poppy is known to occur at elevations of 200–1500 meters (656–4,921 feet) above msl. The immediate threats to this species are unknown. (CNPS 2014).

**Pale-yellow layia (*Layia heterotricha*)—State Special Plants List, CNPS listed 1B.1 species**

Pale-yellow layia (*Asteraceae*/sunflower family) is an annual herbaceous plant that occurs in alkaline or clay soils in coastal scrub, pinyon-juniper woodlands, grasslands, and cismontane woodlands. Pale-yellow layia is known to occur at elevations of 300–1,705 meters (984–5,594 feet) above msl (CNPS 2014).

Threats to this species include agricultural conversion, grazing, construction, and competition from non-native plants. There is a potential threat from road maintenance and wind energy development (CNPS 2014).

#### 2.3.3.5.2 Fauna

**San Joaquin kit fox (*Vulpes macrotis mutica*)—Federal Endangered and State Threatened**

The San Joaquin kit fox (kit fox) is the smallest canid species in North America. The average weights of adult females and males at nearby Camp Roberts are 2.2 and 2.6 kilograms (4.8 and 5.7 pounds), respectively (National Guard Bureau and CA ARNG 1991), with a height of approximately 30 centimeters (12 inches) at the shoulder. Kit foxes have conspicuously large ears, long legs, and a bushy black-tipped tail that is held horizontally from their bodies. The fur on their backs is buff-colored, their flanks are rust-colored, and their undersides are white (USFWS 1998b).

Kit foxes inhabit the California Central Valley floor and valleys in the interior coastal ranges. Kit foxes are active year-round and, though they are primarily nocturnal, can be seen during the early morning or late evening. The San Joaquin kit fox utilizes subterranean dens throughout the year. Each kit fox may use several dens in a season and change dens frequently (USEPA 2010). The entrances of pupping dens are often littered with prey remains, tracks, and scat, although no evidence of use may be seen at an active den (USFWS 1998b).

Many factors have contributed to the overall population decline. In the 1950s, the primary factors were loss, degradation, and fragmentation of habitats in the San Joaquin Valley due to agricultural, industrial, mineral, and urban development. Other factors

leading to their population decline include predation by coyotes, starvation, flooding, rabies, and drought. Human-induced mortality factors include shooting, trapping, poisoning, electrocution, vehicle strikes, and suffocation by burial. Rodenticides pose a current threat to the kit fox through either direct or secondary poisoning—consumption of rodenticide in bait application, or consumption of rodents that have consumed the rodenticide (USFWS Sacramento 2010). However, the most common threats to the survival of the kit fox have been, and continue to be, habitat fragmentation and loss associated with agricultural, urban, and industrial developments; predation; interspecific competition; and disease (USFWS 1998b). No critical habitat has been designated for the San Joaquin kit fox.

**Vernal pool fairy shrimp (*Branchinecta lynchi*)—Federal Endangered**

The range of vernal pool fairy shrimp extends from Shasta County south throughout the Central Valley to Tulare County, and west to the central Coast Ranges. Disjunct populations occur in San Luis Obispo, Santa Barbara, and Riverside counties (Eriksen and Belk 1999). Most known locations are in the Sacramento and San Joaquin Valleys and along the eastern margin of the central Coast Ranges (Eng et al. 1990).

Vernal pool fairy shrimp inhabit rain-filled, ephemeral pools (i.e., vernal pools) that form in depressions, usually in grassland habitats (Eng et al. 1990). Pools must stay inundated long enough for the shrimp to complete their life cycle. Pools occupied by vernal pool fairy shrimp tend to have grass or mud bottoms with clear to tea-colored water, and are often in basalt flow depressional pools in unplowed grasslands. Water characteristics such as alkalinity, total dissolved solids, and pH are among the most important factors in determining the distribution of fairy shrimp (Eriksen and Belk 1999). Vernal pool fairy shrimp also occur in other wetlands that provide habitat characteristics similar to those of vernal pools; these other wetlands include alkaline rain pools, rock outcrop pools, and some constructed sites (USFWS 1994; Eriksen and Belk 1999). Occupied habitats range in size from 0.6 square-meter ($m^2$) (6-square-foot [$ft^2$]) puddles to pools exceeding 9.7 ha (24 acres) (Eriksen and Belk 1999). Vernal pool fairy shrimp is not found in riverine, marine, or other permanent waters (USFWS 1994).

Conversion of vernal pool habitat to agricultural uses and urban development is the primary threat to the species. Water supply and flood control activities also pose a significant threat to vernal pool habitat. Direct destruction and modification of pools from filling, grading, disking, leveling, and other activities remove habitat. Modification of surrounding uplands that alter vernal pool hydrology may also result in habitat loss (USFWS 1994).

In a 2013 survey, no potential habitat was identified in the proposed SATCOM expansion areas. However, four areas of potential fairy shrimp habitat were identified in the survey area around the SATCOM well site. The features of these potential sites will likely only provide suitable vernal pool fairy shrimp conditions in years with normal or above normal rainfall (Tetra Tech, Inc. and ICF International 2013). Additionally, vernal pool fairy shrimp has been document recently in wet tire tracks along dirt roads at Camp Roberts near the SATCOM well sites (U.S. Army 2013a).

Critical habitat for vernal pool fairy shrimp was designated on 06 August 2003 (USFWS 2003). Camp Roberts was excluded from designated critical habitat because the CA ARNG had been implementing measures to conserve vernal pool fairy shrimp and its habitat at the installation, and the USFWS determined that the benefits of excluding Camp Roberts outweighed the benefits of including it (USFWS 2003).

**California condor (*Gymnogyps californianus*)—Federal Endangered, State Endangered**

The California condor has potential to occur at SATCOM, and is managed in accordance with the USAG POM ESMCP (Appendix G). Additional condor life history information is included in Section 2.1.3.5. SATCOM is not located within the designated critical habitat for the condor.

**Pallid bat (*Antrozous pallidus*)—State Species of Special Concern**

Pallid bats can be found in a variety of habitats including grasslands, shrublands, and woodlands, but are most common in open, dry habitats with rocky ledges or tree hollows for roosting. Typical human-made roost structures include buildings, bridges, and mines. This is a resident species that occurs throughout the state, except for in the high Sierra Nevada, from Shasta to Kern counties (Zeiner et al. 1990b). Pallid bats were detected at the SATCOM expansion area site during acoustic surveys conducted in 2013 (Tetra Tech, Inc. and ICF International 2014). At least one known pallid bat roost is located approximately 4.25 miles north/northwest of the expansion area. This roost is a bat box mounted near the roof on the southeast wall of one of the buildings adjacent to the field at the main Camp Roberts compound (Figure 2-35). Approximately 30 pallid bats were observed in this roost in both May and October 2013 (Tetra Tech, Inc. and ICF International 2014). Pallid bats generally forage within 3.7 to 5 miles of their roost sites (Pierson and Rainey 1998). Although the species is capable of long-distance flight, the oak savannah (sparsely forested oak woodland) in the SATCOM expansion area represents typical habitat for pallid bat, and pallid bat roosts have been documented in cavities in oak trees (Pierson and Rainey 1998), which are present in the expansion area. It is reasonable to assume that there may be additional pallid bat roosts within or in proximity to the expansion area (Tetra Tech, Inc. and ICF International 2014). The species is threatened by loss of oak woodland to development and direct disturbance of active roosts (Pierson and Rainey 1998).

**Western red bat (*Lasiurus blossevillii*)—State Species of Special Concern**

Western red bats typically are found in riparian corridors in the summer with mature tree stands of sycamore, cottonwood, and other such trees in low-elevation regions, particularly California's central valley. In winter, western red bats are thought to migrate to temperate coastal areas. The species roods in tree foliage, and is vulnerable to loss of forested habitat and mortality at wind energy facilities. A western red bat was observed in the SATCOM expansion area site during acoustic surveys conducted in 2013. The area may provide foraging and roost opportunities for the bat. Western red bat is vulnerable to loss of forested habitat. The species has been documented in oak woodland and annual grassland, and the expansion area may provide both roost and foraging opportunities for the species (Tetra Tech, Inc. and ICF International 2014). The expansion area is not

typical maternity habitat for western red bat, given the current knowledge of the species (Pierson et al. 2006). It is possible that the site provides migratory stop-over resources, wintering habitat, or year-round habitat for males (Tetra Tech, Inc. and ICF International 2014). Longer term surveys on-site may provide more information on the nature of this species' use of habitat in the expansion area.

**Silvery legless lizard (*Anniella pulchra pulchra*)—State Species of Special Concern**

The silvery legless lizard is a subspecies of the California legless lizard. Legless lizards occur in beach, chaparral, pine-oak woodland, and riparian woodland habitats with sparse vegetation. They require loose soil for burrowing, moisture, warmth, and vegetative cover (Stebbins 2003). The presence of moist soil is especially important (Jennings and Hayes 1994). Legless lizards burrow into washes, sand dunes, and loose soil at the base of slope or near streams. They forage at the base of shrubs and in leaf litter for insects and spiders. Silvery legless lizard occurs in the Coast Ranges from Contra Costa County south to the Mexican border (Zeiner et al. 1988; Stebbins 2003).

**San Joaquin whipsnake (coachwhip) (*Masticophis flagellum rudockii*)—State Species of Special Concern**

The San Joaquin whipsnake is a subspecies of the coachwhip. It occurs in sparsely vegetated areas in grasslands, deserts, scrublands, woodlands, and farmlands. San Joaquin whipsnakes use rodent burrows, rock piles, and bushes for cover (Stebbins 2003). They are active from March through October and hibernate underground or at the base of plants during the remainder of the year. This snake eats rodents, lizards, birds, small turtles, insects, eggs, and carrion. It occurs from Glenn and Butte counties south to the Mexican border, except for higher elevations of the Sierra Nevada and along the central coast (Zeiner et al. 1988).

**Long-eared owl (*Asio otus*)—State Species of Special Concern, Protected by MBTA**

The long-eared owl is found in riparian or woodland habitats. This owl requires densely vegetated woodlands for nesting and roosting and feeds on various rodents, vertebrates, and birds. This species is a winter visitor in the Central Valley and desert areas in the southeastern portion of the state. It is a resident east of the Sierra Nevada/Cascade crest, around San Francisco Bay, along a portion of the Central Coast, and in spotty locations in Southern California (Zeiner et al. 1990a).

**Bald eagle (*Haliaeetus leucocephalus*)—State Endangered Species, Federal Delisted Species, Protected by MBTA and Bald and Golden Eagle Act**

Bald eagles occur primarily in aquatic areas, near lakes, rivers, estuaries, reservoirs, marshes, and some seacoasts. Tall trees, typically mature and old growth forests, are used for nesting and perching to spot prey. Bald eagles primarily prey on waterfowl, rabbits, turtles, snakes, and other small animals. This species is a permanent resident of California (CA ARNG 2012).

**Golden eagle (*Aquila chrysaetos*)—State Special Animal, USFWS Bird of Conservation Concern, Protected by MBTA and Bald and Golden Eagle Act**

Golden eagles occur primarily in rolling foothills, mountainous areas, sage-juniper flats, and deserts. Cliffs and large trees are used for nesting and cover. Golden eagles primarily

eat rabbits, hares, and rodents, and hunt for them by soaring high above open terrain. This species breeds throughout California except for the Central Valley, where it only occurs during the winter (Zeiner et al. 1990a).

**Burrowing owl (*Athene cunicularia*)—State Species of Concern, USFWS Bird of Conservation Concern, Protected by MBTA**

The burrowing owl is a small ground-nesting owl and, unlike other owls, is active during the daytime. Burrowing owls use ground squirrel burrows or other mammal burrows as nest sites and for cover. This owl occurs in grassland, open shrubland, desert, and agricultural habitats with perches and burrows. It feeds on insects, small mammals, birds, reptiles, and carrion. This species can be found throughout the state in appropriate habitats (Zeiner et al. 1990a).

**Salinas pocket mouse (*Perognathus inornatus psammophilus*)—State Species of Special Concern**

The Salinas pocket mouse is a subspecies of the San Joaquin pocket mouse. This pocket mouse has been found in areas with fine-textured, sandy soils. It may also occur on other substrates in annual grassland and desert shrub habitats, especially where there is sparse plant cover and friable soils. The Salinas pocket mouse occurs from near Soledad south to Hog Canyon in the Salinas Valley in Monterey County (Williams 1986).

**American badger (*Taxidea taxus*)—State Species of Special Concern**

American badgers live in open scrubland or grassland habitats with friable soils and adequate prey base. This species digs burrows for cover and feeds on a variety of rodents, insects, reptiles, worms, birds, and carrion. American badgers can be found throughout the state, except in the northern North Coast area (Zeiner et al. 1990b).

**Migratory Bird Treaty Act (MBTA)**

The migratory birds that have been incidentally observed or surveyed on Camp Roberts are listed in Table D-1, in Appendix D. As an inholding within Camp Roberts, those migratory bird species that have been incidentally observed or surveyed for on Camp Roberts have the potential to also utilize SATCOM lands during their migration. Over 170 species of migratory birds have been recorded at Camp Roberts between 1992 and 2011 (CA ARNG 2012).

#### 2.3.3.6 Invasive Species

Invasive plant species have been identified at SATCOM and Camp Roberts through previous INRMPs and planning level surveys. Eighteen species have been identified on SATCOM of the 18, three have a High Cal-IPC Invasiveness rating; Foxtail chess (*Bromus madritensis ssp. madritensis*), Yellow star thistle (*Cenaurea melitensis*), and Medusahead (*Taeniatherum caput-medusae*) (Cal-IPC 2006). Appendix F, the *Invasive Species Management Component Plan*, goes into more detail of invasive plants that are known to occur, or have the potential to occur, at SATCOM. Beyond invasive plants, feral hogs also are present on Camp Roberts and were observed in SATCOM's current boundary near drainage.

#### 2.3.3.7 Nuisance or Pest Species

Although no recent surveys for pest or nuisance species have been completed strictly on the SATCOM site, pest or nuisance animal species that have been identified at Camp Roberts have the potential to occur on SATCOM due to proximity to the property boundaries. Nuisance pest species with the potential to occur on the SATCOM site include California ground squirrel, feral or wild pig, red fox (*Vulpes vulpes*), brown headed cowbird (*Molothrus ater*), and the European starling.

Ground squirrels can be present in large numbers; their burrowing activities can destroy government property (i.e., chewing through vehicle wiring), damage soils and vegetation, and they harbor diseases that are communicable to humans. Feral or wild pigs damage grassland habitat and contribute to erosion. Red foxes compete with and can prey upon or transmit diseases and parasites to San Joaquin kit foxes.

During the PLS for the SATCOM expansion area, feral hogs, elk, and mule deer were most commonly observed near the drainage named "Drainage 1" (Tetra Tech, Inc. and ICF International 2014). California ground squirrels were observed predominantly along the dirt road in the southern portion of the SATCOM expansion area, and desert cottontails were observed in the southeast corner of the expansion area.

##### 2.3.3.7.1 Feral Hogs

A recent PLS in the SATCOM expansion area observed feral hogs and signs of habitat disturbance from the hogs (Tetra Tech, Inc. and ICF International 2014; Figure 2-36). An artificial drainage was delineated during this PLS, apparently sourced from a 6-inch PVC pipe that is the outlet for condensation of air conditioning systems on SATCOM (termed Drainage 7 [Tetra Tech, Inc. and ICF International 2014]). This artificial drainage has attracted feral hogs, since it appears to provide a perennial water source. The hogs have trampled one area to the extent that a 20x40-foot unvegetated pool has been created, with water ponded to the depth of 4–7 inches (Figure 2-37). A large group of feral hogs (8 to 10 individuals) was observed during the spring survey of the PLS. When feral hogs were observed during the PLS, they were seen moving towards this artificial drainage. Greater control of the hog population in the area and at Camp Roberts would help to limit their disturbance in the expansion area.

Although this artificial drainage has attracted hogs, it also has high value for native wildlife as a drinking water sources since the artificial drainage is the only source of water in or near the survey area. In addition to providing habitat for aquatic invertebrates, several species of birds and elk were observed drinking from the drainage (Tetra Tech, Inc. and ICF International 2014). The beneficial use for native species may complicate the USAG POM's ability to remove feral hogs from SATCOM, though once the fence is installed around the SATCOM expansion area, this will serve as a barrier to feral hogs (and native mammals such as elk) as long as it is properly maintained.

The drainage termed "Drainage 1" during the PLS also has been heavily disturbed by feral hogs. Drainage 1 is at the east boundary of the SATCOM expansion area, and

originates at a 12-inch culvert from the SATCOM facility and then becomes a 1- to 2-foot-wide channel. This channel drains to a natural unvegetated drainage.

Annual grassland in the expansion area is disturbed and densely marked by feral hog hoof prints (Tetra Tech, Inc. and ICF International 2014). Rooting by hogs was especially apparent underneath oak trees (Figure 2-38).

***Figure 2-36: Feral hog on SATCOM expansion area***

*Source: Tetra Tech, Inc. and ICF International 2014*

***Figure 2-37: Pooled area in Drainage 7***

*Source: Tetra Tech, Inc. and ICF International 2014*

***Figure 2-38: Feral hog disturbance under oaks***

*Source: Tetra Tech, Inc. and ICF International 2014*

# 2.4 BENICA MILITARY CEMETERY CURRENT CONDITIONS AND USE

## 2.4.1 Installation Description

### 2.4.1.1 General Location Description

Benicia Army Cemetery, is located in Benicia, California, approximately 25 miles northeast of San Francisco. The cemetery is situated on a 1.8-acre parcel in the northern portion of the former Benicia Arsenal (Figure 2-39).

***Figure 2-39: Benicia Army Cemetery, Solano County, California***

#### 2.4.1.2 Abbreviated History and Pre-Military Land Use

No information is available as to the pre-military use of the Benicia Army Cemetery land. The land on which Benicia Army Cemetery is established was purchased by the military as part of a 252-acre acquisition, which adjoined the Benicia city limits on the east. The first occupation of the post was on April 9, 1849, when two companies of the 2nd Infantry Regiment set up camp to establish Benicia Barracks, which also housed the 3rd Artillery Regiment. In this same year, the Benicia Army Cemetery was established, making it the oldest military cemetery in the Pacific Northwest.

Today, the cemetery contains 211 graves dating from 1849 to 1858 and includes 123 military personnel; nine German and Italian POWs; 61 civilians, of which 18 are unknown; and three pets. Lt. Colonel James Mason, who was the superintending engineer for the defenses of the Golden Gate, is the highest-ranking individual buried in the cemetery (Davis 2011).

#### 2.4.1.3 Military Mission

There is no current military mission on Benicia Army Cemetery.

#### 2.4.1.4 Ecological History

The entire 1.8 acres are classified as developed area. Clearing and landscaping the area has fragmented native ecosystems; however, given the small area of the cemetery, no major impacts from its establishment are likely.

Changes that likely affected natural ecological processes in the area include construction of the small crypt, fences, hard-surface walkways, and extensive landscaping.

### 2.4.2 Physical Environment

#### 2.4.2.1 Land Use

Benicia Army Cemetery is used exclusively as a military cemetery. The land at the site consists of gravestones, landscaped areas, and walking paths. The only permanent structure is a mausoleum along the southwestern boundary of the Cemetery. A portable toilet remains on site at the southern end of Birch Road.

##### 2.4.2.1.1 Surrounding Land Use

Benicia Army Cemetery is located within the city of Benicia and is bounded to the south by Interstate (I)-780 (see Figure 2-39). Medium-density residential (8-14 dwelling units per acre) land borders the cemetery to the west. The land use to the east/northeast of the cemetery is zoned limited industrial; this area is part of the Benicia Industrial Park (City of Benicia 2012). The Port of Benicia, a deep-water port on the Carquinez Strait, is located approximately a mile to the south of the Benicia Army Cemetery. Suisun Bay estuaries lie to the south and to the east, along the Carquinez Strait and Suisun Bay (Figure 2-42). These estuaries are approximately one quarter mile to the south and one half mile to the east of the cemetery.

#### 2.4.2.1.2 Outdoor Recreation Areas

Benicia Army Cemetery comprises 1.8 acres of graves, hard-surface walkways, and landscaping. It is open to the public, but has no areas designated for recreation.

### 2.4.2.2 Climate

Benicia, California has a moderate, Mediterranean climate characterized by dry, warm summers and moderate winters. Its proximity to the water (the Carquinez Strait flows into the San Pablo Bay) results in cool ocean breezes, with prevailing winds blowing from the west to the southeast. The average annual temperature is 63ºF, and average annual rainfall is 18 inches (City of Benicia 2011).

### 2.4.2.3 Ecoregion

Similar to the other USAG POM sites, the Benicia Army Cemetery falls within the Mediterranean California ecoregion, which extends from Oregon to Baja California (CEC 1997). See Section 2.1.2.3 for more information.

### 2.4.2.4 Geological Resources

#### 2.4.2.4.1 Geology

Like all of the USAG POM sites, the Benicia Army Cemetery falls within the California Coast Ranges, a series of mountain ranges extending from Humboldt County to Santa Barbara County, in Southern California (CERES n.d.). The northern portion of the Coast Ranges primarily consists of redwood and mixed-hardwood forest, which transitions to southern oak forests in the southern portion. Inland, slopes tend to experience hotter temperatures, and are primarily vegetated with chaparral and blue-oak foothill pine woodland.

#### 2.4.2.4.2 Topography

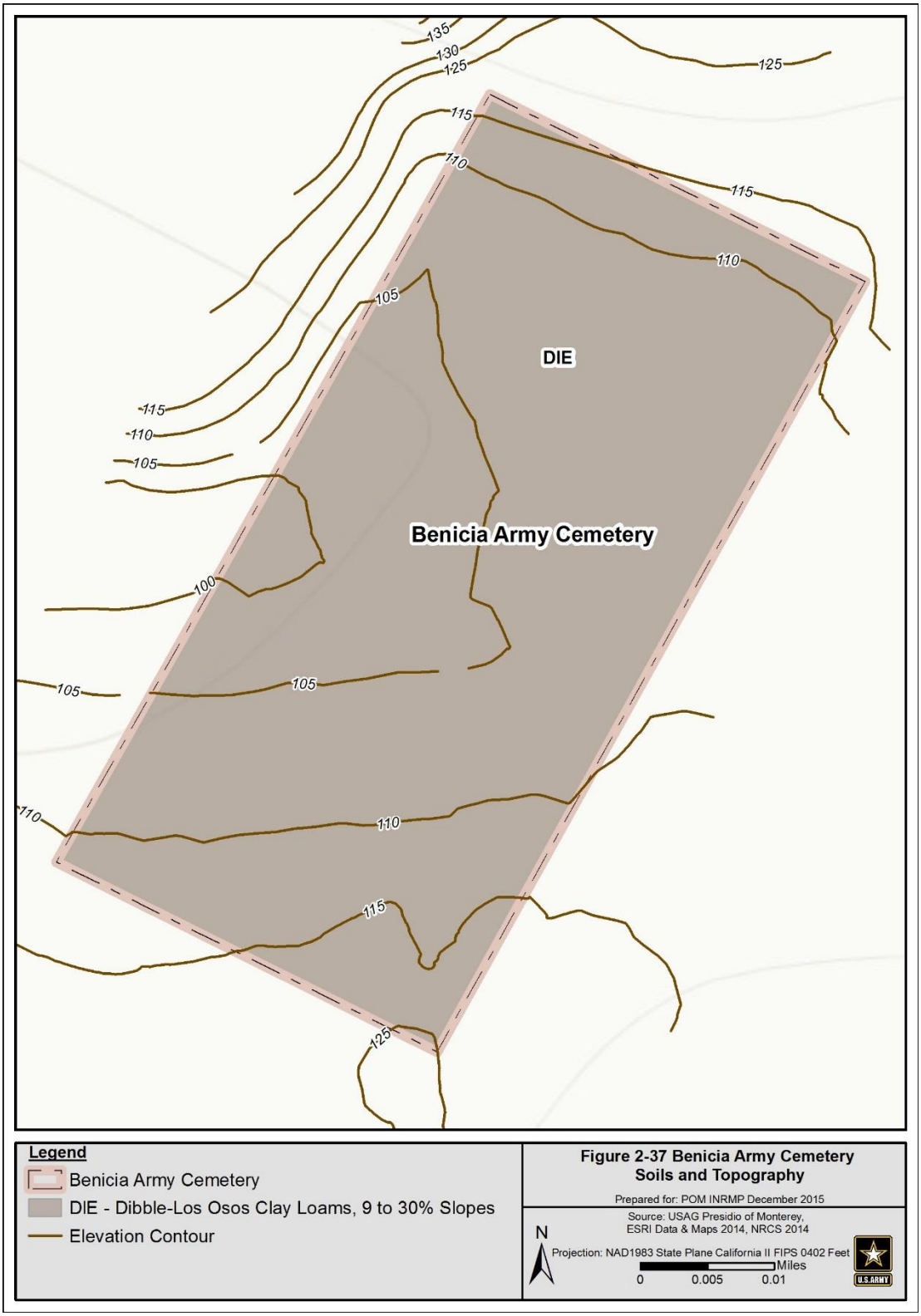
The topography at Benicia Army Cemetery is primarily flat and gently rising in topography from approximately 100 to 120 feet msl, as depicted in Figure 2-40.

#### 2.4.2.4.3 Soils

**Dibble Series**

Dibble-Los Osos clay loams, 9 to 30 percent slopes (DlE) comprise all of the soil at Benicia Army Cemetery, as depicted on Figure 2-40. This soil complex consists of approximately 60 percent Dibble loam and 30 percent Los Osos loam, with the remaining 10 percent being small areas of Millsholm loam. DlE consists of well-drained soils underlain by sandstone. These soils are typical on mountainous uplands that have typical vegetation of grasses, forbs, and scattered oaks, and they are good for use for range and dryland pasture. DlE runoff is medium, with a moderate erosion hazard (USDA 1977).

***Figure 2-40: Benicia Army Cemetery Soils and Topography, Solano County, California***



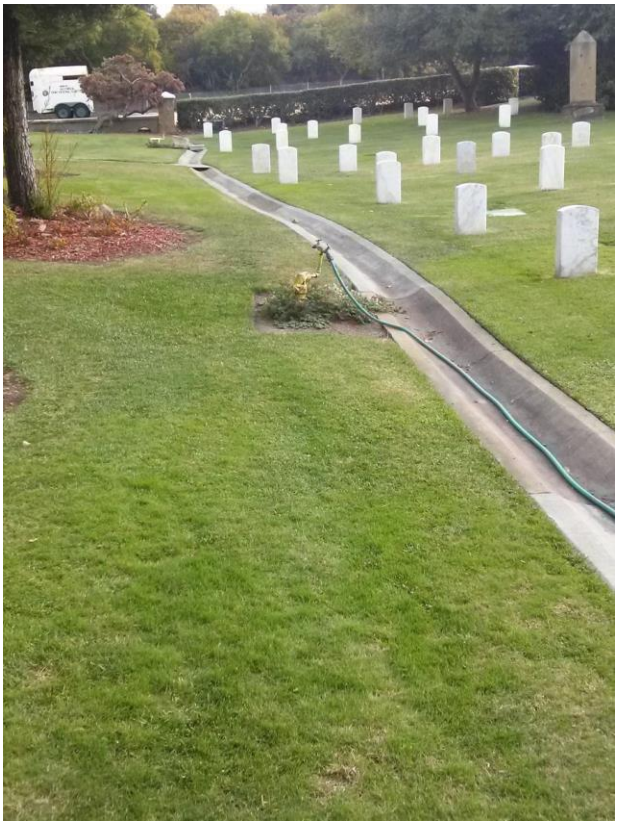
### 2.4.2.5 Water Resources

#### 2.4.2.5.1 Surface Water

Benicia Army Cemetery contains no natural surface water features. Historically, Pine Lake was located east of the cemetery, but the lake was drained several decades ago and that area is now used as an industrial storage site (Burchyns 2010).

Surface water runoff from precipitation is collected in a central drainage conveyance, see Figure 2-41, that traverses the lowest elevation of the property and drains to the Carquinez Strait, which flows into the San Francisco Bay (A. Bihler and A. Hewitt, field observation, December 2013). Figure 2-42 shows the watersheds and sub-watersheds near Benicia Army Cemetery.

***Figure 2-41: Drainage in Benicia Army Cemetery***



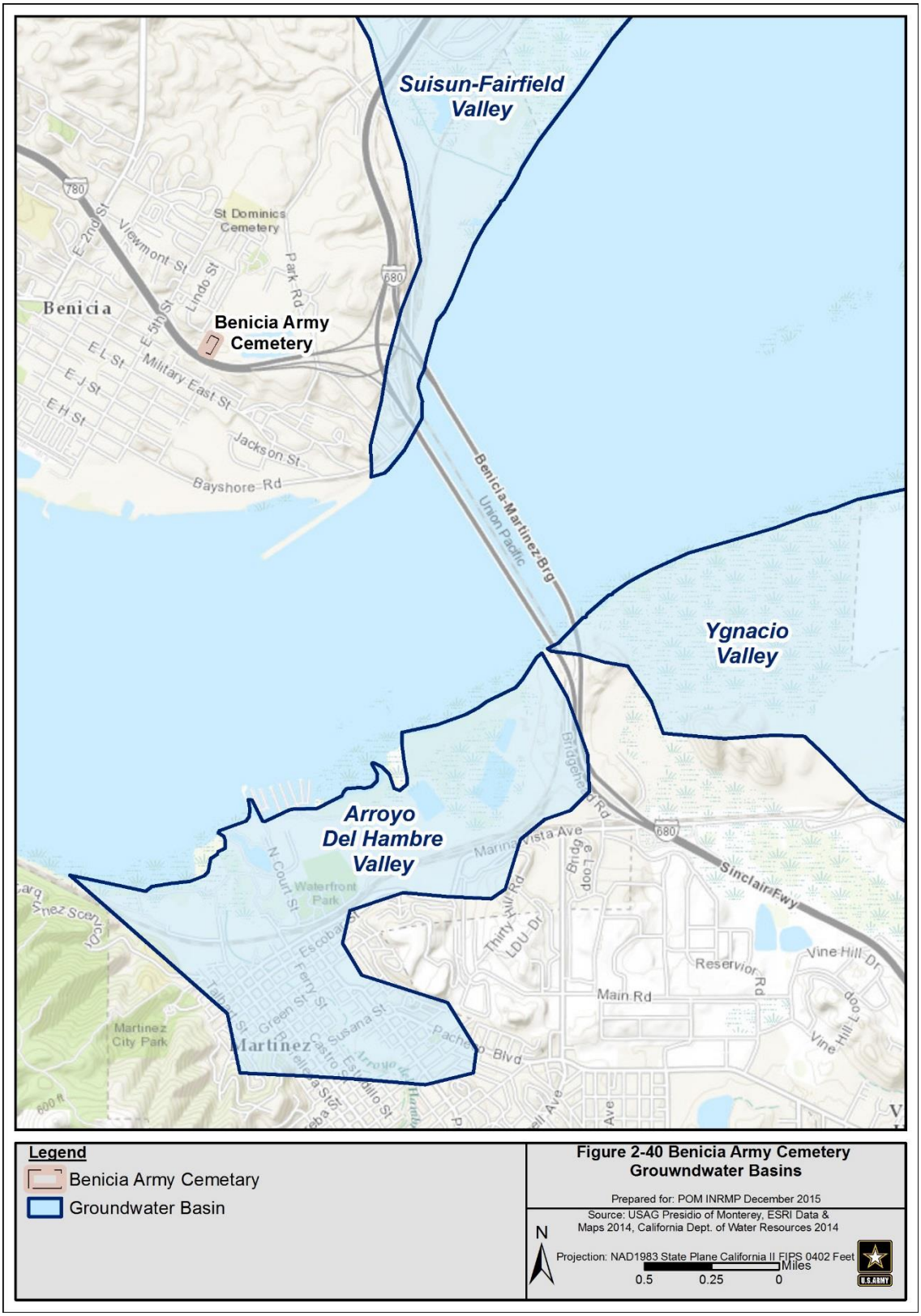
*Source: USAG POM*

***Figure 2-42: Watersheds and Sub-Watersheds around Benicia Army Cemetery, Solano County, California***

#### 2.4.2.5.2 Groundwater

In accordance with the Department of Water Resources for California, no groundwater basins underlie the Benicia Army Cemetery (DWR 2010). Benicia Army Cemetry gets its potable water from the City of Benicia (City of Benicia 2015). Figure 2-43 shows the groundwater basins around Benicia Army Cemetery.

***Figure 2-43: Groundwater Basins around Benicia Army Cemetery, Solano County, California***



#### 2.4.2.5.3 Floodplains

According to FEMA's most recent floodplain maps, Benicia Army Cemetery is outside of the 100-year floodplain and is designated as Zone X, an area of minimal risk of flooding (FEMA 2009).

### 2.4.3 Biological Resources

#### 2.4.3.1 Aquatic Environments

There are no aquatic environments on Benicia Army Cemetery.

#### 2.4.3.2 Coastal Zone and Nearshore Habitat

There are no coastal or nearshore habitat on Benicia Army Cemetery.

#### 2.4.3.3 Flora

##### 2.4.3.3.1 Vegetative Communities

Three vegetative communities were described in a 2014 PLS, see descriptions below (N.H. Sandburg 2014). These vegetative communities are identified in Table 2-11 and Figure 2-46. Plant species at Benicia consist primarily of horticulture species planted for cemetery esthetics. See Appendix C for a complete list of plants observed during the 2014 PLS.

***Table 2-11: Vegetative Communities of Benicia Army Cemetery***

| Vegetative Community | Acres | Percent of Benicia Land |
|---|---|---|
| Lawn with Landscape Ornamental | 1.2 | 66.66 |
| Cork oak forest | 0.5 | 27.77 |
| Ornamental ruderal | 0.1 | 5.57 |
| **Total** | 1.8 | 100 |

The cemetery lawn is composed primarily of horticultural sod grass fescue and rye (Vanier 2014) and is highly manicured; it is essentially weed free. Interspersed within the lawn and around the edges are planted ornamental florals, shrubs, and diverse horticultural tree plantings. Tree species include Aptos blue redwood (*Sequoia sempervirens*) and Italian cypress (*Cupresus sempervierens*). There are also large shrubs, such as vibrurnum (*Viburnum* sp.), privet (*Lingustrum* sp.), nandina (*Nandina domestica*), butterfly bush (*Buddlea* sp.), and Japanese pittisporum (*Pittisporum tobira*). There are also annual and perennials that are present in lawn borders and as accents to structures, includeing: dahlias (*Dahlia* sp.), yellow bush daisy (*Euryops pectinatus*), bird of paradise (*Strelitzia reginae*), and gazania (*Gazania* sp.*).* A vigorous rose (*Rosa* sp.) bed is present in the southeast quadrant of the lawn (N.H. Sandburg 2014).

***Figure 2-44: Ornamental Lawn Landscaping at Benicia Army Cemetery***

*Source: USAG POM*

## Cork Oak Forest

The cork oak (*Quercus suber*) forest is a horticulturally established grove of oaks that has become "naturalized." It is referred to as a "naturalized" forest due to a native complement of plant species that is found beneath the native California oak trees and the associated use by wildlife.

Cork oak is an evergreen, deciduous oak with low water needs, native to the Mediterranean regions of southwest Europe and northwest Africa. Between 1939 and 1949, cork oak seedlings were distributed to more than 30 California counties to assess the potential of developing domestic cork production in the United States (Brooks 1997). Today, approximately 60 mature trees are present in the cork oak forest (Tetra Tech, Inc. and ICF International 2014). Cork oak trees reach an average height of 60 feet and spread of 60 feet (Benicia Tree Foundation 2011). Understory species found in the forest include native shrub species such as Oregon grape (*Berberis aquifolium*) and Coffee berry (*Frangula californica*) with non-native species such as priven (*Lingustrum* sp.). The cork oak forest extends beyond the cemetery fence boundaries onto adjacent open industrial land for several acres. The overstory cover decreases at the northeast Benicia fence boundary where increased light levels provides for growth of non-native grasses and thistle such as rattail fescue and tocalote.

Like other oak forests, the cork oak forest is expected to provide especially productive wildlife habitat. Birds and mammals consume acorns, a particularly energy-dense food source, and utilize oak cavities for shelter and reproduction. Nesting and roosting habitat is provided by the trees for owls and hawks.

At Benicia Army Cemetery, cork oak is found within the vegetative cover on the north end. At the cemetery, this woodland provides a habitat island within the surrounding,

intensively developed region. This woodland, in combination with the nearby Suisun Bay estuaries, provides important migratory stopover habitat for migrant birds within the larger conservation landscape of the region.

***Figure 2-45: Cork Oak Forest at Benicia Army Cemetery***

*Source: USAG POM*

**Ornamental ruderal**

Located at the south end of Birch Road is a small section of weedy grasses and shrubs planted with ornamentals. Structures here include interpretive signs and a cargo shipping container used for storage. Planted ornamentals include species with full sun tolerance such as oleander (*Nerium oleander*), and bottle bush (*Callistemon* sp.). Ruderal species include rush skeleton weed (*Chondrilla juncea*), slender oat (*Avena faua*), and pampas grass.

Vegetative cover at Benicia Army Cemetery is depicted in Figure 2-46.

1 ***Figure 2-46: Benicia Army Cemetery Vegetative Cover, Solano County, California***


2

#### 2.4.3.4 Fauna

A full list of fauna species observed at Benicia Army Cemetery is shown in Appendix D. This include species observed over a period of thirty-three years.

##### 2.4.3.4.1 Mammals

The following species have been observed:

- raccoon
- western grey squirrel (*Sciurus griseus*)
- mountain lion
- house cat
- coyote
- mule deer
- California ground squirrel
- Virginia opossum
- desert cottontail
- black rat (*Rattus rattus*)
- striped skunk
- gray fox
- bat (unidentified)

Visitation by large mammals may be infrequent, but could be expected due to the continuity of oak woodland and grassland habitat northward of the cemetery, and a large expanse of wetland habitat to the east. The industrial park property to the east and north of the cemetery could easily be traveled by wildlife as it provides a continuity of intermittent shrub and tree cover to northern grasslands and eastern wetlands. The wetland expanse is accessible to wildlife from the cemetery by passage under Highway 680 and Highway 780 overpass bridges. Coyotes and large cats often descent into suburban areas to prey on household pets and, due to secretiveness, are usually unknown to suburban residents. The cemetery represents the terminal point for miles of open grassland to the north and it provides relatively secluded cover within the cork oak forest as human activities and disturbance of the cemetery is limited to cemetery maintenance and occasional visitors. However, the small size of the cork oak forest precludes other large mammal use other than transitory visitation.

**Bats**

A total of one pass (overhead flight of bat) was recorded at the site. However, the pass was not diagnostic of bat species, as it was too short in length to receive a high probability for species identification. The call was placed into the 25 kHz bat group consisting of *Eptesicus fuscus*, *ladionycteris noctivagans*, and *Tadarida brasiliensis*. Judging from the length of the call, the bat may have been flying over the site en-route to another location. No other signs (i.e., guano) of bats have been identified at the site (N.H. Sandburg 2014).

#### 2.4.3.4.2 Birds

The National Audubon Society conducts annual bird surveys at Benicia Army Cemetery. Almost 40 different species of birds were observed at the cemetery during the last survey in December 2013 (Pilotte 2014).

Raptors present at Benicia Army Cemetery include red-tailed hawk, red-shouldered hawk, Cooper's hawk (*Accipiter cooperii*), American kestrel, and merlin (*Falco columbariu*s).

Common passerines observed at Benicia Army Cemetery include the following:

- American crow
- American goldfinch (*Spinus tristis*)
- American robin
- black phoebe
- bushtit
- California towhee
- cedar waxwing (*Bombycilla cedrorum*)
- chestnut-backed chickadee
- common raven (*Corvus corax*)
- dark-eyed junco
- fox sparrow (*Passerella iliaca*)
- golden-crowned sparrow
- hermit thrush
- house finch
- lesser goldfinch
- northern mockingbird
- orange-crowned warbler (*Vermivora celata*)
- pine siskin
- ruby-crowned kinglet
- song sparrow
- spotted towhee
- Townsend's warbler
- western scrub-jay (*Aphelocoma californica*)
- white-crowned sparrow
- yellow-rumped warbler

Hummingbirds seen at the Cemetery include Anna's hummingbird and Allen's hummingbird.

From the Picidae family bird species, Nuttall's woodpecker, red-breasted sapsucker (*Sphyrapicus ruber*), and northern flicker were all observed at Benicia Army Cemetery.

Columbidae family bird species include mourning dove and rock pigeon. The rock pigeon is a non-native species in the United States.

Two birds were observed as using the Cemetery rarely during winter: western tanager (*Piranga ludoviciana*) and red crossbill (*Loxia curvirostra*). Both species are passerines.

#### 2.4.3.4.3 Reptiles and Amphibians

Per the 2014 PLS, no amphibians were observed at the site, likely due to absence of sufficient pooled water in the vicinity for reproduction. Observed reptiles included the southern alligator lizard and western fence lizard. The southern alligator lizard and western fence lizard were both observed in ruderal habitat in the proximity of the cargo shipping container. Western fence lizards were also commonly observed on concrete walls between walkways and the cork oak forest habitat.

#### 2.4.3.4.4 Invertebrates

The following list of invertebrate species have been observed at the site (2014 PLS):

- dragonfly
- woodlouse (*Armadillidium vulgare*)
- ground beetle (*Carabidae* sp.)
- earwig
- potted cucumber beetle (*Diabrotica undecimpunctata*)
- Argentine ant (*Linepithema humile*)
- tarantula hawk (*Peis grossa*)
- firey skipper (*Hylephila phyleus*)
- moth (*Leptodoptera* sp.)
- sheetweb spider (*Stiphidion facetum*)
- house fly (*Musca domestica*)
- flea (Pulicidae family)
- blow fly (*Calliphoridae* sp.)
- two-spotted leaf hopper (*Sophonia orientalis*)
- common hairstreak (*Strymon melinus*)
- cranefly (Tipulidae family)
- gover fly (*Toxomerus marginatus*)
- yellow jacket (Vespula family)

### 2.4.3.5 Special Status Species

See Section 2.1.3.5 for defining characteristics for special status species. No special status plant or animal species have been documented at the site. No plant species with federal or state protection are known to occur within Benicia Army Cemetery boundaries. However, both soft bird's beak (*Chloropyron molle* ssp. *molle*) and Contra Costa goldfields (*Lasthenia conjugens*) are present within the same geographical quadrangle (CDFG 2011).

Table 2-12 includes 18 special status animal species that occur within the Benicia, California quadrangle. Based on the Audubon Society annual bird surveys, Cooper's

hawk is the only special status bird species that has been observed within the cemetery's boundaries (Pilotte 2014).

Approximately 40 species of migratory birds are expected to use the Benicia Army Cemetery during some point of their migratory journey (Pilotte 2014). These birds are protected under the MBTA and are listed in Table D-1, in Appendix D.

***Table 2-12: Special Status Animal Species Known to Occur or Have the Potential to Occur at Benicia Army Cemetery.***

| Common Name | Scientific Name | Federal Status | State Status | CDFW Status | USFWS BCC | Migratory Bird | SAR | Status |
|---|---|---|---|---|---|---|---|---|
| **Reptiles and Amphibians** | | | | | | | | |
| Alameda whipsnake | *Masticophis lateralis euryxanthus* | T | T | | | | G1 | Potential to occur |
| **Insects** | | | | | | | | |
| Callippe silverspot butterfly | *Speyeria callippe* | E | | | | | T1 | Potential to occur |
| Monarch butterfly | *Danaus plexippus* | | | | | | G5 | Potential to occur |
| **Birds** | | | | | | | | |
| Cooper's hawk | *Accipiter cooperii* | | | WL | | MBA | G5 | Present |
| Great blue heron | *Ardea herodias* | | | | | | G5 | Potential to occur |
| Osprey | *Pandion haliaetus* | | | WL | | MBA | G5 | Potential to occur |
| Northern harrier | *Circus cyaneus* | | | SSC | | MBA* | G5 | Potential to occur |
| Golden eagle | *Aquila chrysaetos* | | | FP; WL | BCC | MBA | G5 | Potential to occur |
| American peregrine falcon | *Falco peregrinus anatum* | | | FP; WL | BCC | MBA* | T4 | Potential to occur |
| California black rail | *Laterallus jamaicensis coturniculus* | | T | FP; WL | BCC | MBA* | T1 | Potential to occur |
| California clapper rail | *Rallus longirostris obsoletus* | E | E | SSC | | MBA | T1 | Potential to occur |
| Saltmarsh common yellowthroat | *Geothlypis trichas sinuosa* | | | SSC | BCC | MBA | T2 | Potential to occur |
| Suisun song sparrow | *Melospiza melodia maxillaris* | | | SSC | BCC | MBA | T2 | Potential to occur |
| San Pablo song sparrow | *Melospiza melodia samuelis* | | | SSC | BCC | MBA | T2 | Potential to occur |
| Tricolored blackbird | *Agelaius tricolor* | | | SSC | | MBA* | G3 | Potential to occur |
| **Mammals** | | | | | | | | |
| Suisun shrew | *Sorex ornatus sinuosus* | | | SSC | | | T1 | Potential to occur |
| Big free-tailed bat | *Nyctinomops macrotis* | | | SSC | | | G5 | Potential to occur |
| Salt-marsh harvest mouse | *Reithrodontomys raviventris* | E | E | FP | | | G1 | Potential to occur |
| *For descriptions of status, codes refer to Table 2-3* | | | | | | | | |

#### 2.4.3.6 Invasive Species

Like other USAG POM sites, invasive weed species occur on site. Of particular concern are California privet (*Ligustrum ovalifolium*), slender oat, wild oat, soft brome (*Bromus hordaceous*), tocalote, rush skeleton weed, pampas grass, cotoneaster (*Cotoneaster* sp.), Bermuda grass (*Cynodon dactylon*), redstem filaree (*Erodium cicutarium*), sweet alyssum (*Lobularia maritime*), California burclover, and kikuyu grass.

#### 2.4.3.7 Nuisance or Pest Species

Aphids (*Aphidoidea* sp.), snails (*Cornu* sp.), and slugs (*Deroceras* sp.) are known pest species present at Benicia Army Cemetery. Raccoons are the only vertebrate pests that have been observed. They dig up the sod for worms and damage the landscaping. In addition, noticeable animal damage in the form of scratches and stripped bark has been observed. Although the species causing the damage remains unconfirmed, the CDFW suggested that raccoons are causing the claw marks. They could also potentially be caused by the California ground squirrel (A. Bihler and A. Hewitt, field observations, December 2013).

*This page intentionally left blank.*

# 3.0 NATURAL RESOURCES MANAGEMENT AND SUSTAINABILITY

## 3.1 SUSTAINING MILITARY MISSION AND NATURAL ENVIRONMENT

### 3.1.1 Integrating Military Mission and Sustainable Land Use

The U.S. Army understands the role INRMPs play in identifying potential conflicts between an installation's mission and natural resource management. The Garrison Commander is responsible for integrating mission requirements and priorities identified in this INRMP into other installation programs and policies, where applicable, to help ensure natural resources are maintained in the best ecological condition possible to fully support current and future mission requirements. USAG POM DPW-E accomplishes this requirement by implementing an ecosystem management approach for the stewardship of the natural resources. The NRP works in close cooperation with other DPW divisions, tenants, other installation personnel, and contractors on a regular basis to ensure there is a mutual understanding and support among internal and external stakeholders.

The formal mechanism by which the INRMP and natural resources program are integrated with facility-wide mission activities is through the DPW-E NEPA review process and participation in the Environmental Quality Control Committee (EQCC). The EQCC provides a forum to enhance, address, and resolve environmental issues in regard to activities at USAG POM sites. The Commander organizes and chairs the EQCC and facilitates the quarterly committee meetings (U.S. Army 2007). The DPW-E NEPA review process is discussed in Section 3.5.

#### 3.1.1.1 Sustainability Challenges

At the USAG POM sites, there are certain issues that can potentially pose significant challenges to the sustainability of the natural resources. Primary sustainability challenges are described below.

##### 3.1.1.1.1 Impervious surfaces/stormwater runoff

Managing stormwater runoff in developed areas of USAG POM sites is a challenge because hardened surfaces such as buildings, parking lots, and sidewalks do not allow stormwater to naturally penetrate the ground. If not managed, this stormwater will quickly run across the land and erode soils, pick up pollutants and contaminants, and ultimately, end up in receiving waterbodies as polluted runoff. For the POM and OMC, polluted runoff empties into the Monterey Bay and contributes to the degradation of this estuary's water quality (see Section 4.1.1.1 for more details). For SATCOM, stormwater flows into natural drainage channels emptying into the Nacimiento River and the San Marcos Creek. In addition, stormwater runoff has the potential to affect an ephemeral stream on its eastside and vernal pools just to the south of SATCOM boundaries.

#### 3.1.1.1.2 Soil erosion

Preventing and controlling soil erosion is challenging because of the steep slopes on POM and degraded soils at the OMC and SATCOM. Stormwater running off of impervious surfaces causes soil erosion, which is exacerbated by construction activities at the POM, OMC, and SATCOM.

#### 3.1.1.1.3 Invasive species

As described in Appendix F *Invasive Species Management Component Plan*, the POM, OMC, SATCOM, and Benicia Army Cemetery are challenged by numerous invasive plant species. Certain invasive species negatively affect native ecological resources. For example, French broom is a particularly problematic invader into the federally endangered Yadon's piperia habitat on the POM and feral pigs continue to degrade grassland ecosystems at SATCOM by contributing to erosion and habitat degradation.

#### 3.1.1.1.4 Habitat loss and fragmentation

The historical and current land use at USAG POM sites have caused the loss of habitat for numerous native plant, animal, and insect species. Due to a large amount of the POM being improved land (See Figure 2-4) specific areas that were once interconnected habitats are now fragmented, especially the Monterey pine forest habitat. The remaining unimproved land is considered important refugia, especially at Huckleberry Hill Nature Preserve. One species in particular, Yadon's piperia (see Figure 2-17), is found in the unimproved lands on the POM, and has two conservation areas designated for its distribution to be fostered on the installation. With such a small amount of suitable habitat available, the carrying capacity for this species, and other species of plants, animals, and insects, will be limited as a result of overcrowding (MACTEC 2005).

#### 3.1.1.1.5 Disruption of natural disturbance regimes

The historical and current land use at USAG POM sites does not allow for natural fire disturbance regimes required for the proliferation and success of Monterey pine forest habitats. This has made managing the Huckleberry Hill Nature Preserve challenging. The Monterey pine forest likely would benefit from a prescribed burning program focused on mimicking its historical natural fire regime. However, due to safety issues to the residents of the POM and adjacent urban development, prescribed fire is not a realistic option for the ecological management of the preserve. This no-fire regime has led to minimal regrowth of pine forest, which creates a population of unvarying ages and a lack of diversity in the succession stages within the forest. Old growth trees are more susceptible to other threats, such as pathogens and insect pests. With this lack of diversity in age within the forest, one pathogen, insect infestation, or threat could ultimately destroy the current population to a point past restoration (Jones & Stokes 1996a).

### 3.1.2 Define Impact to the Military Mission

The types of natural resource constraints that may affect the USAG POM sites missions are different from those experienced at installations with combat training missions. Currently, natural resources management at USAG POM sites does not significantly affect the military mission. However, some constraints to the military mission and operations caused by natural resources and environmental factors do exist.

#### 3.1.2.1 Encroachment and Constraints

Encroachment is the cumulative result of internal and external activities and events that inhibit normal military training, testing, and operations. It is the result of any activity, law, or pressure that affects the ability of military forces to train to doctrinal standards or to perform the mission assigned to the installation. The following figures show the natural resources and environmental factors that cause constraints to the military missions of the POM (Figure 3-1), OMC (Figure 3-2), SATCOM (Figure 3-3) and the Benicia Army Cemetery (Figure 3-4).

**POM**

Figure 3-1 depicts the following constraints:

- federally endangered Yadon's piperia observed locations
- Huckleberry Hill Nature Preserve and Yadon's piperia designated conservation areas
- the landfill and sports fields
- slope >15 percent
- coastal zone boundary
- intermittent streams and riparian areas
- city leased land
- the Historic District
- invasive species

Yadon's piperia designated conservation areas, Huckleberry Hill Nature Preserve, and the landfill limit land available for mission related activities. As a result of the 2013 Real Property Master Plan and associated NEPA review process two "Yadon's Piperia Designated Conservation Areas" were created to minimize impacts to this federally endangered species. In addition, as part of the 1984 POM Real Master Plan EA, the 80-acre Huckleberry Hill Nature Preserve was also designated as a forest conservation area. The presence of endangered species and other special status species in these conservation areas should be an important consideration when siting new development. The four-acre capped landfill on the POM is a voluntary-remediation site. Use of the landfill is restricted due to the continued presence of hazardous materials.

The upper POM has lands with moderate to severe erosion potential, often correlated with slopes greater than 15 percent. Development on steep slopes (>15 percent) is often expensive and leads to soil degradation. The California's Coastal Commission coastal

zone boundaries are also shown on Figure 3-1. This designation will require the USAG POM to provide a federal consistency determination for proposed development within the coastal zone on the POM. Also, appropriate management of the riparian areas in the southeast corner of the POM is critical to ensuring runoff into the Monterey Bay is prevented or at least kept within pollutant load allocations.

City-leased land and the Historic District are constraints because these land determinations can be subject to special consideration which can restrict future land uses. Finally, invasive species can be considered a constraint because they can: degrade land conditions and vegetative cover required for realistic training, which can limit training and development activities; pose human health and safety concerns; destroy habitat; diminish biodiversity; require the diversion of funding from other natural resources or operational priorities; and threaten the economic value of surrounding lands.

## OMC

Figure 3-2 depicts the following constraints:

- federally endangered Monterey spine flower and tiger salamander
- coast live oak and mixed coast live oak woodlands
- slopes >15 percent
- coastal zone boundary
- stormwater features

Although, the 1993 BO for the disposal and reuse of Fort Ord allows for development of all OMC land, it also requires identification of sensitive biological resources within these parcels that may be salvaged for use in restoration activities within reserve areas (Jones & Stokes 1997). To the extent feasible, the NRP coordinates with USFWS to avoid, minimize, and mitigate impacts to endangered species. Due to a high soil erosion hazard, development on slopes greater than 15 percent have additional requirements such as safe setback distances and/or regrading as necessary. Stormwater must be appropriately managed to minimize pollution flowing into the Monterey Bay and a federal consistency determination for proposed development within or adjacent to the coastal zone boundary may be necessary for specific actions.

## SATCOM

Figure 3-3 depicts the following constraints:

- endangered species
- slopes >15 percent
- blue oak woodlands
- intermittent streams
- invasive species
- stormwater features

The steep terrain of this region contributes largely to the soil erosion hazard rated as high (see Appendix E). As future site construction activities proceed, erosion and sediment control best management practices will need to be implemented to retain soil on site and minimize sediment-laden runoff from polluting nearby intermittent streams. Additionally, blue oaks will need to be removed from areas proposed for construction of infrastructure and the perimeter fence installment; mitigation of blue oaks will occur due to the importance of this species to the natural communities of this region and also due to how blue oaks are experiencing near zero reproductive success on Camp Roberts (refer to Section 4.3.4). Although there is no known documented occurrence of federally endangered species, endangered species that occur on Camp Roberts have the potential to occur on SATCOM. Therefore, the potential impacts of proposed activities on endangered species and their habitat should be considered. Additionally, invasive feral hogs, which are not depicted on Figure 3-3, may exacerbate habitat degradation and soil erosion on SATCOM.

**Benicia Army Cemetery**

Figure 3-4 depicts the following constraints:

- vegetative cover
- tree and shrub locations
- stormwater features

The vegetative cover and individual tree/shrub points are shown as constraints for two reasons: (1) this vegetation is beneficial to stormwater management and also for migratory birds, and (2) some of the vegetation may have historical significance such as the naturalized cork oaks. Additionally, a clogged drain pipe is causing flooding on the cemetery, leading to soil erosion. Although the drain pipe is not owned by DOD, the USAG POM has a vested interest in the proper management of this drain pipe since the USAG POM is accountable for sediment-laden runoff from the cemetery, caused by the localized flooding (see Section 4.1.1.3).

#### 3.1.2.2 Opportunities to Support Military Mission

Any areas on the following figures that are not indicated as constraints are considered opportunities for continued military mission requirements.

*This page intentionally left blank.*

***Figure 3-1: Constraints and Opportunities on the Presidio of Monterey, Monterey County, California***

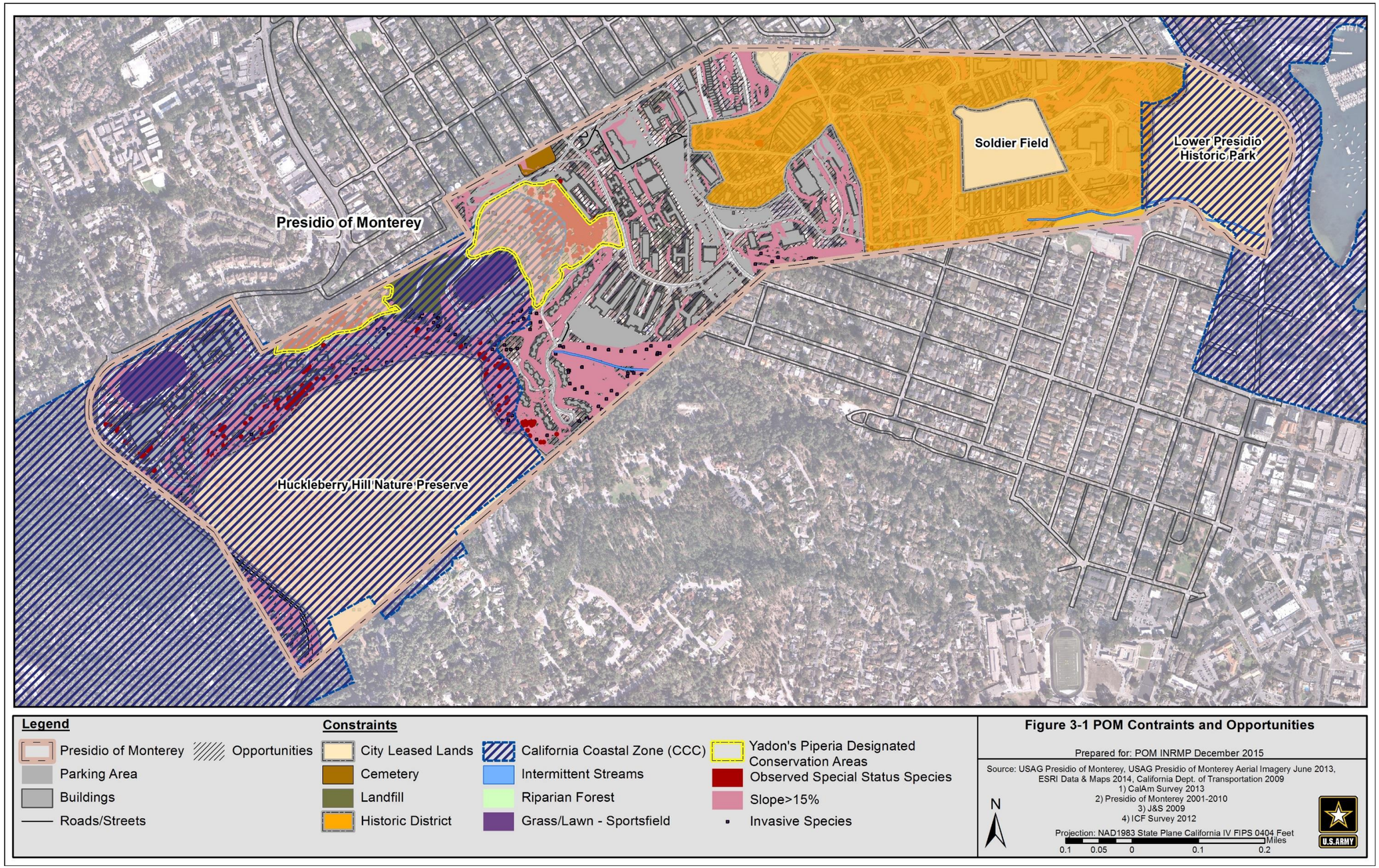


***Figure 3-2: Constraints and Opportunities on the Ord Military Community, Monterey County, California***

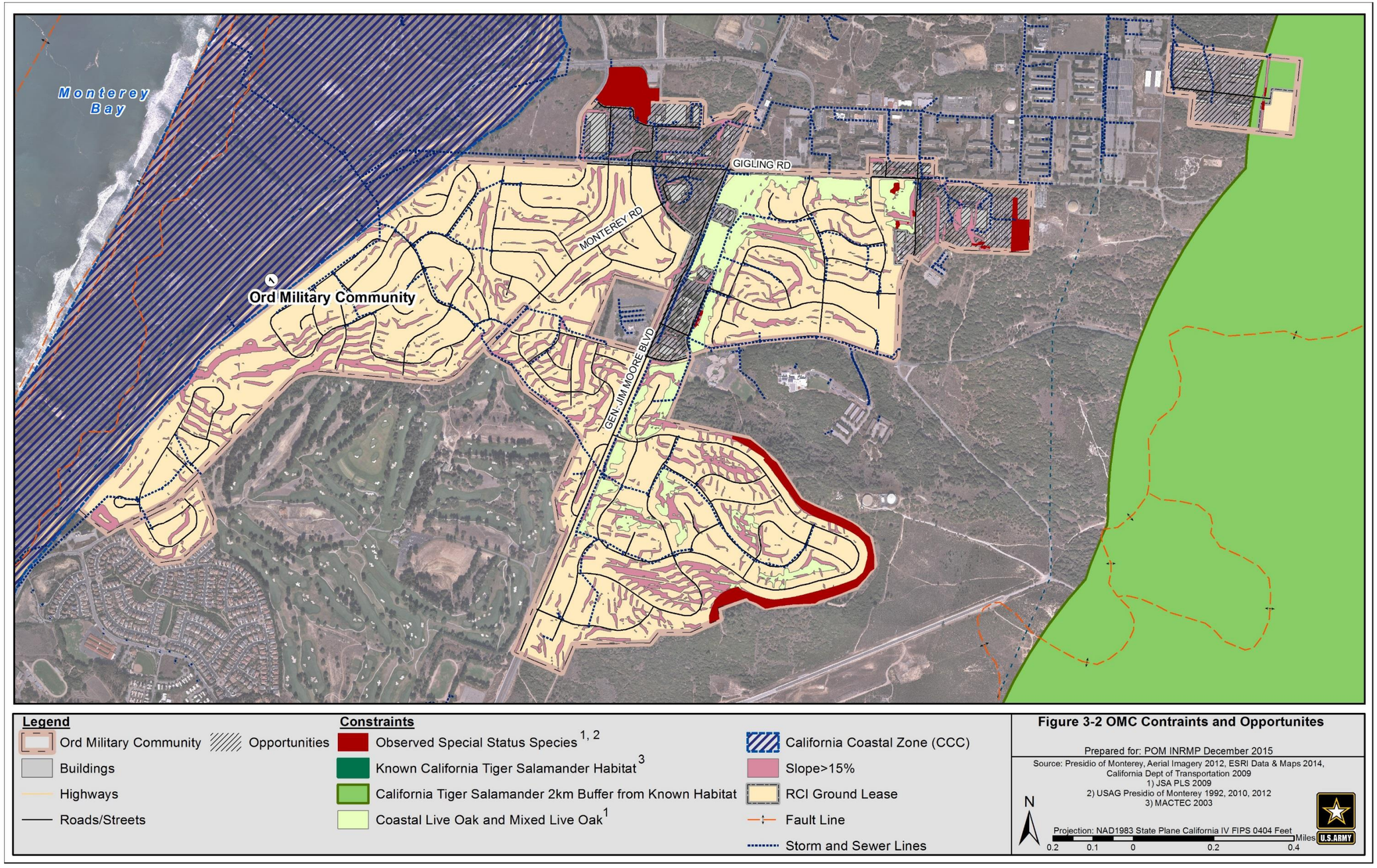
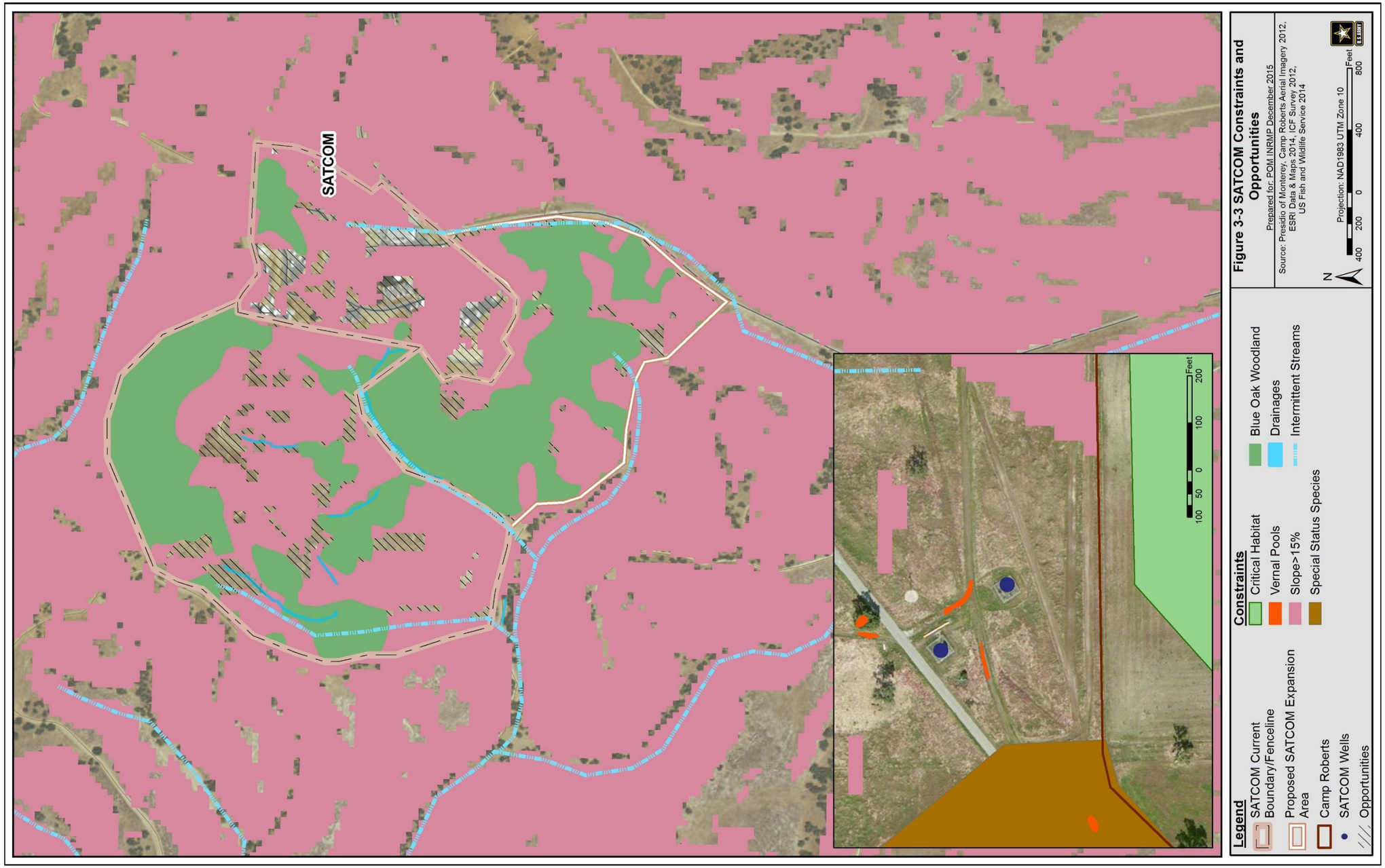


***Figure 3-3: Constraints and Opportunities on the Satellite Communications Station at Camp Roberts, Monterey and San Luis Obispo Counties, California***



*This page intentionally left blank.*

***Figure 3-4: Constraints and Opportunities on Benicia Army Cemetery, Benicia, California***

### 3.1.3 Encroachment Partnering

Encroachment partnering opportunities relevant to the constraints outlined above are described below.

**POM**

- Continue partnering with the City of Monterey to manage the Huckleberry Hill Nature Preserve, including invasive species management, to support the beneficial uses of this area for both regional biodiversity and for military personnel recreational use.
- Continue partnering with the City of Monterey to manage the Historic District.

**OMC**

- Continue partnering with land managers from the BRAC office, the BLM (Fort Ord National Monument), the California State Parks Department (Fort Ord Dunes State Park), and with any additional landowners of the disposed conservation and restoration areas for the former Fort Ord when planned activities will affect endangered species such as the Monterey spineflower and California tiger salamander; this may include translocating.

**SATCOM**

- Continue partnering with Camp Roberts on natural resources management.
- Coordinate with Camp Roberts for any necessary feral hog removal.
- Coordinate with Camp Roberts for blue oak mitigation due to planned site construction and perimeter fence installation.

**Benicia Army Cemetery**

- Identify the owner of the clogged drain pipe and discuss how to resolve this issue.

### 3.1.4 Relationship to other Operational Management Plans

This INRMP is not intended to replace existing installation policy, operations protocols, or military management plans. Rather, this INRMP is meant to facilitate the integration and coordination of natural resources management actions with other plans and programs at the installations and, moreover, with the USAG POM mission (refer to Section 1.9). Currently, the USAG POM does not have any range management plans in place that would need to be coordinated with natural resources management at the installation. However, since SATCOM is embedded within Camp Roberts, an Army National Guard range, the USAG POM will continue to coordinate with Camp Roberts for activities on the SATCOM potentially affecting natural resources on Camp Roberts.

## 3.2 ECOSYSTEM SERVICES

Ecosystem services are the collective direct and indirect benefits that humans derive from ecological processes and the resultant resources occurring in ecosystems. These include "provisioning services such as food and water; regulating services such as flood and disease control; cultural services such as spiritual, recreational, and cultural benefits; and supporting services such as nutrient cycling that maintain the conditions for life (DOD 2011)." Ecosystem services also provide potential economic value and thus, an opportunity to reduce installation costs in grey (or built) infrastructure for aspects such as stormwater management, drinking water filtration, and waste water treatment.

In recognition of the importance of ecosystem services, DODI 4715.03 requires that all DOD natural resource conservation program activities include consideration of ecosystem services to foster their long-term ecological integrity and sustainability (DOD 2011). Conserving, enhancing, and further incorporating ecosystem services into the planning vision of USAG POM sites and their respective surrounding regions will provide lasting benefits, including support of current and future military sustainability and the ability to prevent, or at least minimize, the impacts of encroachment. Furthermore, leveraging ecosystem credits or assets such as carbon sequestration or biodiversity can provide the flexibility to meet new and changing mission requirements, as well as create natural buffers against development and other encroachment. The respective ecosystems services provided by USAG POM sites are summarized in Table 3-1.

*This page intentionally left blank.*

1 ***Table 3-1: Key Ecosystem Services Provided by Natural Resources at USAG POM Sites***

| Ecological Resources | Ecosystem Services | Military Benefits | Regional Benefits |
|---|---|---|---|
| **POM** | | | |
| **Aquatic Environments**: intermittent streams | • storm protection<br>• flood control<br>• water retention and purification<br>• absorbs and cleans pollution from stormwater<br>• erosion control<br>• maintains hydrologic cycle<br>• carbon sequestration<br>• biodiversity<br>• habitat corridor<br>• climate regulation | • buffers installation from storm surges and flooding<br>• reduces stormwater management and flood control costs<br>• reduces water treatment costs<br>• reduces pollution prevention costs | • supports regional biodiversity by providing habitats for plants and wildlife<br>• provides green space in an otherwise developed landscape<br>• replenishes aquifers during years with normal or above-normal rainfall |
| **Mixed Forest/Woodlands**: Monterey cypress stands, Monterey pine forest, coast live oak woodland, mixed coast live oak woodland with landscape trees, coast live oak riparian forest | • absorbs and cleans pollution from stormwater<br>• carbon sequestration<br>• oxygen production<br>• biodiversity<br>• habitat corridor<br>• climate regulation<br>• recreation<br>• soil stabilization<br>• erosion control<br>• aesthetics | • reduces stormwater management costs<br>• reduces water treatment costs<br>• reduces pollution prevention costs<br>• provides carbon sequestration<br>• provides recreation areas<br>• adds aesthetic value<br>• controls soil erosion | • supports regional biodiversity by providing habitats for plants and wildlife<br>• provides green space in an otherwise developed landscape |

| Ecological Resources | Ecosystem Services | Military Benefits | Regional Benefits |
|---|---|---|---|
| **OMC** | | | |
| **Grassland, Scrub, and Woodland**: mixed coastal scrub/grassland, black sage scrub, Monterey cypress stands, coast live oak woodland, mixed coast live oak woodland with landscape trees, mixed grassland/shrub with scattered trees | • erosion control<br>• absorbs and cleans pollution from stormwater<br>• biodiversity<br>• organic matter<br>• climate regulation<br>• oxygen production<br>• carbon sequestration<br>• recreation<br>• aesthetics | • reduces stormwater management costs<br>• reduces water treatment costs<br>• reduces pollution prevention costs<br>• controls soil erosion | • supports regional biodiversity by providing habitats for plants and wildlife<br>• provides green space in an otherwise developed landscape |
| **SATCOM** | | | |
| **Grassland, Woodland, and Forests**: California annual grassland and blue oak woodland | • erosion control<br>• absorbs and cleans pollution from stormwater<br>• climate regulation<br>• oxygen production<br>• carbon sequestration<br>• habitat corridor<br>• biodiversity<br>• aesthetics | • reduces stormwater management costs<br>• reduces pollution prevention costs<br>• controls soil erosion | • supports regional biodiversity by providing habitats for wildlife and pollinators<br>• promotes habitat connectivity for biodiversity |
| **Benicia Army Cemetery** | | | |
| **Woodland and shrubs** | • carbon sequestration<br>• absorbs and cleans pollution from stormwater<br>• biodiversity<br>• aesthetics | • reduces stormwater management costs<br>• reduces pollution prevention costs<br>• controls soil erosion | • supports regional biodiversity by providing habitats for wildlife and pollinators |

| Ecological Resources | Ecosystem Services | Military Benefits | Regional Benefits |
|---|---|---|---|
| **Urban green space**: cemetery | • aesthetics | • provides special honor to 123 U.S. military personnel, nine foreign military personnel, 61 civilians, 18 of unknown affiliation, and three dogs | • provides historic landmark, where visitors can visit and pay their respects<br>• offers park-like, peaceful area for visitors |

1

*This page intentionally left blank.*

## 3.3 CLIMATE CHANGE

Climate change "refers to any significant change in climate (such as temperature or precipitation) lasting for an extended period (decades or longer)" (USEPA 2014). According to the U.S. Global Change Research Program, warming of the climate is both "unequivocal" in its occurrence and primarily human-induced (United States Global Change Research Program 2009).

As observations of climate change are made throughout the world, climate change is no longer a future threat, but instead a challenge today. These observations are in agreement that the planet is warming. In 2013, the average annual temperature of the contiguous United States was 52.4°F, 0.3°F above the 20th century average (National Oceanic and Atmospheric Administration [NOAA] 2013). Nighttime lows are increasing faster than daytime highs and average temperatures. Further indicators of increasing air temperatures are observed decreases in the number of "winter chill" events and an increase in the atmospheric altitude where the temperature drops below freezing (Office of Environmental Health Hazard Assessment [OEHHA] 2013). Global impacts associated with these observations include increased surface temperatures, decreased snow and ice cover, changes in precipitation regimes, rising global and regional sea levels, increased atmospheric water vapor, and changes to growing season lengths (NCADAC 2013).

Climate change is already affecting the United States. The most recent decade was the warmest on record with impacts on water and land resources and biodiversity (NCADAC 2013). Across the United States, scientific evidence exists that average temperatures are rising, precipitation patters are changing, sea level is rising, and the frequency of drought and heat wave events has increased (NCADAC 2013). These climate change effects are causing impacts on natural resources, such as shifts in species' ranges and distributions, changes in phenology, and variations in ecological processes (e.g., drought, fire, and flood) (DOD Natural Resources Program 2011). DODM 4715.03 requires climate change to be addressed in INRMPs to help mitigate these potential impacts of climate change to the natural resources on installations (DOD 2013).

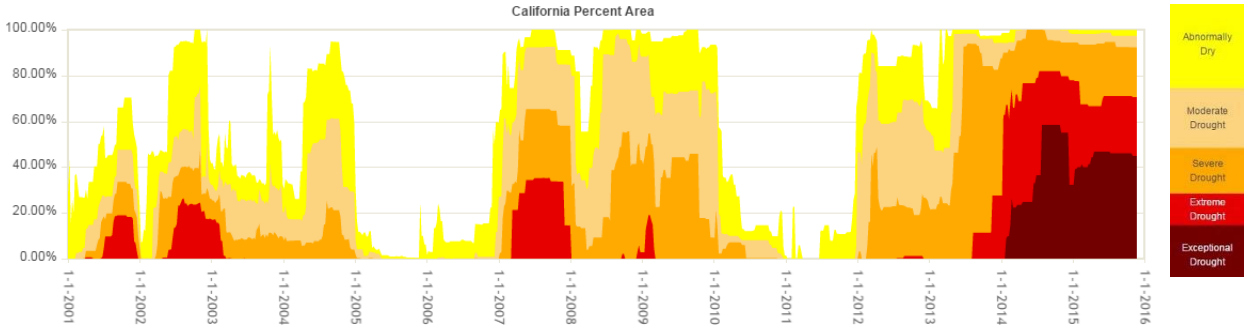
### 3.3.1 Historical and Current California Climate Trends

The following is a summary of California's climate trends:

- Average annual temperatures have increased by approximately 1.5°F since 1985 (OEHHA 2013).
- Summertime heat wave trends are increasing across the state, with some of the greatest observed increases along coastal California (Maurer et al. 2002; Gershunov et al. 2009).
- Over the last 100 years, California has experienced an average of seven inches of sea level rise (DWR 2008).
- Sea level rise has been observed at a rate of 1.34 mm per year at the Monterey gage (CA Station: 9413450) from 1973 to 2006, equivalent to 0.44 feet sea level rise in 100 years (NOAA 2014).

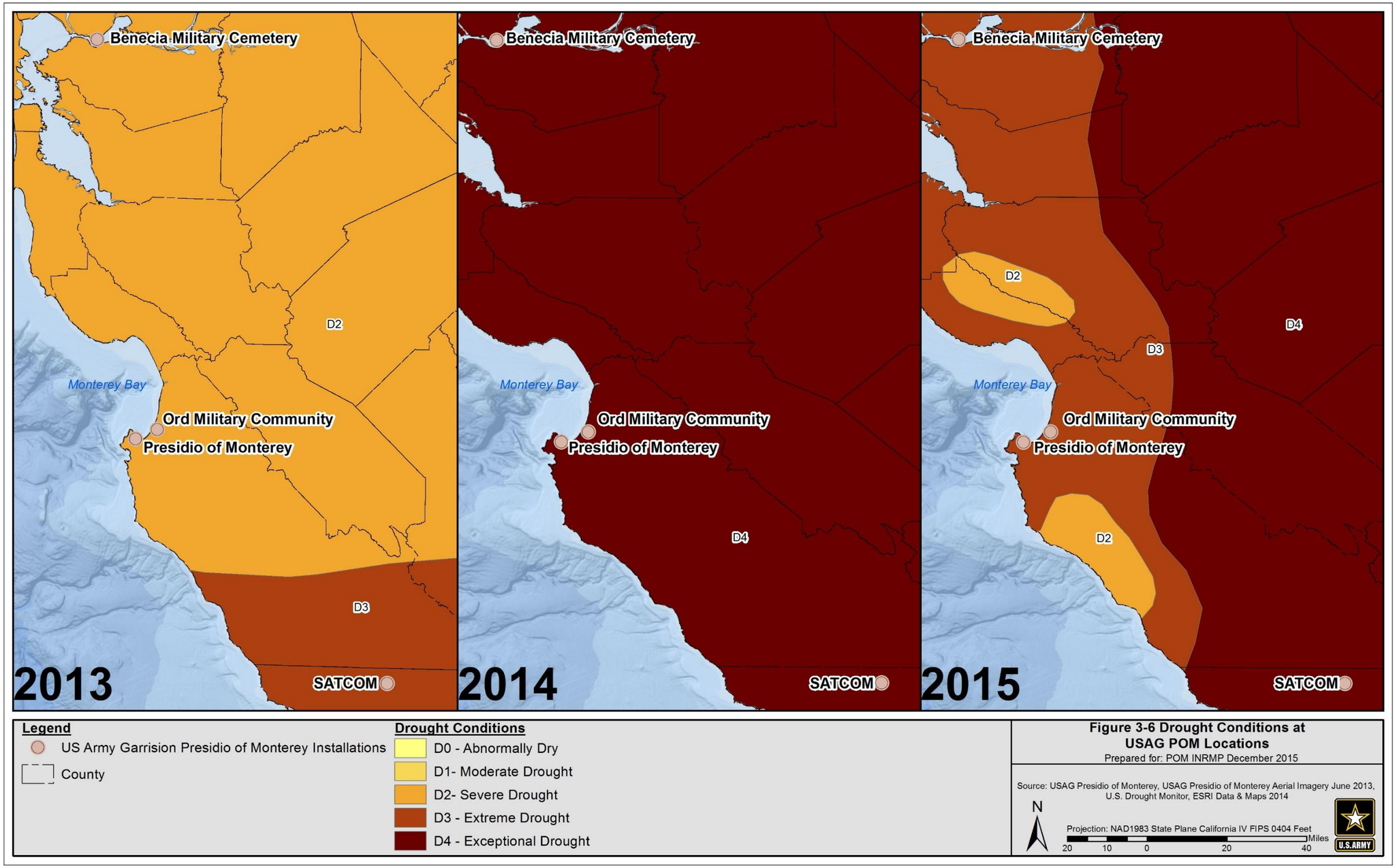
- At the Port Chicago gage (CA Station: 9415144, approximately 5.7 miles from Benicia Army Cemetery) trends indicate a 2.08 mm per year rate from 1976 to 2006, or 0.68 feet in 100 years (NOAA 2014).
- Annual observed precipitation rates are 19.73 inches for Monterey, California, 11.06 inches for Bradley, California (approximately 9 miles from SATCOM), and 15.41 inches at Port Chicago, California (WRCC 2014a, b, c).
- Figure 3-5 illustrates the cyclical nature of the historical drought patterns in the state of California. Figure 3-6 below illustrates the drought conditions in and around USAG POM locations in October for the years 2013, 2014, and 2015.

***Figure 3-5: Percent of California in Drought Conditions Over 14-year Period***




*Source: U.S. Drought Monitor 2014*

***Figure 3-6: Drought Conditions at USAG POM Locations***



*This page intentionally left blank.*

### 3.3.2 California Climate Projections

The following is a summary of the future climate projections for California:

- Annual average temperatures are expected to continue to rise, with projections varying between 5°F to 9°F by 2070–2099 depending on different carbon emission reduction scenarios (NCADAC 2013).
- Frost events are projected to continue to decrease (Ackerly 2012) and heat waves are projected to become longer and hotter (Gershunov et al. 2009).
- In a synthesis of peer-reviewed studies by the California Department of Water Resources, between 7 and 55 inches of sea level rise is estimated for the California coast by 2100 (2008). A synthesis of six global climate models using the Rahmstorf (2007) scheme and Intergovernmental Panel on Climate Change emission scenarios estimate 30–45 cm increase in sea-level rise along the California coast by 2050.
- There is little model agreement on the projected precipitation patterns, except that changes to precipitation regimes are predicted with variations expected between the northern and southern parts of the state (Kunkel et al. 2013).
- Climate change impacts on California are expected to increase drought within the state (DWR 2008). Droughts are projected to be more frequent, intense, and longer lasting than in the historical record (Cayan et al. 2012). The impacts of higher temperatures (e.g., evaporation rates and reduction in stream flow) will ultimately result in more frequent droughts (DWR 2008).

### 3.3.3 Ecological Impacts of Climate Change on USAG POM's Natural Resources

Climate change is expected to have major effects on the size, shape, and distribution of California's microclimates. Vegetation change is controlled by several mechanisms, including invasive species, succession, fire, grazing, extreme weather events, and disease. When climate change is layered on top of this already complex system, the transition between habitat types may be more quickly triggered (Cornwell et al. 2012). At the state level, shifts towards higher elevations have already been observed in the Santa Rosa and Sierra Nevada Mountains, with upward migrations of dominant plant species as great as 65 meters in 30 years (OEHHA 2013).

These changes in abiotic factors are constricting species distribution. At the same time, the distribution of cold temperatures and freezing events, which have historically restricted species, are now being relaxed, allowing for the potential for greater distribution of less cold tolerant species (Ackerly 2012). In the San Francisco Bay area, modeled climate change impacts on vegetation distribution show the most common transition being from forest ecosystems to shrub-dominated communities (Cornwell et al. 2012).

Impacts from climate change to biological systems include shifts in species distribution, changes in community structure, and ecosystem function (Ackerly 2012). The following is a summary of how climate change is projected to impact plant and wildlife species found on USAG POM locations:

- Numerous fire models project more wildfire as climate change continues (Krawchuk et al. 2009, Litschert et al. 2012), including up to 74 percent more fires in California (Westerling et al. 2012). Fire serves as a major mechanism influencing vegetation changes, such as coastal sage scrub, Monterey pine forest understory, or oak woodlands becoming converted to grasslands (Cornwell et al. 2012).
- Huckleberry Hill Nature Preserve on upper POM consists of Monterey pine forest. There are three special status species occupying that habitat: federally endangered Yadon's piperia, small-leaved lomatium, and Hooker's manzanita (MACTEC 2005; see Section 2.1.3.5, for more details). Wildland fires have affected resources in the preserve in the past, and with the projected increase in drought and wildfire, this area will become increasingly more at risk.
- Currently, SATCOM land has a 38 percent coverage of blue oak woodland. With increasing wildfires, these woodlands are at an increasing risk to be converted into annual grassland. This conversion will minimize the ecosystem services that blue oak woodlands provide, see Table 3-1 for details.
- An increase in overall temperature and a change in precipitation can affect the habitat suitability for certain special status species. Just a 3°C increase in temperature can alter the suitability of a habitat for the plant species found in that area (Sierra Club n.d.).
- Hooker's manzanita and Yadon's piperia both have a warm-season tolerance for four to five months, and Monterey has been determined to currently have a warm season of five to six months, still within an acceptable range for these species. Any additional expansion in the warm season will likely make the POM an unsuitable habitat for these species (Calflora 2014).
- Little is known about climate change effects on bats, but with two special status bat species present on SATCOM, the change in vegetation may alter the presence or distribution of the pallid bat and the western red bat (Sierra Club n.d.).

### 3.3.4 USAG POM Climate Change Adaptation Strategies

Adaptation strategies for the USAG POM can focus on promoting climate change resiliency to enable natural resources sustainability. Adaptation strategies should consider the following in their development:

- Complete a climate change vulnerability assessment project for the USAG POM sites to provide a detailed analysis of natural resources that are at-risk from climate change. See more details on this in Section 3.3.4.1
- Educate the USAG POM personnel and surrounding communities on the threat climate change poses to natural resources and resulting impacts on property, structures, and infrastructure.

#### 3.3.4.1 Climate Change Vulnerability Assessment

At the time of this INRMP, USAG POM is planning to complete a climate change vulnerability assessment. This assessment will provide a detailed analysis of the natural resources on the

installation and delineate those that are at-risk from climate change. Data from this assessment will then be used to devise installation-specific climate adaptation strategies. At the species and community level, this project should determine if the species and communities of interest are declining or expanding their use of on-installation habitat as a result of climate change.

California Natural Resources Agency has updated their 2009 climate adaptation strategy with a 2013 version: *Safeguarding California: Reducing Climate Risk*. This report provides guidance for governing bodies on how to reduce impacts and prepare for climate risks across nine sectors: 1) agriculture; 2) biodiversity and habitat; 3) emergency management; 4) energy; 5) forestry; 6) ocean and coastal ecosystems and resources; 7) public health; 8) transportation; and 9) water (California Natural Resources Agency, 2013). Reviewing this report will be beneficial for USAG POM personnel to gain insight on these sectors and how they apply to USAG POM installations. Currently, California Natural Resources Agency is completing a draft report on specific actions that can be taken to mitigate effects in each of the nine sectors mentioned above, titled: *Safeguarding California: Implementation Action Plans*. These two reports, and personnel from the California Natural Resources Agency, are important resources for the completion for USAG POM's climate change vulnerability assessment.

Other resources that can be valuable to this assessment are: Cal-Adapt (cal-adapt.org), a hub for California's climate change research, data, and tools; California Emergency Management Agency, specifically their 2013 Hazard Mitigation Plan, California Climate Adaptation Planning Guide, or their MyPlan Geographic Information System (GIS) Hazards Mapping Tool; and California's Climate Change Portal (www.climatechange.ca.gov) hosted by the California Energy Commission.

## 3.4 NATURAL RESOURCES CONSULTATION REQUIREMENTS

USAG POM has completed Biological Assessments for activities that may affect listed species for the POM (ICF International 2013), OMC (USFWS 1993) and SATCOM (Jones & StokesUS 2005). Informal or formal Section 7 consultation with the USFWS now occurs when USAG POM anticipates exceeding the amount of incidental take currently authorized in the USFWS 2013, 2005, and 1993 BO, or when new activities will be conducted that have not yet been assessed.

In addition, although the 1993 BO for the Disposal and Reuse of Fort Ord allows for development of OMC, it also requires identification of sensitive biological resources within OMC that may be salvaged for use in restoration activities within reserve areas. As part of this requirement, USAG POM coordinates with USFWS on actions that have no effect on federally listed species.

## 3.5 NATIONAL ENVIRONMENTAL POLICY ACT REVIEW

The NEPA review coordinates environmental reviews for proposed projects/actions on USAG POM sites in accordance with 32 CFR Part 651, Environmental Analysis of Army Actions. The NEPA review process includes the systematic examination of possible and probable environmental consequences of implementing a proposed action. The NEPA planner is the DPW-E employee who oversees the NEPA review of projects.

The goal of the NEPA review is to integrate the NEPA process into Army project planning at the earliest possible time. All construction, demolition, remodeling, and operation and maintenance activities are reviewed for environmental impact. In addition, administration, operation, procurement, and real estate activities are also reviewed under the NEPA process.

The project proponent completes an internal work review information sheet (Figure 3-7) and submits the sheet with pertinent project data to DPW-E to initiate environmental review. The project action is then reviewed by subject matter experts to determine the possible impacts to resources. DPW-E reviews, on average, 100 projects (i.e., construction, repairs, landscape, environmental planning documents) per year to evaluate, mitigate, and, where feasible, avoid potential impact to natural resources.

The four broad categories into which proposed action on USAG POM sites may fall into for environmental review are:

- Emergencies. In the event of an emergency, the Army may need to take immediate actions that have environmental impacts, such as those to promote national defense or security or to protect life or property, without the specific documentation and procedural requirements of other sections of this part. In such cases, at the earliest practical time, the Headquarters, Department of Army proponent will notify the Office of Director of Environmental Programs.
- Categorical Exclusions. These actions normally do not require an EA or an EIS. The Army has determined that they do not individually or cumulatively have a significant effect on the human environment.
- An EA is a public document and is required when the proposed action has the potential for

    - cumulative impact on environmental quality when combining effects of other actions or when the proposed action is of lengthy duration;
    - release of harmful radiation or hazardous/toxic chemicals into the environment;
    - violation of pollution abatement standards; or
    - some harm to culturally or ecologically sensitive area.

- An EIS is a public document with a primary purpose of ensuring that NEPA policies and goals are incorporated early into the programs and actions of federal agencies. An EIS is required to provide a full and fair discussion of significant environmental impacts. Along with other project documentation, the EIS provides a basis for informed decision making. Further, it allows a public review and comment on the proposal. An EIS is required to provide a full and fair discussion of significant environmental impacts. Along with other project documentation, the EIS provides a basis for informed decision making. Further, it allows a public review and comment on the proposal. The following are actions normally require an EIS:
    - significant expansion of a military facilities, such as installation of satellite equipment and administrative buildings
    - construction of facilities that have a significant effect on endangered species or other areas of critical environmental concern
    - major changes in the mission of facilities either affecting areas of critical environmental concern or causing significant environmental impact
    - land acquisition, leasing, or other actions that may lead to significant changes in land use

DPW-E also performs the following as part of the NEPA environmental review process:

- Conducts site visits on a regular basis to enforce NEPA requirements, to assist with conservation measure implementation, and to develop appropriate mitigation, minimization, and/or avoidance measures for specific projects/actions.
- Participates in a quarterly line item review meetings with the USACE, Sacramento District Office personnel, project proponents, and other stakeholders to discuss the planning, designing, and construction status of projects. This serves as a venue for open communications with contractors and project managers regarding specific projects' environmental requirements, such as tree mitigations, landscaping guidelines, BMPs for vegetation maintenance, and biological monitoring.
- Maintains an open line of communication with stakeholders through participating in planning meetings, site walks, design charrettes, and project kick-off meetings.
- Conducts quality control and quality assurance on projects/actions (i.e, conducting site visits to ensure appropriate mitigation, minimization, and/or avoidance measures are implemented accordingly, reviewing and approving supplies and equipment to be used, and reviewing work reports, ensuring contractors are performing work according to contract specifications).

***Figure 3-7: Work Review Information Sheet***

US ARMY PRESIDIO OF MONTEREY
**POM-EMS-SOP-001A**

DATE: MAR 2011
VERSION: 1.0

| **ENVIRONMENTAL REVIEW CHECKLIST** | Environmental Document Control Number: |
|---|---|
| INSTRUCTIONS: *Sections I & II to be completed by Proponent. Section III to be completed by Environmental Division. Continue on separate sheets as necessary. Reference appropriate item number(s).* | |

**SECTION I – PROPONENT INFORMATION**

| 1. TO *(USAG and Environmental Division Address)* | 2. FROM *(Proponent Organization)* | 2a. TELEPHONE NO. *(Include Alternate POC)* |
|---|---|---|
| | | |

| 3. TITLE OF PROPOSED ACTION/PROJECT *(Include Project or DPW Work Request Number)* |
|---|
| |

| 4. DESCRIPTION, PURPOSE AND NEED FOR ACTION *(Identify decision to be made and need date)* |
|---|
| |

| 5. PROPONENT APPROVAL (Name and Organization) | 5a. SIGNATURE | 5b. DATE |
|---|---|---|
| | | |

| **SECTION II – PRELIMINARY ENVIRONMENTAL REVIEW** *(Proponent check appropriate box for potential environmental effects)***– Attach additional sheets as needed -** | Yes | No | Unknown |
|---|---|---|---|
| 6. Any construction of new buildings or structures? *(Potential impacts: Stormwater, water and energy use, waste disposal/recycling, wastewater discharges, cultural sites, endangered species habitat or other natural resources, etc.)* | | | |
| 7. Any activity that involves digging, disking, grading, or other soil disturbance? *(Potential impacts: Stormwater, cultural sites, endangered species habitat or other natural resources, etc.).* | | | |
| 8. Any demolition, remodeling, or repair of any structure? *(Potential impacts: Asbestos Containing Material, lead-based paint, waste disposal/recycling, stormwater, cultural sites or historic properties, etc.).* | | | |
| 9. Any vehicle or construction equipment to be staged/stored on/off pavement? | | | |
| 10. Any mechanical excavation or deposition of fill in creeks or drainages, wet or dry? | | | |
| 11. Any hookups to the water distribution system? | | | |
| 12. Will the project require any water discharges of any kind *(non-potable, waste, etc.)*? | | | |
| 13. Any installation of permanent equipment that includes an internal combustion engine or other combustion device *(Generators, boilers, etc.)*? | | | |
| 14. Will the project require use of portable equipment with diesel engines more than 50-horsepower *(air compressors, generators, etc.)*? | | | |
| 15. Any tree cutting, trimming or removal? | | | |
| 16. Any pest control involving application of herbicides or pesticides? | | | |
| 17. Will the project require the storage, handling and/or disposal of hazardous materials or hazardous wastes *(asbestos, lead-based paints, solvents, oils and greases, pesticides, etc.)*? | | | |
| 18. Any installation, repair and/or removal of underground/above-ground storage tanks or equipment? | | | |
| 19. Will the project produce loud noise for extended periods of time? | | | |
| 20. Will the project produce odors that may cause a nuisance? | | | |
| 21. Any real estate activities involving a lease, license, or transfer of ownership? | | | |
| 22. OTHER *(Specify other potential impacts not addressed above).* | | | |

**SECTION III – ENVIRONMENTAL REVIEW DETERMINATION** *(DPW-Environmental Division review and comment)*

| 23. | | |
|---|---|---|
| | | PROPOSED ACTION REQUIRES NO FURTHER ACTION |
| | | PROPOSED ACTION FALLS WITHIN THE LIST OF CATEGORICAL EXCLUSIONS AND DOES NOT REQUIRE A RECORD OF ENVIRONMENTAL CONSIDERATION. |
| | | PROPOSED ACTION FALLS WITHIN THE LIST OF CATEGORICAL EXCLUSIONS AND **REQUIRES** A RECORD OF ENVIRONMENTAL CONSIDERATION. |
| | | PROPOSED ACTION DOES NOT QUALIFY FOR EXCLUSION; FURTHER ANALYSIS AND ENVIRONMENTAL REVIEW ARE REQUIRED. |

| 24. REMARKS: |
|---|
| |

| 25. ENVIRONMENTAL DIVISION CERTIFICATION (Name) | 25 a. SIGNATURE | 25 b. DATE |
|---|---|---|
| | | |

Page __ of __ Page(s)

*Note: This on-line document is a "controlled" document and authorized for use. When printed from this web-site, this document is uncontrolled. Before using a printed copy of this document, ensure that it is the same as the on-line version.*

## 3.6 BENEFICIAL PARTNERSHIPS AND COLLABORATIVE RESOURCE PLANNING

Effective communication among personnel from different offices is vital for ensuring that site activities are implemented as planned under the INRMP. An ecosystem approach to natural resources management also requires managers to look beyond site boundaries to non-DOD partners. There are many agencies, organizations, and other institutions that can assist in implementing an INRMP; thus local and regional partnerships should be encouraged. Both DOD and Army policy call for installations to form partnerships to facilitate the implementation of many of the natural resources initiatives presented in this plan. Installations can enter into CAs with federal agencies, states, local governments, NGOs, and individuals for a variety of reasons, such as biological inventories, monitoring, research, minor construction and maintenance, public outreach and education, natural resources program support, or conservation law enforcement. Army installations are encouraged to use partnerships and volunteers to complete projects under the direction and supervision of Army natural resources managers. The use of volunteers must be in accordance with DODI 1100.21, *Voluntary Services in the Department of Defense (DOD)* (DOD 2002).

Currently the NRP actively participates in partnerships and resource planning to enhance awareness and work collectively to manage resources for the following projects or organizations:

- City of Monterey County Forestry for managing Huckleberry Hill Nature Preserve
- City of Monterey for public access and management of the Lower POM Historic Park and Soldier Field
- City of Monterey for tree maintenance and pest control services on POM
- Camp Roberts Army National Guard for managing the resources on the SATCOM
- Ventura Fish and Wildlife Office, USFWS, and CDFW for managing federally protected species
- CAL FIRE for the prevention and suppression of wildfires, particularly on the Huckleberry Hill Nature Preserve
- City of Seaside for tree maintenance and pest control on OMC
- Fort Ord National Monument, BLM, for the federally protected species and sensitive natural communities on OMC
- Californial State University of Monterey Bay

The following sections discuss potential agencies and organizations that could provide support with INRMP implementation. These partnerships can be very beneficial because they make it easier and more cost effective for installations to fund natural resources research and improvement projects.

### 3.6.1 DOD Organizations and Programs

**DOD Legacy Resource Management Program**

The DOD Legacy Resources Management Program was created by Congress to fund natural and cultural resources management projects that may otherwise go unfunded. The Legacy Program seeks projects that further conservation goals while also supporting military mission sustainment. Legacy funds may be requested annually in accordance with instructions provided by the Office of the Deputy Undersecretary of Defense for Installations and Environment (ODUSD - I&E) and the Office of the Deputy Assistant Secretary of the Army (Environment, Safety, and Occupational Health).

**Strategic Environmental Research and Development Program (SERDP)**

The SERDP is an environmental research program that is planned and executed through a partnership between the DOD, Department of Energy, and USEPA. SERDP funds research that pursues solutions to DOD's environmental challenges. One of the SERDP focus areas is Resource Conservation and Climate Change, which has a particular interest in understanding ecological systems on DOD lands, assessing the impact of training on protected species, and understanding ecological impacts from climate change, among other things. Research funded by the SERDP program may be of interest to the USAG POM. In addition, the USAG POM sites could potentially serve as a host for SERDP-funded investigations.

**DOD Partners in Flight (PIF) Program**

It is DOD policy to promote and support the PIF initiative that protects and conserves neotropical migratory birds, and all landbirds, and their habitat. The DOD and its services support PIF by protecting vital habitat, enhancing biodiversity, and maintaining healthy and productive natural systems on its lands, consistent with military missions. PIF includes national working groups to deal with local and regional problems. The USAG POM can coordinate with, and seek, assistance from the PIF Western Working Group to manage particular bird species on the installation. In addition, the DOD PIF Program is a resource for advice on managing and sharing bird monitoring data. DOD PIF representatives could assist in improving the monitoring and inventory, research and management, and education programs involving birds and their habitats (DOD PIF 2013).

**DOD Partners in Amphibian and Reptile Conservation (PARC)**

DOD PARC provides a network through which the DOD can work to avoid future mission restrictions while providing stewardship for threatened and endangered herpetofauna. DOD PARC focuses on habitat and species management; inventory, research, and monitoring; and education, outreach, and training. It provides a framework for the effective management of amphibians and reptiles by the military services and their installations. DOD PARC's primary responsibility is to ensure that the DOD has the operational and logistical flexibility necessary for testing and training exercises.

### 3.6.2 Federal Agencies and Programs

**U.S. Fish and Wildlife Service (USFWS)**

The mission of the USFWS is to work with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people. The USFWS implements key conservation statutes, including the ESA, MBTA, and the *Sikes Act*. USFWS offices will be able to provide technical expertise and assistance in implementing this INRMP and can help advise USAG POM on how to maximize conservation without compromising its military mission.

**U.S. Environmental Protection Agency (USEPA)**

The USEPA leads the nation's environmental science, research, education, and assessment efforts. Its activities include developing and enforcing environmental regulations; providing financial assistance to state environmental programs, non-profits, and educational institutions; performing environmental research at laboratories located nationwide; sponsoring voluntary partnerships and programs; and providing environmental education. The USEPA also protects human health and the environment through a variety of activities such as regulating water and air pollution, and overseeing clean-up of contaminant spills.

**U.S. Army Corps of Engineers (USACE)**

The mission of USACE is to deliver public and military engineering services, partner in peace and war to maintain U.S. security, energize the economy, and reduce risks from disasters. The Sacramento District of USACE is responsible for parts of California that include the USAG POM installations. The USACE can provide engineering and construction support to the USAG POM, and can also serve as a technical advisor for environmental restoration and other projects. In addition, the USAG POM has the option to gain access to USACE organizations, such as the Waterways Experiment Station and the Construction Engineering Research Laboratory, for technical assistance and support for natural resources projects.

**Natural Resources Conservation Service (NRCS)**

The NRCS works in close partnerships with farmers and ranchers, local and state governments, and other federal agencies to maintain healthy and productive working landscapes. NRCS's natural resources conservation programs help people reduce soil erosion, enhance water supplies, improve water quality, increase wildlife habitat, and reduce damages caused by floods and other natural disasters. NRCS is a good source for technical information and assistance.

**U.S. Geological Survey (USGS)**

The USGS is a science organization that provides impartial information on the health of our ecosystems and environment, the natural hazards that threaten us, the natural resources we rely on, the impacts of climate and land use change, and the core science systems that help provide timely, relevant, and useable information. As the nation's largest water, earth, and biological science and civilian mapping agency, the USGS collects, monitors, analyzes, and provides scientific understanding about natural resource conditions, issues, and problems. The diversity of their scientific expertise enables the agency to carry out large-scale, multi-disciplinary

investigations and provide impartial scientific information to resource managers, planners, and other customers. The USGS can assist the USAG POM by helping design biological, water quality, and hydrologic surveys, and facilitating the integration of USAG POM data into national or regional databases. For example, the USGS invasive species program provides methodologies and information to manage and prevent species invasions. The USGS also houses the National Climate Change and Wildlife Science Center, whose mission is to provide NRMs with the scientific tools and information they need to address the impacts of climate change on fish and wildlife, and their habitats. In addition, the DOD and USGS jointly developed a "Coordinated Bird Monitoring Plan," which outlines procedures for bird monitoring, including study design, data collection methods, and data analysis. The plan also calls for data to be stored in a long-term repository, such as the Coordinated Bird Monitoring Database (CBMD). USAG POM should share its data with the CBMD.

**U.S. Department of Agriculture (USDA)**

The USDA provides leadership on food, agriculture, natural resources, rural development, nutrition, and related issues based on sound public policy, the best available science, and efficient management. The USDA-Animal and Plant Health Inspection Service, Wildlife Service could provide technical assistance with invasive plant and animal species management and eradication.

### 3.6.3 State Agencies

**California Department of Fish and Wildlife (CDFW)**

The CDFW works to maintain native fish, wildlife, plant species, and natural communities in the state for their "intrinsic and ecological value and the benefits to people," mainly through habitat protection and maintenance. The CDFW also is responsible for recreational, commercial, scientific, and educational use of fish and wildlife. CDFW offices will be able to provide technical expertise and assistance in implementing this INRMP and can help advise USAG POM on how to maximize conservation without compromising its military mission.

**California Coastal Conservancy**

The California Coastal Conservancy works with local governments, public agencies, nonprofit organizations, and private landowners to purchase, protect, restore, and enhance coast resources, and to provide access to California's shoreline. The POM may consider attending periodic public meetings hosted by the Conservancy to provide military interest in the protection and management of coastal resources, in relation to OMC and the POM.

**California Environmental Protection Agency (CalEPA)**

The CalEPA works to provide for the protection of human health and the environment, and to assure coordinated deployment of state resources. Its mission is to restore, protect, and enhance the environment; and to ensure public health, environmental quality, and economic vitality. The CalEPA serves as an umbrella organization for the state's Air Resources Board, Department of Pesticide Regulation, Department of Resources Recycling and Recovery, Department of Toxic Substances Control, Office of Environmental Health Hazard Assessment, and the SWRCB. In

regards to the INRMP, CalEPA can be consulted for pest management technical guidance and regulations (including potential pesticide risk exposure to endangered species) and climate action planning.

### 3.6.4 Regional and Local Agencies

**Monterey Peninsula Regional Park District (MPRPD)**

The mission of the MPRPD is to acquire and maintain open space in the District for preservation and use for public benefit and environmental protection.

**Monterey Peninsula Water Management District (MPWMD)**

The MPWMD aims to provide a sustainable water supply and to manage and protect the water resources of the area to the benefit of the Monterey peninsula community and the environment.

**Marina Coast Water District (MCWD)**

The MCWD mission is to provide high quality water, wastewater and recycled water services to the City of Marina and to the Ord Community through management, conservation and development of future resources (MCWD 2012).

### 3.6.5 Colleges and Universities

**California State University, Monterey Bay; Hopkins Marine Station of Stanford University; University of California, Berkeley; and California Polytechnic State University, San Luis Obispo**

Universities listed above are all located in proximity to the USAG POM sites. These universities host environmental and engineering research programs and could potentially offer technical assistance in natural resource management activities. The California Sea Grant program, part of the National Sea Grant College Program within the NOAA, is housed within the University of California system. University of California, Berkeley, is the host for the Californian Cooperative Ecosystem Studies Unit (CESU), which is a partnership among federal agencies (including DOD) and California universities. This partnership provides research, technical assistance, and education with respect to California.

Opportunities may exist for university researchers to conduct investigations on or near the USAG POM sites, which could help shed light on the condition of a sites natural resources.

### 3.6.6 Non-Profit Organizations

Many NGOs operating in the vicinity of the USAG POM sites are dedicated to conserving natural resources in California and the Monterey Bay area. These organizations can potentially provide technical expertise as well as funding and volunteers to carry out management and restoration activities. Some organizations to consider include the following:

- Big Sur Land Trust
- Monterey Bay National Marine Sanctuary
- Monterey County Water Resources Agency

- Elkhorn Slough National Estuary Research Reserve System
- Audubon Society
- Land Conservancy of San Luis Obispo

In addition, two national level NGOs that are relevant to protecting special status species and protecting biodiversity are described below.

**NatureServe**

NatureServe is a nonprofit conservation organization whose mission is to provide the scientific basis for effective conservation. NatureServe represents an international network of biological inventories known as natural heritage programs or conservation data centers. NatureServe not only collects and manages detailed local information on plants, animals, and ecosystems, but develops information products, data management tools, and conservation services to help meet local, national, and global conservation needs. The scientific information about species and ecosystems developed by NatureServe is used by all sectors of society, such as conservation groups, government agencies, corporations, academia, and the public, to make informed decisions about managing our natural resources. Further, plant and animal species identified by NatureServe as critically imperiled or imperiled across their range are considered special status species in this INRMP. Within California, the state-level NatureServe partner is the CNDDB.

**The Nature Conservancy**

In 1988 The Nature Conservancy (TNC) and DOD signed a CA which has since been extended to 2015 (DOD and TNC n.d.). This agreement allows installation commanders to obtain technical assistance from TNC and to participate in programs and projects of mutual interest. It also permits TNC to study significant ecosystems managed by the U.S. Army.

### 3.6.7 Interagency Programs

**Coastal America**

Coastal America is a partnership of federal agencies, state and local governments, and private organizations that work together to protect and restore coastal ecosystems. It seeks to improve coastal management by sharing information, pooling resources, and combining management and technical expertise. Coastal America has a civil-military program that seeks to align coastal restoration projects with the military's need to provide high-quality, real-world training. These projects, called "innovative readiness training," could offer a way for the USAG POM to enhance environmental stewardship on its installations.

**The California Landscape Conservation Cooperative (CA LCC)**

Landscape Conservation Cooperatives (LCC) are public-private partnerships that share and provide information to ensure the sustainability of natural and cultural resources. The CA LCC, which includes much of California, is one of 22 LCCs across the country. CA LCC extends from the San Francisco Bay coastline east and north through the upper edge of the Great Central Valley, including the Sierra Nevada (but not including Lake Tahoe); it extends south to the western edge of Baja California in Mexico and east to the western border of the Mojave Desert.

It is governed by federal, state, tribal, and NGOs, and other species-specific partnerships like migratory bird joint ventures and fish habitat partnerships. The CA LCC funds research and projects such as risk and vulnerability assessments for species and habitat, inventory and monitoring methods and protocols, population and habitat assessments, and conservation plans and designs. Example projects funded by the CA LCC include development of an online risk mapping tool for invasive species, and an analysis of the effects of climate change on inland fisheries in California. The USAG POM could take advantage of some of these resources, and could potentially participate as a study site for CA LCC-funded research projects.

## 3.7 PUBLIC ACCESS AND OUTREACH

Although provision of public access is addressed in the *Sikes Act*, security concerns in the aftermath of 11 September 2001 ("September 11th") have greatly restricted public access on DOD facilities. Access to the POM and SATCOM is restricted to authorized personnel, which include those with proper DOD credentials or identification, or visitors who have been arranged with prior coordination with the installation. However, Lower Presidio Historic Park and Huckleberry Hill Nature Preserve are open to the general public. Huckleberry Hill offers hiking trails through its Monterey pine forest with views of the Monterey bay and coastline. It is accessible to the general public via the Veterans Memorial Park in the city of Monterey.

Public access to OMC is not restricted, as it is primarily a residential community, however, outdoor recreation for the general public is not applicable for this site.

Benicia Army Cemetery is open to the public on Wednesdays and weekends. An annual Memorial Day ceremony is held at the site to honor veterans, an event that typically draws a crowd of about 300 people. The Memorial Day ceremony typically features speakers, color guard, and music.

The Public Affairs Office is responsible for publicizing stewardship activities within USAG POM sites. Outreach vehicles include the POM newsletter (Monterey Military News), POM websites (www.monterey.army.mil), and POM social media sites (i.e., Facebook, Twitter, and Flickr). Outreach to the public outside of the USAG POM community is accomplished via partnering on natural resources projects (e.g., bird monitoring) both inside and outside USAG POM sites and making natural resources information available to interested agencies (i.e., USFWS and CDFW). Outreach is also accomplished through dissemination of information brochures about natural resources and through placement of interpretive signs throughout USAG POM sites.

Although public access is restricted due to national security reasons, the POM is receptive to, and has participated in, public outreach events. The USAG POM and DLIFLC invite the public to Language Day annually at the POM, typically on the second Friday each May.

This INRMP includes projects for additional public outreach events and activities, including continuing Earth Day and other volunteer-oriented events (e.g., National Public Lands Day) to support plant and wildlife habitat enhancement and restoration projects such as invasive species control and native tree plantings.

***Figure 3-8: Tree Planting Earth Day 2014***

*Source: USAG POM*

## 3.8 STATE WILDLIFE ACTION PLAN

In 2005, the CDFW released its SWAP, titled *California Wildlife: Conservation Challenges, California's Wildlife Action Plan* (Bunn et al. 2005). This plan analyzes conservation issues from a regional landscape-, habitat-, and ecosystem-level, multispecies approach, rather than a species-by-species approach. It also is focused specifically on wildlife species (vertebrates and invertebrates) and the habitats and ecosystems that sustain them; thus, conservation issues specific only to plant species are not directly addressed. Although, native plants can indirectly benefit from the plan's implementation because plants are an integral part of habitats and ecosystems. In addition, this plan considers the health and population levels of all wildlife species, with an emphasis on SAR or special status species based on the Special Animals List of the CNDDB (CDFG 2011).

Threats to wildlife species and their habitats are described, as well as conservation actions, both by the major regions of California. These regions are largely based on regional designations defined by California's Biodiversity Council, and their boundaries are driven by agency jurisdictions and ecological features of the landscape. The POM, OMC, and SATCOM fall within the Central Coast region, and Benicia Army Cemetery is located within the Central Valley and Bay-Delta region.

Primary threats to wildlife in the Central Coast Region include the following (Bunn et al. 2005):

- growth and development
- intensive agriculture
- excessive livestock grazing
- water management conflicts and degradation of aquatic ecosystems
- recreational pressures
- invasive species

Primary threats in the Central Valley and Bay-Delta Region include the following:

- growth and development (including urban, residential, and agricultural)
- water management conflicts and reduced water for wildlife
- water pollution
- invasive species
- climate change

Implementation of this INRMP will align with several conservation actions of California's Wildlife Action Plan. These conservation actions are listed in Table 3-2, and are cross-referenced to this INRMP's goals and objectives.

*This page intentionally left blank.*

***Table 3-2: California's Wildlife Action Plan Conservation Actions that Are Applicable to the Implementation of this INRMP***

| Wildlife Action Plan Conservation Actions | INRMP Goal | INRMP Objective |
|---|---|---|
| **Statewide** | | |
| Permitting agencies, county planners, and land management agencies should work to ensure that infrastructure development projects are designed and sited to avoid harmful effects on sensitive species and habitats. | Goal 1. Ensure overall protection, proliferation, and success of special status species, including threatened, endangered, at-risk species, federal trust species, and other species of interest. | Objective 1.2. Avoid, minimize, or mitigate the impacts on special status species from proposed actions (i.e., construction, training, maintenance, etc.). |
| Federal, state, and local agencies should provide greater resources, and coordinate efforts to control existing occurrences of invasive species and prevent new introductions. | Goal 3. Assess, sustain, and restore the ecological integrity of natural communities and native species to support the conservation of installation and regional native biodiversity.<br><br>Goal 7. Build and maintain effective partnerships with external stakeholders. | Objective 3.4. Discourage practices that promote the establishment of non-native species and invasive species, and the subsequent displacement of native species.<br><br>Objective 3.5. Follow an Integrated Pest Management Plan (IPMP) to prevent, detect, eradicate, or manage invasive and nuisance species, and species that pose a potential threat to human health and safety.<br><br>Objective 7.1. Maintain interagency cooperation with the USFWS, CDFW, City of Monterey, etc. |
| Federal, state, and local agencies and conservation NGOs, working with private landowners and public land managers, should expand efforts to restore and conserve riparian communities. | Goal 2. Conserve soil and water resources to sustain and enhance water quality of nearby regional and installation water bodies and aquatic environment. | Objective 2.1. Avoid, minimize, or mitigate soil erosion and stormwater runoff by applying BMPs outlined in the Sediment Erosion and Sediment Control Component Plan (Appendix E).<br><br>Objective 2.2. Avoid, minimize, or mitigate impacts on aquatic environments (i.e., intermittent streams and vernal pools) from site construction activities and long-term maintenance of developed land areas. |

| Wildlife Action Plan Conservation Actions | INRMP Goal | INRMP Objective |
|---|---|---|
| In their conservation planning and ecosystem restoration work, state and federal wildlife agencies and land managers should consider the most current projections regarding the effects of global warming. | Goal 5. Provide for long-term sustainability of natural resources using the principles of ecosystem-based management, adaptive management, and the integration of INRMP elements. | Objective 5.1. Assess climate change vulnerability and identify adaptation strategies. |
| Both state and federal governments should give greater priority to wildlife and natural resources conservation education. | Goal 6. Promote environmental awareness for personnel and their dependents by providing an aesthetically pleasing natural environment on the installation, environmental education and outreach activities, and natural resources-related recreation opportunities. | Objective 6.1. Educate installation employees, tenants, residents, and contractors about natural resource topics, challenges, and best management practices.<br><br>Objective 6.2. Promote natural resources-related recreation opportunities for personnel and dependents, tenants and contractors. |
| **Central Coast Region** | | |
| Federal, state, and local agencies, along with conservation NGOs, should work to protect large, relatively unfragmented habitat areas, wildlife corridors, and under protected ecological community types. | Goal 3. Assess, sustain, and restore the ecological integrity of natural communities and native species to support the conservation of installation and regional native biodiversity. | Objective 3.1. Preserve and restore natural habitat corridors to support migratory and dispersal wildlife patterns and genetic exchange between wildlife and plant populations. |

| Wildlife Action Plan Conservation Actions | INRMP Goal | INRMP Objective |
|---|---|---|
| Federal, state, and local public agencies should sufficiently protect sensitive species and important wildlife habitats on their lands. | Goal 3. Assess, sustain, and restore the ecological integrity of natural communities and native species to support the conservation of installation and regional native biodiversity.<br><br>Goal 1. Ensure overall protection, proliferation, and success of special status species, including threatened, endangered, at-risk species, federal trust species, and other species of interest. | Objective 3.2. Preserve, restore and enhance natural habitats, including habitat for pollinator species.<br><br>Objective 3.3. Avoid, minimize, or mitigate impacts on natural habitats and native species from site project activities.<br><br>Objective 1.1. Identify, monitor, and manage special status species in terrestrial and aquatic environments.<br><br>Objective 1.2. Avoid, minimize, or mitigate the impacts on special status species from proposed actions (i.e., construction, training, maintenance, etc.).<br><br>Objective 1.3. As feasible, identify, monitor, and manage migratory bird populations, bat populations, and other federal trust species to support regional population sustainability. |
| Federal, state, and local agencies should provide greater resources and coordinate efforts to control existing occurrences of invasive species and prevent new introductions. | Goal 3. Assess, sustain, and restore the ecological integrity of natural communities and native species to support the conservation of installation and regional native biodiversity. | Objective 3.4. Discourage practices that promote the establishment of non-native species and invasive species, and the subsequent displacement of native species.<br><br>Objective 3.5. Follow an Integrated Pest Management Plan (IPMP) to prevent, detect, eradicate, or manage invasive and nuisance species, and species that pose a potential threat to human health and safety. |

| Wildlife Action Plan Conservation Actions | INRMP Goal | INRMP Objective |
|---|---|---|
| **Central Valley and Bay Delta Region** | | |
| Public land managers need to continue improving wildlife habitat for a variety of species on public lands. | Goal 3. Assess, sustain, and restore the ecological integrity of natural communities and native species to support the conservation of installation and regional native biodiversity.<br><br>Goal 1. Ensure overall protection, proliferation, and success of special status species, including threatened, endangered, at-risk species, federal trust species, and other species of interest. | Objective 3.1. Preserve and restore natural habitat corridors to support migratory and dispersal wildlife patterns and genetic exchange between wildlife and plant populations.<br><br>Objective 3.2. Preserve, restore and enhance natural habitats, including habitat for pollinator species.<br><br>Objective 3.3. Avoid, minimize, or mitigate impacts on natural habitats and native species from site project activities.<br><br>Objective 1.1. Identify, monitor, and manage special status species in terrestrial and aquatic environments.<br><br>Objective 1.2. Avoid, minimize, or mitigate the impacts on special status species from proposed actions (i.e., construction, training, maintenance, etc.).<br><br>Objective 1.3. As feasible, identify, monitor, and manage migratory bird populations, bat populations, and other federal trust species to support regional population sustainability. |

1

# 4.0 NATURAL RESOURCES PROGRAM OVERVIEW

This chapter provides general information about how the USAG POM's natural resources program components (i.e., water resources, endangered species, vegetation) are managed. For each component a list of management actions was identified. Management actions have been developed to assist in accomplishing INRMP goals and objectives. Management actions are separated into "conservation measures" and "conservation projects," which are defined as:

- Conservation measures: actions that can be carried out by existing installation staff or program workflows, or integrated into service contracts, but do not require additional funding.
- Conservation projects: actions that require a funding mechanism to complete.

All conservation projects requiring funding are described in the USAG POM Project Implementation Schedule Table in Appendix B. Management actions were developed to address unique issues at each individual USAG POM site. Similar to Chapter 2.0 this chapter is organized into four divisions, one each for the POM (Section 4.1), OMC (Section 4.2), SATCOM (Section 4.3) and Benicia Army Cemetery (Section 4.4).

## 4.1 PRESIDIO OF MONTEREY

### 4.1.1 Water Resources Management

Many federal and state laws and local ordinances have been enacted to regulate and protect water resources. These include, but are not limited to, the following:

- EO 11988, Floodplain Management
- EO 11990, Protection of Wetlands
- EO 13514, Federal Leadership in Environmental, Energy, and Economic Performance
- EO 13423, Strengthening Federal Environmental, Energy, and Transportation Management
- 15 CFR 923 – Coastal Zone Management Program Development and Approval Regulations
- 15 CFR 930 – Federal Consistency with Approved Coastal Management Programs
- *Clean Water Act*
- *Water Quality Act*
- *Safe Drinking Water Act*
- 33 CFR 320-330 – *Rivers and Harbors Act*
- USEPA Region 9 – National Pollutant Discharge Elimination System (NPDES)
- 40 CFR 131 – Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California
- California Water Code – Section 13260

- California Code of Regulations, Title 22
- CDFW Code Section – 1600-1616
- *Porter-Cologne Water Quality Control Act*
- Seaside Area Sub-basin Adjudication
- *California Sustainable Groundwater Management Act*

Surface waters on the POM primarily consist of intermittent streams and stormwater runoff. The intermittent streams located on the POM and in the surrounding areas are not assessed for water quality (USEPA 2013). However, the NRP works with DPW-E, CalAm, and other contractors to implement control measures (Appendix E) to reduce potential pollution to intermittent streams and stormwater runoff.

California's *Sustainable Groundwater Management Act* became effective January 1, 2015. The law provides the framework for sustainable management of groundwater in California. The purpose of the law is to do the following, as described in Part 2.74 of the California Water Code Section 10720.1:

- Provide for the sustainable management of groundwater basins.
- Enhance local management of groundwater consistent with rights to use or store groundwater and Section 2 of Article X of the California Constitution. It is the intent of the Legislature to preserve the security of water rights in the state to the greatest extent possible consistent with the sustainable management of groundwater.
- Establish minimum standards for sustainable groundwater management.
- Provide local groundwater agencies with the authority and the technical and financial assistance necessary to sustainably manage groundwater.
- Avoid or minimize subsidence.
- Improve data collection and understanding about groundwater.
- Increase groundwater storage and remove impediments to recharge.
- Manage groundwater basins through the actions of local governmental agencies to the greatest extent feasible, while minimizing state intervention to only when necessary to ensure that local agencies manage groundwater in a sustainable manner.

Stormwater management and erosion and sediment control are discussed below.

#### 4.1.1.1 Stormwater Management

Generally, stormwater is regulated under the NPDES permit program, as directed by the CWA. The NPDES controls water pollution by regulating the discharge of pollutants into waters of the United States (USEPA 2015). The USEPA authorizes California and SWRCB to issue NPDES permits (USEPA Region 9 2014). The permitting program has three general permitting categories: municipal, industrial, and construction. The USAG POM installations fall under two categories: municipal and construction. Municipal permits are further broken down into Phase I, populations over 100,000, and Phase II,

small municipalities in urbanized areas. At the POM, stormwater is managed under the NPDES Waste Discharge Requirements for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) General Permit for Phase II Non-Traditional Permittees (Phase II MS4). The POM DPW-E manages all regulatory requirements for stormwater management (i.e., applying for and paying for permits, permit reporting, water quality sampling, final report submittal, etc.).

In 2013, USAG POM applied for a Phase II MS4 permit for both the POM and OMC. In 2014, DPW-E worked with a contractor to prepare a Phase II MS4 General Permit Implementation Plan for the POM and OMC (identified as the Implementation Plan). The need for this Implementation Plan was identified in the SWRCB Water Quality Order No. 2013-0001-DWQ, NPDES General Permit No. CAS000004 Waste Discharge Requirements (WDR) for Stormwater Discharges from MS4 (General Permit; SWRCB 2013), which became effective 01 July 2013 superseding Order No. 2003-0005-DWQ. The goal of the Implementation Plan is to identify the specific General Permit requirements that apply to the POM/OMC and describe action the U.S. Army, DPW-E, USACE, and contractors can take to meet these requirements throughout the next 5 years.

Currently USAG POM is within its fourth year of implementation to achieve the following requirements:

- developing and implementing a public outreach and education program
- providing biennial training program for appropriate employees involved in pollution prevention
- maintaining an up-to-date and accurate map showing the location of all outfalls and drainage areas within the urbanized area and of all water bodies receiving direct discharges from outfalls
- conducting field sampling to detect potential illicit discharges
- developing written procedures for conducting investigations into the source of all non-stormwater discharges suspected to be illicit discharges
- developing and maintaining an inventory and map of all facilities that may impact stormwater
- developing and implementing procedures to assess and prioritize the MS4 storm drain system, including, catch basins, pipe and pump infrastructure, above-ground conveyances, receiving water bodies within the POM/OMC urbanized area and detention basins
- implementing a program that focusses on pollution prevention, source control BMPs, and landscaping design and maintenance to reduce the amount of pesticides, herbicides, and fertilizers used during Army operations and activities
- enforcing implementation of site design measures, such as stream setbacks, soil quality improvement, rooftop and impervious areas disconnection, porous pavement, green roofs, vegetated swales, and rain barrels to reduce project site runoff for new construction
- implementing LID design standards to effectively reduce runoff and pollutants associated with runoff from development projects

In addition to the Phase II MS4 permit requirements, any project that consists of one acre or more of ground disturbance is also required to comply with the California State Storm Water Construction General Permit (CGP) (SWRCB 2012a, SWRCB 2012b). The CGP regulates stormwater runoff from construction sites. The permit requires the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP addresses water pollution control during construction and outlines the BMPs planned for use on the site to prevent pollutants from leaving the project site. BMPs include, but are not limited to, erosion, wind, and sediment controls, in addition to waste management and tracking controls. The SWPPP has two main objectives: 1) identify pollutant sources, and 2) describe practices to reduce sediment transport of pollutants in stormwater discharge. Future construction projects under the 2013 Real Property Master Plan (RPMP) will either require a SWPPP, under the CGP, or another management practice pursuant to the POM's MS4 permit depending on the amount of ground disturbance associated with the project. New development will also increase the number of impervious surfaces, making effective stormwater management key to preventing polluted stormwater runoff/illicit discharge from emptying into Monterey Bay. USAG POM’s stormwater management program aims to reduce the amount of pollutants that enter the Monterey Bay.

Street sweeping and storm drain system maintenance are conducted regularly and DPW-E staff receives annual training in management practices to reduce or eliminate stormwater pollution from the POM’s daily activities. In addition, the program has developed a public education and outreach program to inform base personnel, their dependents, and contractors about stormwater pollution and steps that can be taken to reduce it. Education materials (see Appendix Q for examples of brochures about what can be done to protect the waters of Monterey and tips for implementing soil erosion control measures) have been developed and disseminated to target audiences in various media such as print, storm drain inlet stencils, advertisements, and websites (i.e., http://www.monterey.army). DPW-E also provides and solicits local and regional training opportunities (i.e., LID workshops, pollution prevention, SWPPP training) for contractors and installation personnel. Table 4-1 outlines POM’s stormwater resources management actions.

***Table 4-1: POM Stormwater Resources Management Actions***

| Conservation Measures |
|---|
| Ensure adherence to the Phase II MS4 permit requirements, CGP, and project specific SWPPPs to reduce polluted runoff from emptying into the Monterey Bay. (*Objectives 2.1, 2.2, 2.3*) |
| Continue to work with stakeholders to implement the Soil Erosion and Sediment Control Component Plan (SESCCP) for land disturbing activities to reduce polluted runoff. (*Objectives 2.1, 2.3, 7.1*) |
| Continue to provide and solicit local and regional training opportunities on stormwater management for contractors and installation personnel. (*Objectives 2.1, 2.2, 5.5*) |
| Continue to implement education and outreach programs to inform base personnel, dependents, and contractors about stormwater pollution and steps that can be taken to reduce it. (*Objectives 2.1, 2.2, 6.1*) |
| **Conservation Projects** |
| Develop and implement an Installation Conservation Design Plan (ICDP) to address stormwater pollution reduction, pollinator habitat establishment, urban tree planting opportunities, and wildlife habitat enhancement projects. (*Objectives 2.1, 2.2, 2.3, 3.2, 4.1, 4.2*) |
| Implement the Water Diversion Project (#55996) plan to improve existing drainage within the POM Historic District. (*Objective 2.3*) |

#### 4.1.1.2 Erosion and Sediment Control

The Soil Erosion and Sediment Control Component Plan in Appendix E identifies:

- the regulatory requirements for erosion and sediment control;
- sensitive areas including steep slopes, unstable soils, or outcroppings of bedrock, which may require specific management strategies;
- sedimentation control measures that can be employed to mitigate problem areas or lessen the impact of soil disturbance actions such as construction projects; and
- how USAG POM sites can minimize soil erosion for long-term sustainable conditions through the implementation of BMPs.

The POM's primary causes of soil erosion and sedimentation are site construction, pedestrian foot traffic, grounds maintenance, and landscaping. DPW-E takes proactive steps to prevent erosion and sedimentation by working with other DPW divisions, contractors, and the USACE. This includes ensuring that specific language, requiring implementation of soil erosion prevention measures and BMPs, is written into contract specifications and conducting quality control and quality assurance on projects to ensure contractors are performing work according to contract specifications and soil erosion control plans. Table 4-2 outlines POM's erosion and sediment control management actions.

***Table 4-2: POM Erosion and Sediment Control Management Actions***

| Conservation Measures |
|---|
| Adhere to the Phase II MS4 permit requirements, CGP, and project specific SWPPPs to reduce polluted runoff from emptying into the Monterey Bay. (*Objectives 2.1, 2.2, 2.3*) |
| Continue to work with stakeholders to implement the SESCCP for land disturbing activities to reduce polluted runoff. (*Objectives 2.1, 2.3, 7.1*) |
| **Conservation Projects** |
| Conduct special status and native plant species replacement plantings and maintenance projects as needed to mitigate construction impacts. (*Objectives 1.2, 3.3, 4.2, 4.3*) |
| Continue to coordinate and implement environmental education and outreach activities. (*Objectives 6.1, 6.2, 6.3*) |

### 4.1.1.3 Floodplain Management

EO 11988, Floodplain Management, requires federal agencies to manage floodplains and reduce adverse associated impacts. According to FEMA's most recent floodplain maps, the POM is in an area of undetermined flood hazard (FEMA 2009). USAG POM will conduct a project to evaluate flooding hazards on the POM and to update the FEMA or local area floodplain maps to clarify the POM's flood hazard. Consideration for coastal flooding from storm events and the potential for sea level rise will be incorporated. Table 4-3 outlines POM's floodplain management actions.

***Table 4-3: POM Floodplain Management Actions***

| Conservation Measures |
|---|
| Continue to implement stormwater management conservation measures (Section 4.1.1.1). (*Objectives 2.1, 2.2, 2.3*) |
| Continue to implement soil erosion and sediment control conservation measures (Section 4.1.1.2). (*Objectives 2.1, 2.2, 2.3*) |
| **Conservation Projects** |
| Evaluate flooding hazards for POM and update flood hazard maps. (*Objective 5.1*) |

## 4.1.2 Coastal Zone Management

The Federal Consistency Unit of the CCC implements the CZMA as it applies to federal activities that affect the coastal zone. Consistancy with enforceable policies of the state's certified program, as included in the *California Coastal Act of 1976*, is required for some activities on the POM and OMC. The review process of federal activites is referred to as federal consistancy and includes consistency determinaitons and consistency certification.

As defined through the *California Coastal Act*, the coastal zone "*…extends inland generally 1,000 yards from the mean high tide line of the sea. In significant coastal estuarine, habitat, and recreational areas it extends inland to the first major ridgeline paralleling the sea or five miles from the mean high tide line of the sea, whichever is less,*

*and in developed urban areas the zone generally extends inland less than 1,000 yards."* In addition, the CCC has determined that the Monterey Pine Forest community meets criteria to be protected as an Environmentally Sensitive Habitat Area (ESHA) under the *California Coastal Act*.

Although the CZMA (16 United States Code §1453) states, "*Excluded from the coastal zone are lands the use of which is by law subject solely to the discretion of or which is held in trust by the Federal Government, its officers or agents*", this does not obviate the need for federal consistency where activites on POM and OMC have effects on the coastal zone.

Please see Figure 2-9 for the coastal zone locations on and near USAG POM locations. Table 4-4 outlines POM's coastal zone management actions.

***Table 4-4: POM Coastal Zone Management Actions***

| **Conservation Measures** |
|---|
| Complete a federal consistency determination for any spillover effects on non-excluded lands, water use, or natural resources of the coastal zone. (*Objectives 7.1, 7.2*) |
| Continue to implement stormwater management conservation measures (Section 4.1.1.1). (*Objectives 2.1, 2.2, 2.3*) |
| Continue to implement erosion and sediment control conservation measures (Section 4.1.1.2). (*Objectives 2.1, 2.2, 2.3*) |
| **Conservation Projects** |
| Develop and implement an Installation Conservation Design Plan (ICDP) to address stormwater pollution reduction, pollinator habitat establishment, urban tree planting opportunities, and wildlife habitat enhancement projects. (*Objectives 2.1, 2.2, 2.3, 3.2, 4.1, 4.2*) |
| Continue to coordinate and implement environmental education and outreach activities. (*Objectives 6.1, 6.2, 6.3*) |

### 4.1.3 Vegetation Management and Grounds Maintenance

The DPW O&M Division provides overall coordination and oversight for vegetation management and grounds maintenance activities at the POM and OMC. In addition, landscaping on individually occupied residences, on the POM and OMC, is maintained by landscaping service provided through the Residential Housing Communities Initiative (RCI – a partnership between the U.S. Army, Monterey Bay Land, LLC, and Monterey Bay Military Housing, LLC to provide adequate housing to military families). All vegetation management and grounds maintenance services are normally contracted to a commercial enterprise that provides grounds maintenance services such as mowing, trimming, edging, irrigation, weed removal, pruning, tree removal, fertilization, and installation of new landscape designs.

On all USAG POM sites, landscaping practices shall comply with the Guidance for Presidential Memorandum on Environmentally and Economically Beneficial Landscape Practices on Federal Landscaped Grounds (USEPA 1995) and EO 13693, Strengthening

Federal Environmental, Energy, and Transportation Management (Office of the President 2007).

When performing ground maintenance, maintenance crews are required to follow BMPs for vegetation management practices and landscaping as outlined in Appendices N. These BMPs are written into the grounds maintenance contract managed by the DPW O&M Division and RCI partners. Other DPW divisions also coordinate directly with DPW-E on specific projects to ensure BMPs are implemented accordingly.

In addition, virtually all of the nesting birds on POM are protected under the MBTA (United States Code Title 16, Chapter 7; see Appendix D for a list of migratory birds potentially occurring on the POM). Grounds maintenance activities, such as removal or pruning of trees, grass cutting, herbicide application, etc., have the potential to impact nesting birds. Activities that may disturb migratory nesting birds in improved areas are coordinated through DPW-E.

Land use at the POM and OMC are defined by the levels of grounds maintenance required; improved, semi-improved, and unimproved (see Section 2.1.2.1 for descriptions). Vegetation management or grounds maintenance activities for each land use category are listed below.

#### 4.1.3.1 Improved Lands

This category includes intensive grounds maintenance activities that must be planned and performed annually as a fixed requirement. Activities include mowing; periodic irrigation (where designated), fertilization, cultivation, aeration, seeding, sodding, spraying, pruning, trimming; weed, dust, and erosion control; special plantings for drainage, landscape effect, wind, and sound abatement; supplemental plantings; and other intensive practices. Vegetative communities in improved lands include horticultural tree plantings, grass/lawn, and grass/lawn with scattered trees (USAG POM 2008).

To ensure that BMPs are implemented accordingly, DPW-E shall review and comment on project scopes of work; conduct site visits; review the use of planting materials, chemicals, and equipment; and develop appropriate conservation and mitigation measures to minimize and avoid impacts to special status species and their habitat. For example, since the federally endangered Yadon's piperia has been documented in improved areas, routine maintenance such as mowing is prohibited, where feasible, during the growing season (December to July). Most recently, Yadon's piperia was documented west of building 617, and in early 2000, south of the 200 series buildings adjacent to the city of Monterey boundary and around the Price Fitness Center, building 842 (ICF International 2013).

In addition, Hooker's manzanita has been planted as a landscape species in improved areas; pruning or other maintenance activities, including irrigation, performed on planted Hooker's manzanita are avoided, where feasible.

For development of new landscapes, DPW-E works with other DPW divisions to design low maintenance landscapes, such as xeriscaping and utilizing native plant species from the approved POM planting list (Appendix L). DPW-E also maintains standards to ensure that invasive plant species are not used in landscape designs (see Appendix F).

#### 4.1.3.2 Semi-Improved Lands

Semi-improved lands are areas on which periodic recurring grounds maintenance is performed, but to a lesser degree than improved grounds. Practices normally include cyclic patterns (e.g., weed and brush control, drainage maintenance, mowing for fire protection and major land repair/restoration that result from mission activities). Vegetation communities in semi improved lands include some horticultural tree plantings that are comprised of native species such as Monterey pine, Monterey cypress, and coast live oak; grass/lawn with scattered trees; Monterey pine forest-grassy understory, forest-shrubby understory, and Monterey pine/live oak forest (USAG POM 2008).

Since the federally endangered Yadon's piperia has been documented in semi-improved areas, routine maintenance (e.g., mowing) is prohibited, where feasible, during the growing season (December to July). Yadon's piperia has been documented in Bolio Gulley adjacent to Private Bolio Road and west of building 450, and adjacent to MacArthur and Mason Roads near the 800 series barracks (ICF International 2013).

In addition, irrigation on semi-improved lands should be minimized and avoided if possible beneath native oak trees. Native California oaks are sensitive to overwatering and susceptible to oak root fungus. Frequent watering will likely result in a slow death for oak trees. Native pines may also be damaged by over-watering.

Semi-improved areas on the POM also serve as important buffer zones between improved, developed areas and unimproved native forested areas. As opportunities arise, DPW-E manages buffer zones to reduce intrusion of invasive plant species into native forests. This includes removal of invasive plant species such as French broom and rattlesnake grass and plantings of site specific native plants.

#### 4.1.3.3 Unimproved Lands

Unimproved lands on the POM support special status species described in Chapter 2.0. No landscape maintenance is expected to be required or occur on unimproved lands except for removal and dead wooding of trees that pose a safety risk along walkways and roads. Vegetative communities in this category include Monterey pine forest-new growth stands, Monterey pine forest-shrubby understory, and riparian forest (USAG POM 2008).

Vegetation management within the Huckleberry Hill Nature Preserve is conducted in accordance with its Forest Management Plan (Appendix H). For more information see Forest Management Section 4.1.4.

As opportunities arise, DPW-E works with other DPW divisions to remove non-native vegetation and, where feasible, replace non-native plants with site specific native species.

Planting in native plant communities of unimproved grounds, such as the Monterey pine forest and riparian forest on the POM, is not recommended and should only be done to enhance or restore habitat. Further, it should be strictly limited to species indigenous to those vegetative communities. The primary purpose of any planting in unimproved areas should be to increase the habitat value of native plant communities for wildlife and should only be accomplished in close coordination with DPW-E. To conserve the integrity of the local genetic stock, plant materials should be obtained by collecting propagules from existing populations as near to the planting site as possible. Without exception, any Monterey pine source material (including seeds and cloned materials) must be from the Monterey stands of native Monterey pine forest. Replacement plantings in riparian forests should be installed in middle-to-late autumn to take advantage of seasonal rainfall for plant establishment. Generally, unimproved areas will not require fertilization, except to increase density of vegetation for erosion control or to enable initial establishment of native plantings. Table 4-5 outlines POM's unimproved land management actions.

***Table 4-5: POM Vegetation and Grounds Maintenance Management Actions***

| Conservation Measures |
|---|
| Ensure that lawns, where feasible, are not used in landscape designs and are instead replaced with other forms of landscape elements and plants that require less maintenance and are drought-resistant. (*Objective 4.4*) |
| Ensure the use of drought tolerant varieties of grasses for lawns, where deemed necessary, including Chewing's fescue (*Festuca rubra commutate*), red fescue (*Festuca rubra*), and bentgrass (*Agrostis* spp.). Tall fescue (*Festuca arundinacea*) should be avoided because it is a non-native invasive species. Appendix M provides recommended grass varieties and planting specifications. Generally, lawns should be established with a balanced mixture of grass species depending on environmental conditions and projected use. (*Objectives 3.4, 4.4*) |
| Ensure plant species used for landscaping do not include invasive or noxious species such as eucalyptus, acacia, ice plant, pampas grass, or French broom. (*Objectives 3.4, 6.3*) |
| Use xeriscaping and low-maintenance site specific native species in landscaping designs. (*Objectives 4.4, 6.3*) |
| Ensure that no irrigation occurs under established native California tree species in landscaping. (*Objective 4.1*) |
| Prohibit routine maintenance activities, such as mowing, in portions of the two conservation areas occupied by Yadon's piperia during the growing season (December through July) and anywhere else that Yadon's piperia plants have been documented. If landscape maintenance activities are unavoidable, the proponent shall coordinate with DPW-E to ensure avoidance and minimization measures are implemented accordingly to reduce potential impacts to the species and its habitat. (*Objectives 1.2, 3.3*) |
| Avoid, where practical, pruning or other maintenance activities performed on planted Hooker's manzanita. (*Objectives 1.2, 3.3*) |
| Install landscaping, as opportunities arise, in non-landscaped areas, characterized by bare ground or a cover of non-native weed or ruderal species (a plant that grows in wasteland, trash, or disturbed ground). (*Objectives 3.1, 4.4, 6.3*) |
| Ensure that any tree work, including the cutting of roots, are supervised by an International Society of Arboriculture-certified arborist. (*Objectives 4.1, 4.2*) |
| Avoid cutting live Monterey pine material (including roots) during the height of bark beetle season (generally March through October). Damaged live pine material emits a resin that attracts bark beetles which are the primary vector of pine pitch canker. (*Objective 4.2*) |

| |
|---|
| In cooperation with the City of Monterey and other agencies, conduct active management of Monterey pine forest to slow the spread of pine pitch canker. (*Objectives 4.1, 4.2, 7.2*) |
| Schedule grounds maintenance activities, where feasible, that could potentially disturb migratory birds outside the nesting season (February to August). Projects or activities that must occur during the bird nesting season will be reviewed and approved by DPW-E in advance and may require a nesting bird survey prior to commencing work. The survey(s) must be performed by an experienced biologist familiar with migratory birds of the central coast and their breeding behavior. The surveys will be accomplished during the morning hours (6:30 to 11:00 am) and will not take place during periods of excessive or abnormal cold, heat, wind, rain, or other inclement weather that may reduce the likelihood of detection. Generally, the biologist will survey all areas that may provide suitable nesting habitat within 300 feet (500 feet for raptors) of project activities. (*Objectives 1.3, 3.3*) |
| Schedule grounds maintenance activities, where feasible, that could potentially disturb bats outside the breeding season (April to September). Projects or activities that must occur during the breeding season will be reviewed and approved by DPW-E in advance and may require a bat surveys prior to commencing work. The survey(s) must be performed by an experienced biologist familiar with bat biology. Surveys should include visual inspection to identify potential suitable bat roosting habitat in trees slated for removal. Followed by daytime visual assessments and evening visual searches of emerging and free flying bats. Generally, the biologist will survey all areas that may provide suitable breeding habitat within 300 feet of project activities. (*Objectives 1.3, 3.3*) |
| **Conservation Projects** |
| Continue to contract ISA-certified arborist to monitor trees on the POM and OMC for disease and potential hazards. (*Objectives 4.1, 4.2*) |
| Conduct special status and native plant species replacement plantings and maintenance projects as needed to mitigate construction impacts. (*Objectives 1.2, 3.3, 4.2, 4.3*) |
| Conduct periodic biological and ecological surveys to include flora, fauna, special status species, and vegetative communities. (*Objectives 1.1, 1.3*) |
| Develop and implement training on sensitive resources for personnel, contractors, and other target audiences that identifies and discusses unique biological resources on USAG POM sites. (*Objectives 5.5, 6.1*) |
| Develop and print educational brochures or factsheets concerning special status species, invasive species, and other natural resource topics of interest. (*Objective 5.5, 6.1*) |

### 4.1.3.4 Urban Forestry

Throughout improved or developed areas on the POM, scattered stands of Monterey pine forest and coast live oak woodland urban forest exist. DPW-E works with stakeholders to apply careful care and management of these urban forests in order to advocate the role of trees as a critical part of the urban infrastructure. Urban forest on the POM provide habitat for wildlife (i.e., migratory birds, butterflies, bats), filter air and water, reduce stormwater runoff, and decrease heat-island effects (USDA-FS 2014). As opportunities arise, DPW-E uses improved and semi-improved areas on the POM for urban forestry projects such as tree plantings, care, and protection.

DPW-E has adopted tree ordinances to preserve the urban forests on USAG POM sites. On the POM, the tree removal ratio is 2:1 in-kind of native trees. This means that any native trees removed during new construction must be replaced with the same species at a ratio of 2:1. Replaced trees must be provided with supplementary care (water and weeding) for 3–5 years during the establishment stage. Coordination with DPW-E is required prior to any tree removal project. The placement of new, native trees will be

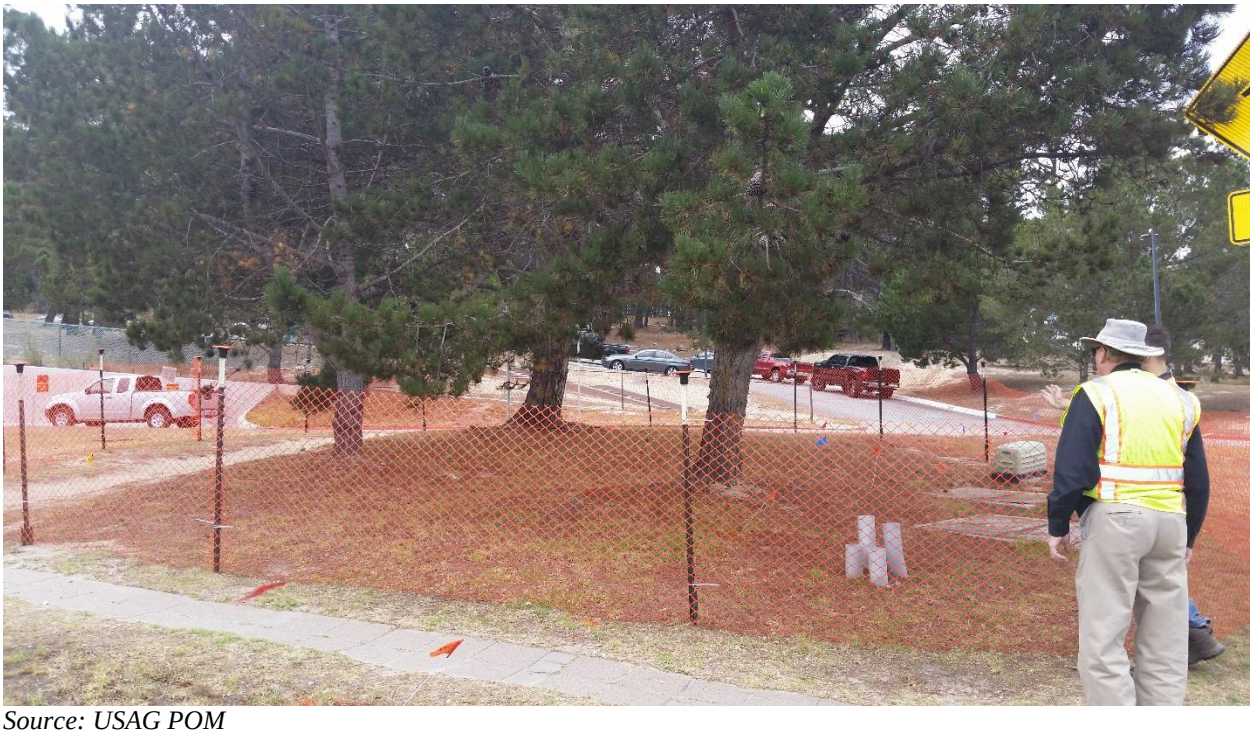
determined by an arborist at the time of the planting. DPW-E works closely with other DPW Divisions and the USACE to enforce and implement the tree removal ratio/mitigation. For example, at this time DPW-E is working with other DPW divisions, USACE, and a contractor to mitigate for about 400 trees that will be removed for construction of a new barracks identified in the 2013 POM RPMP. DPW-E is currently working with stakeholders to identify potential planting sites for an additional 790 trees (consisting of Monterey pine, coast live oak, and cypress), to replace 400 trees being removed, and assisting with overseeing a contract that will collect native plant propagules, propagate native plants, grow native plants in containers, install native plants, install browse protection, and maintain native plants for one year by providing irrigation and weed control.

USAG POM has also adapted the City of Monterey Tree Protection Procedures for urban forestry. This includes having an International Society of Arboriculture (ISA)-Certified Arborist monitor and manage urban trees on the POM and OMC. The arborist and his field crew perform routine tree inspections and maintenance (i.e., pruning, removing, dead wooding, and treating for disease) as needed to maintain current safety standards. DPW-E is provided with quarterly reports of inspection findings and actions taken. In addition, the arborist works with DPW and contractors to ensure that construction activities do not compromise the health and structural stability of existing trees; that no irrigation, trenching, compaction, or other soil condition altering activities occur within the drip line of naturally-occurring Monterey pine, coast live oak trees, and horticultural trees (including Monterey cypress and eucalyptus trees) unless necessary or unavoidable and; tree mitigation plantings are adequate (i.e., species, site, planting ratios) to provide adequate habitat to replace trees lost to development activities (Figure 4-1 and Figure 4-2). Table 4-6 outlines POM’s urban forestry management actions.

***Figure 4-1: 2001 Tree Replacement Mitigation Project in Lower POM***

*Source: USAG POM*

***Figure 4-2: City ISA Certified Arborist Inspecting Implementation of City of Monterey Tree Protection Measures at POM Construction Site***



*Source: USAG POM*

***Table 4-6: POM Urban Forestry Management Actions***

| Conservation Measures |
|---|
| Ensure that any tree work, including the cutting of roots, are supervised by an ISA-certified arborist. (*Objectives 4.1, 4.2*) |
| Avoid cutting live Monterey pine material (including roots) during the height of bark beetle season (generally March through October). Damaged live pine material emits a resin that attracts bark beetles which are the primary vector of pine pitch canker. (*Objective 4.2*) |
| Support and encourage research of other agencies/conservation groups that are monitoring and evaluating pine pitch canker. (*Objective 4.2, 7.2*) |
| Ensure that any native trees removed during new construction are replaced with the same species at a ratio of 2:1. Replaced trees must be provided with supplementary care (water and weeding) for 3-5 years during the establishment phase. The placement of new, native trees will be determined by an arborist at the time of the planting. (*Objective 4.3*) |
| **Conservation Projects** |
| Continue to contract ISA-certified arborist to monitor trees on the POM and OMC for disease and potential hazards. (*Objectives 4.1, 4.2*) |
| Conduct special status and native plant species replacement plantings and maintenance projects as needed to mitigate construction impacts. (*Objectives 1.2, 3.3, 4.2, 4.3*) |
| Develop and implement training on sensitive resources for personnel, contractors, and other target audiences that identifies and discusses unique biological resources on USAG POM sites. (*Objectives 5.5, 6.1*) |
| Develop and implement Installation Conservation Design Plan (ICDP) to address stormwater pollution reduction, pollinator habitat establishment, urban tree planting opportunities, and wildlife habitat enhancement projects. (*Objectives 2.1, 2.2, 2.3, 3.2, 4.1, 4.2*) |

### 4.1.3.5 Pollinator Habitat

In 2014, President Obama issued a memorandum for "Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators." The Presidential memorandum directs federal departments and agencies to evaluate and use their resources, facilities, and land management responsibilities to expand knowledge of pollinator health and to increase habitat quality and availability. Immediately following the Presidential memorandum, DOD issued a memorandum to military services in September 2014 to reinforce the DOD Policy to Use Pollinator-Friendly Management Prescriptions and use native landscaping, when possible; avoid using herbicides and pesticides in sensitive habitats; and coordinate with other agencies and NGOs on habitat and pollinator issues.

DOD intents to issue additional guidance that the military services track implementation of this policy, in addition to adding pollinator-friendly management language to DOD Instruction 4715.03, Natural Resources Conservation Program. DOD will issue additional technical and programmatic guidance to update the Unified Facilities Criteria (UFC) for Landscape Architecture (UFC 3-201-02), issued in February 2009, to include pollinator-friendly management practices in contractor design and construction projects. Pollinator protection and management will also be included in DOD's Natural Resources Strategic

Plan, which provides broad goals and objectives for implementing natural resources conservation and management on DOD installations.

DPW-E recognizes the important ecological role pollinators play in native ecosystems on USAG POM sites. The restoration and creation of pollinator habitats is encouraged on the POM. Pollinators include bees, butterflies, moths, beetles, flies, hummingbirds, and bats. As a group, pollinators are threatened worldwide by habitat loss and fragmentation, pesticides, disease, and parasites.

In an effort to enhance pollinator habitat quality and availability, DPW-E will develop and implement an Installation Conservation Design Plan (ICDP) to identify and develop the following for POM and OMC sites:

- identify sites in improved and semi-improved areas that can be enhanced with native plants to establish pollinator gardens
- identify how unimproved land can best be managed to support pollinator populations

develop pollinator-friendly BMPs vegetation management and ground maintenance activities (i.e., reducing use of toxic pesticides and herbicides, enhancing native plant communities). Table 4-7 outlines POM's pollinator habitat management actions.

***Table 4-7: POM Pollinator Habitat Management Actions***

| **Conservation Measures** |
|---|
| Use low-maintenance site-specific native species in landscaping designs. (*Objectives 4.1, 4.4*) |
| Avoid, where feasible, herbicides and pesticides use in sensitive pollinator habitats. (*Objectives 3.2, 3.5*) |
| Develop and maintain working relationships with other organizations addressing pollinator habitat issues. (*Objectives 7.1, 7.2*) |
| **Conservation Projects** |
| Develop and implement an Installation Conservation Design Plan (ICDP) to address stormwater pollution reduction, pollinator habitat establishment, urban tree planting opportunities, and wildlife habitat enhancement projects. (*Objectives 2.1, 2.2, 2.3, 3.2, 4.1, 4.2*) |

### 4.1.3.6 Construction Mitigation Measures

Construction and maintenance projects are ongoing at the POM to obtain, operate, and maintain the highest-quality facilities to support the missions of tenants. To ensure that projects are implemented in a sustainable manner to protect and preserve the natural and man-made environment, DPW-E is involved in the planning, development, and implementation process for all new construction and maintenance projects. DPW-E works closely with stakeholders to critically think about site selection before development. DPW-E worked closely with internal stakeholders to prepare the 2013 POM RPMP and is currently working with the DPW Master Planning Division, the Garrison Commander, the DLI, and the City of Monterey to prepare an ADP for the POM.

In addition, DPW-E staff works with stakeholders on a regular basis to ensure that appropriate mitigation measures and BMPs are implemented accordingly for all construction and maintenance projects. DPW-E accomplishes this primarily through the NEPA review process and engaging in open communications with USACE and DPW Engineering, O&M, and Master Planning Divisions.

DPW-E has also developed a set of site specific construction mitigation measures that, where feasible, are written directly into the contract specifications or are required per the individual project NEPA review. Mitigation measures encompass all components of natural resources management on the POM, such as soil erosion, vegetation management, and endangered species protection. These mitigation measures are outlined in Appendix N. Table 4-8 outlines POM's construction mitigation measures management actions.

***Table 4-8: POM Construction Mitigation Measures Management Actions***

| Conservation Measures |
|---|
| Avoid negative impacts to protected trees, including Monterey pine, coast live oak, and Monterey cypress, to the maxim extent feasible, for any planned construction and/or lands management activities. This includes temporarily fencing all trees identified for preservation during construction activities. Generally, fencing shall be located at the edge of the root zone. The root zone is determined to be that area located a distance 15 times the DBH in all directions. (*Objectives 3.3, 4.1, 4.2*) |
| Avoid, where feasible, new construction and intrusive operation and maintenance practices in Monterey pine forest and riparian habitats, to preserve sensitive biological resources. (*Objectives 3.3, 4.1, 4.2*) |
| Prohibit irrigation, trenching, compaction, or other soil condition altering activities that occur within the drip line of naturally occurring Monterey pine, coast live oak trees, and horticultural trees (including Monterey cypress and eucalyptus trees) unless necessary or unavoidable. Such activities can compromise the health and structural stability of the tree, and can create a safety hazard. If unavoidable, the proponent shall coordinate the activity with an ISA-certified arborist and DPW-E. (*Objectives 4.1, 4.2*) |
| Ensure that any tree work, including the cutting of roots, are supervised by an ISA-certified arborist. (*Objectives 4.1, 4.2*) |
| Ensure that any native trees removed during new construction are replaced with the same species at a ratio of 2:1. Replaced trees must be provided with supplementary care (water and weeding) for 3–5 years during the establishment phase. The placement of new, native trees will be determined by an arborist at the time of the planting. (*Objective 4.3*) |
| Ensure that prior to the start of construction, all Monterey pine trees that are within 100 feet of the project area and scheduled to be preserved, are treated for bark beetle using standard practices recommended by the ISA-arborist and in accordance with the IPMP. Unseasoned lumber or newly cut pine trees give off a fragrance that attracts the beetles. (*Objectives 4.1, 4.2*) |
| Schedule construction projects, where feasible, that could potentially disturb migratory birds outside the nesting season (February to August). Projects or activities that must occur during the bird nesting season will be reviewed and approved by DPW-E in advance and may require a preconstruction nesting bird survey. The survey(s) must be performed by an experienced biologist familiar with migratory birds of the central coast and their breeding behavior. The surveys will be accomplished during the morning hours (6:30 to 11:00 am) and will not take place during periods of excessive or abnormal cold, heat, wind, rain or other inclement weather that may reduce the likelihood of detection. Generally, the biologist will survey all areas that may provide suitable nesting habitat within 300 feet (500 feet for raptors) of project activities. (*Objectives 1.3, 3.3*) |
| Schedule construction projects, where feasible, that could potentially disturb bats outside the breeding season (April to September). Projects or activities that must occur during the breeding season will be |

| |
|---|
| reviewed and approved by DPW-E in advance and may require a preconstruction bat surveys. The survey(s) must be performed by an experienced biologist familiar with bat biology. Surveys should include visual inspection to identify potential suitable bat roosting habitat in trees slated for removal. Followed by daytime visual assessments and evening visual searches of emerging and free flying bats. Generally, the biologist will survey all areas that may provide suitable breeding habitat within 300 feet of project activities. (*Objectives 1.3, 3.3*) |
| **Conservation Projects** |
| Continue to contract ISA-certified arborist to monitor trees on the POM and OMC for disease and potential hazards. (*Objectives 4.1, 4.2*) |
| Conduct special status and native plant species replacement plantings and maintenance projects as needed to mitigate construction impacts. (*Objectives 1.2, 3.3, 4.2, 4.3*) |
| Develop and implement training on sensitive resources for personnel, contractors, and other target audiences that identifies and discusses unique biological resources on USAG POM sites. (*Objectives 5.5, 6.1*) |

### 4.1.4 Forest Management

The largest contiguous Monterey pine forest on the POM is located within the 81-acre Huckleberry Hill Nature Preserve. The preserve is leased to and managed by the City of Monterey in accordance with the city's Huckleberry Hill Preserve Forest Management Plan (Appendix H). In 2016, DPW-E, in coordination with the city, revised and updated the 2008 forest management plan to identify the biological resources of the Preserve and to make forest management recommendations based on the City of Monterey's forest management objectives.

Since 1987, the City of Monterey has managed the preserve with great success. Their management strategy focuses on restoring, enhancing, and maintaining the health and quality of the forest to meet diverse needs and values. This approach has resulted in the preserve having the highest native plant and wildlife species diversity on the POM (see Section 2.1.3).

CalAm utilizes above ground storage tanks in the preserve. In 2012, a CalAm water distribution line ruptured. The large release of water caused some erosion damage, and native vegetation suffered minor effects from the event. This event resulted in the development of a restoration plan to restore the area that was eroded with native plants. The area has since been replanted with 13 different native plants such as common yarrow (*Achillea millefolium*), California brome, huckleberry, sticky monkey flower, and Monterey pine. DPW-E will continue to work with CalAm and the City of Monterey to maintain the plantings at the site and monitor the eroded areas.

DPW-E, where feasible, works with the City of Monterey to manage buffer areas along the edge of the preserve to control non-native, invasive plant species and to monitor special status species. In addition, DPW-E conducts periodic flora and fauna surveys, coordinates security issues, and works with both the City of Monterey and CalAm to preserve the area (e.g., supporting trail maintenance).

Table 4-9 outlines the POM's forest management actions.

***Table 4-9: POM Forest Management Actions***

| Conservation Measures |
|---|
| Avoid, where feasible, new construction and intrusive operation and maintenance practices in Monterey pine forest and riparian habitats to preserve sensitive biological resources. (*Objectives 1.2, 2.2, 3.3, 4.1, 4.2*) |
| Continue implementing the Huckleberry Hill Forest Management Plan in coordination with the City of Monterey. (*Objectives 3.1, 6.2, 6.3, 7.1*) |
| Continue restricting the removal of Hooker's manzanita or Monterey pine. Removal will be authorized only for the purpose of reducing insect and disease problems within the Preserve. (*Objectives 1.1, 1.2*) |
| Monitor, survey, and remove, where feasible, invasive plants within the Preserve. (*Objectives 3.1, 3.5*) |
| In cooperation with the City of Monterey and other agencies, conduct active management of Monterey pine forest to slow the spread of pine pitch canker. (*Objectives 3.1, 3.5, 4.1, 4.2*) |
| Support and encourage research of other agencies/conservation groups that are monitoring and evaluating pine pitch canker. (*Objectives 3.5, 4.2*) |
| Increase the structural heterogeneity of existing pine forest habitat by encouraging a multi strata canopy through non-native plant removal and supplemental planting of Monterey pines. (*Objectives 3.1, 3.4, 4.1*) |
| Create buffer areas in open landscape or unvegetated open areas contiguous to forested areas, and plant native vegetation to increase the diversity of cover types surrounding forest habitat. (*Objectives 3.1, 3.4, 4.1, 4.4*) |
| Implement conservation measures for wildland fire management (Section 4.1.5). (*Objectives 5.1, 7.1*) |
| Monitor for Yadon's piperia and, where feasible, partner with the City of Monterey to install protective fencing and signage for species management. (*Objectives 1.1, 7.1*) |
| **Conservation Projects** |
| Produce environmental awareness materials and install informational signs to identify sensitive natural and cultural resources. (*Objectives 6.1, 6.3*) |
| Conduct annual monitoring of Yadon's piperia. (*Objective 1.1*) |
| Control invasive, nonnative plant species in habitat occupied by Yadon's piperia and potential habitat areas. (*Objectives 1.1, 3.5*) |
| Conduct a study to develop and implement a plan for raccoon population management. (*Objective 3.5*) |
| Perform Hooker's manzanita surveys. (*Objective 1.1*) |
| Establish a propagation and planting program for Hooker's manzanita. (*Objectives 1.1, 3.1*) |
| Conduct survey for pine rose in native Monterey pine forest habitat. (*Objective 1.1*) |
| Perform study of black-tailed deer populations on the POM and OMC. (*Objective 3.5*) |
| Continue to coordinate and implement environmental education and outreach activities. (*Objectives 6.1, 6.2, 6.3*) |
| Conduct special status and native plant species replacement plantings and maintenance projects as needed to mitigate construction impacts. (*Objectives 1.2, 3.3, 4.2, 4.3*) |
| Conduct periodic biological and ecological surveys to include flora, fauna, special status species, and vegetative communities. (*Objectives 1.1, 1.3*) |
| Conduct invasive species surveys. (*Objectives 3.4, 3.5*) |
| Perform invasive plant species control. (*Objective 3.5*) |
| Develop and implement training on sensitive resources for personnel, contractors, and other target audiences that identifies and discusses unique biological resources on USAG POM sites. (*Objectives 5.5, 6.1*) |
| Develop and print educational brochures or factsheets concerning special status species, invasive species, and other natural resource topics of interest. (*Objective 5.5, 6.1*) |

Presidio of Monterey, Ord Military Community, Satellite Communication Station at Camp Roberts, and Benicia Army Cemetery

### 4.1.5 Wildland Fire Management

The POM is an urban environment, hosting classrooms, dormitories, and support facilities. It is surrounded on all sides by the cities of Monterey, Pebble Beach, and Pacific Grove. No prescribed burning occurs on the POM. The normal fire season for wildland fires is 01 May to 15 November as vegetation and annual grasses begin to dry out at the end of their life cycle and summer weather is established. Historically, human behavior has been a major cause of wildland fires. Open fires are prohibited on USAG POM sites and a burn permit is required for any activity that can generate a fire, such as welding or cutting. Smoking is only permitted in designated areas.

#### 4.1.5.1 Fire Service

The City of Monterey Fire Department provides fire suppression services to the POM. The POM is equipped with an automated fire alarm system that notifies the City of Monterey of an emergency. Additionally, the USAG POM Fire Department, located at OMC, will respond automatically to reports of wildland/urban interface fires.

In addition, the USAG POM maintains Cooperative Agreements with the cities of Monterey, Seaside, Marina, BLM, CAL FIRE, and the Division of Forestry organizations to provide and receive assistance in the event of a major fire (USAG POM 2012b).

#### 4.1.5.2 Prevention

Fire prevention activities to mitigate the threat of wildland fire are focused on maintaining fuel breaks between the facilities and all wildland areas that surround the POM. Paved surfaces, primarily roads, act as fuel breaks in the lower, developed areas of the POM. The USAG POM Fire Department conducts surveys on a semi-annual basis on the POM to ensure that grasses and shrubs do not encroach on facilities, trees are trimmed, and access roads remain clear. In the event of shrub encroachment, the appropriate agency (DPW or RCI) is notified of the hazard so that a clearing activity can be scheduled.

In undeveloped areas of the Huckleberry Hill Nature Preserve, a series of unpaved maintenance roads serve as fuel breaks. The City of Monterey maintains these fuel breaks as needed, by keeping roads clear of vegetation and protecting them from erosion. In addition, roads in the preserve are clearly labeled with the name of the road in reflective writing to assist fire personnel locate their current position in relation to fires in an emergency.

Three wildfires have occurred on the upper POM within the last 30 years, all in the Huckleberry Hill Nature Preserve. One of these fires occurred in 1987, and started in the nearby community of Pebble Beach. The other two occurred in 1989 and 2006, caused by an improperly extinguished campfire and lightning respectively. All three fires were suppressed but affected resources in the preserve. The positive effect was that the natural regeneration of Monterey pine has been extremely successful in the burned areas.

Since the preserve has been designated as a fire hazard area, the City of Monterey has an active dead and downed vegetation removal program to reduce the accumulation of combustible fuel on the ground. For this program, the City of Monterey relies on the CAL FIRE brush removal crews to remove brushy fuel (greater than three inches in diameter) from the forest floor of the preserve on an annual basis, or as needed (Reid 1998; Reid 2007). In addition, City of Monterey field crews conduct periodic brush clearance at the preserve along Highway 68 and remove dead and downed wood from within the preserve. Table 4-10 outlines POM's wildland fire management actions.

***Table 4-10: POM Wildland Fire Management Actions***

| Conservation Measures |
|---|
| Continue implementing the Huckleberry Hill Forest Management Plan in coordination with the City of Monterey. (*Objectives 3.1, 6.2, 6.3, 7.1*) |
| Continue to work with POM Fire Department, DPW O&M Division, and contractors to ensure fuel breaks are surveyed and maintained. (*Objectives 6.1, 7.1*) |
| **Conservation Projects** |
| Produce environmental awareness materials and install informational signs to identify sensitive natural and cultural resources. (*Objectives 6.1, 6.3*) |
| Continue to coordinate and implement environmental education and outreach activities. (*Objectives 6.1, 6.2, 6.3*) |

### 4.1.6 Fish and Wildlife Management

The purpose of fish and wildlife management is to protect, conserve, and sustain biodiversity at a level that is compatible with the military mission and compliant with federal and state laws, guidance, and policy. The following laws and regulations apply to managing fish and wildlife at USAG POM sites:

- ESA of 1973 (P.L. 93-205) and amendments of 1988 (P.L. 100-478)
- *Fish and Wildlife Coordination Act* (Public Law [P.L.] 85-654)
- *Fish and Wildlife Conservation Act* (16 USC § 2901-2912)
- *Lacey Act of 1900* (16 USC §§ 3371-3378), as amended by the Lacey Act of 1981
- *Migratory Bird Treaty Act* (16 USC § 703–716)
- *Sikes Act Improvement Act of 1997* (16 USC § 670 a)

The focus of the fish and wildlife management program at the POM is habitat management. The goal is to protect native ecosystems to enhance and maintain native plant and wildlife populations, communities, and assemblages. This is done by conserving and restoring natural wildlife habitats in unimproved and semi-improved areas. Based on the land use classifications and typical wildlife associations, the primary native wildlife habitats on the POM are the Monterey pine and riparian forest. No wetlands and, due to the lack of perennial stream flows and standing water, no native or game fish populations occur on the POM. Other land use classifications, particularly horticultural tree plants, grass and lawn, and improved areas, provide more limited

habitat for wildlife due to the lack of sufficient sources of native food or cover. To conserve and restore existing wildlife habitat on the POM, DPW-E performs the following actions:

- preserves natural areas (i.e., Monterey pine forest habitats) to maintain and enhance populations of native wildlife species; for example, the creation of the two forest conservation areas for Yadon's piperia and Huckleberry Hill Nature Preserve.
- conducts NEPA review of specific projects to evaluate potential impacts of new construction and operation and maintenance projects in Monterey pine and riparian forest; DPW-E reviews, on average, 100 projects (i.e., construction, repairs, landscape, environmental planning documents) per year to minimize, avoid, and/or mitigate potential impacts to wildlife and their habitat.
- identifies and avoids management actions that have the potential to adversely affect migratory bird populations through the NEPA review process.
- makes every effort to protect, restore, and enhance important habitats for migratory birds.
- preserves wildlife corridors, such as Huckleberry Hill Nature Preserve, for migrating native species including black legless lizards and coast horned lizards traveling to and from habitat areas, such as the adjacent Del Monte Forest.
- preserves and restores urban forest through enforcement of tree removal ratios.
- prohibits the use of non-native plants in landscape designs and promotes the use of native species.
- removes non-native species in landscapes and, where feasible, replaces them with native species on the POM approved planting list.
- enforces implementation of cultural practices to reduce the need for implementing detrimental control techniques to raccoons, deer, and coyotes.
- reviews contractor's construction project plans and conducts site visits to ensure appropriate soil erosion and sediment control and BMPs are implemented to minimize impacts to urban forest and natural forested habitats.
- reviews landscaping contractor's project plans and conducts site visits to ensure new landscape designs utilize native plants beneficial to wildlife and pesticide/herbicide use are not detrimental to wildlife species or their habitat; only aquatic-approved formulations of pesticides are recommended for use in riparian areas and aquatic environments (e.g., glyphosate-based Rodeo herbicide).

#### 4.1.6.1 Bat Management

One bat species, California myotis, was detected in the riparian forest habitat (POM 2009 PLS). Bat monitoring, along with regular acoustic surveys, will help natural resource managers better understand whether this species regularly uses this habitat. Also, bat boxes can be installed in the natural habitats of the POM to contribute to sustainment of regional bat populations.

### 4.1.6.2 Migratory Bird Management

The MBTA is the primary legislation in the United States established to conserve migratory birds. The MBTA prohibits the taking, killing, or possessing of migratory birds unless permitted by regulation. The species of birds protected by the MBTA appear in Title 50, Section 10.13, of the Code of Federal Regulations (50 CFR 10.13). The *2003 National Defense Authorization Act* provides that the armed forces are exempt from the MBTA for the incidental taking of migratory birds during military readiness activities.

Congress defined that military readiness activities do not include the following:

- routine operation of installation operating support functions, such as administrative offices; military exchanges; commissaries; water treatment facilities; storage facilities; schools; housing; motor pools; laundries; moral, welfare, and recreation activities; shops; and mess halls
- operation of industrial activities
- construction or demolition facilities used for the purpose described in the above two bullets

Migratory bird conservation relative to non-military readiness activities is addressed separately in a MOU developed in accordance with EO 13186, signed 10 January 2001, *Responsibilities of Federal Agencies to Protect Migratory Birds*. This MOU between the DOD and the USFWS was signed on 21 July 2006. The MOU includes, but is not limited to, the following DOD responsibilities:

- obtaining permits for import and export, banding, scientific collection, taxidermy, special purposes, falconry, raptor propagation, and depredation activities
- encouraging incorporation of comprehensive migratory bird management objectives in the planning of DOD planning documents
- incorporating conservation measures addressed in regional or state bird conservation plans in INRMPs
- managing military lands and activities other than military readiness in a manner that supports migratory bird conservation
- avoiding or minimizing impacts on migratory birds, including incidental take and the pollution or detrimental alteration of the environments used by migratory birds
- developing, striving to implement, and periodically evaluating conservation measures for management actions to avoid or minimize incidental take of migratory birds, and if necessary, conferring with the USFWS on revisions to these conservation measures

The USAG POM sites are located within the Pacific flyway, which is a major bird migration route. This flyway stretches over some of the most densely populated and developed areas of the United States, which makes it critically important that natural areas and undeveloped lands be conserved and managed to support these species. Threats

to migratory birds on USAG POM sites include feral cats; exposure to pesticides from invertebrate pest and weed control; exposure to other possible contaminants including paint and diesel fuel; loss of Monterey pine and coast live oak habitat from building construction; disturbance due to loud noise from the use of mechanized equipment such as weed whackers and leaf blowers; and collisions with structures and equipment.

To manage migratory birds on the POM, DPW-E works closely with other DPW divisions and USACE to ensure that the following language is included in contract specifications:

*"To avoid violations of Federal and State migratory bird protections and prevent effects on migratory bird species, project construction, where feasible, will be timed to be conducted outside the nesting season. Projects or activities that must occur during the bird nesting season (February 1 to August 31) require 2 biological surveys be conducted; one 15 days prior to and a second 72 hours prior to the commencement of construction activities. The survey(s) must be performed by an experienced biologist familiar with migratory birds of the central coast and their breeding behavior. The surveys will be accomplished during the morning hours (6:30 to 11:00 am) and will not take place during periods of excessive or abnormal cold, heat, wind, rain or other inclement weather that may reduce the likelihood of detection. Generally, the biologist will survey all areas that may provide suitable nesting habitat within 300 feet (500 feet for raptors) of project activities. If an active nest is located, the contractor shall inform the Contracting Officer immediately and construction shall not commence within 300 feet (500 feet for raptors) of the nest until DPW-E has determined the appropriate avoidance measures to be implemented and/or, if necessary has coordinated with the USFWS and the CDFW for guidance on appropriate avoidance measures per individual species."*

In addition, DPW-E conducts site visits when birds are on found on job sites, to identify the birds and to ensure contractors are performing work according to contract specifications. If migratory bird nests are found, all work is ceased within 300 feet of the nest until the chicks have fledged or if it identified that the nest has failed. Table 4-11 outlines POM's fish and wildlife management actions.

***Table 4-11: POM Fish and Wildlife Management Actions***

| Conservation Measures |
|---|
| Avoid new construction and intrusive operation and maintenance practices in natural areas such as Monterey pine forest and riparian habitats to preserve native ecosystems. (*Objectives 3.3, 4.1, 4.2*) |
| Create buffer areas in open landscape or unvegetated open areas contiguous to forested areas, and plant native vegetation to increase the diversity of cover types surrounding forest habitat. (*Objectives 3.1, 3.4, 4.1, 4.4*) |
| To the extent practical, remove intrusive non-native vegetation from natural areas. Attempt to bridge islands of native forest by creating corridors with supplemental plantings to reduce gap size and increase carrying capacity of forest habitat. (*Objectives 3.1, 3.4, 3.5*) |
| Implement vegetation management conservation measures (Section 4.1.3) to ensure conservation and restoration of wildlife habitat (i.e., using native plants and removing non-native plants in landscapes). (*Objectives 3.1, 3.4, 3.5, 4.4*) |

| |
|---|
| Implement stormwater runoff conservation measures (Section 4.1.1.1) to reduce pollutants into Monterey Bay. (*Objectives 2.1, 2.3*) |
| Implement forest and urban forest management conservation measures (Section 4.1.3.4 and 4.1.4) to ensure conservation and restoration of wildlife and their habitat (i.e., implementing the Huckleberry Hill Nature Preserve Forest Management Plan and enforcing the tree removal ratio). (*Objectives 3.1, 3.2, 4.1, 4.2, 4.3*) |
| Add avian data to the DOD Coordinated Bird Monitoring Database. (*Objectives 1.1, 1.3*) |
| Work with internal and external stakeholders to identify appropriate, non-lethal bird deterrent options for facility use, such as rooting and landing prevention devices and visual scare devices. (*Objectives 1.3, 5.3, 7.2*) |
| Develop working relationships with other agencies and organizations to identify bird conservation sites, participate in efforts to collect data on migratory bird species biology, and actions for conservation management. (*Objectives 1.3, 7.2*) |
| Remove feral cats from the installation and educate the public about keeping cats indoors (Section 4.1.8 and Appendix Q). (*Objectives 3.5, 6.1*) |
| Schedule construction and maintenance projects, where feasible, that could potentially disturb migratory birds outside the nesting season (February to August). Projects or activities that must occur during the bird nesting season will be reviewed and approved by DPW-E in advance and may require a preconstruction nesting bird survey. The survey(s) must be performed by an experienced biologist familiar with migratory birds of the central coast and their breeding behavior. The surveys will be accomplished during the morning hours (6:30 to 11:00 am) and will not take place during periods of excessive or abnormal cold, heat, wind, rain or other inclement weather that may reduce the likelihood of detection. Generally, the biologist will survey all areas that may provide suitable nesting habitat within 300 feet (500 feet for raptors) of project activities. (*Objectives 1.3, 3.3*) |
| Schedule construction and maintenance projects, where feasible, that could potentially disturb bats outside the breeding season (April to September). Projects or activities that must occur during the breeding season will be reviewed and approved by DPW-E in advance and may require a preconstruction bat surveys. The survey(s) must be performed by an experienced biologist familiar with bat biology. Surveys should include visual inspection to identify potential suitable bat roosting habitat in trees slated for removal. Followed by daytime visual assessments and evening visual searches of emerging and free flying bats. Generally, the biologist will survey all areas that may provide suitable breeding habitat within 300 feet of project activities. (*Objectives 1.3, 3.3*) |
| **Conservation Projects** |
| Develop and implement an Installation Conservation Design Plan (ICDP) to address stormwater pollution reduction, pollinator habitat establishment, urban tree planting opportunities, and wildlife habitat enhancement projects. (*Objectives 2.1, 2.2, 2.3, 3.2, 4.1, 4.2*) |
| Conduct special status and native plant species replacement plantings and maintenance projects as needed to mitigate construction impacts. (*Objectives 1.2, 3.3, 4.2, 4.3*) |
| Develop and implement training on sensitive resources for personnel, contractors, and other target audiences that identifies and discusses unique biological resources on USAG POM sites. (*Objectives 5.5, 6.1*) |
| Conduct a study to develop and implement a plan for raccoon population management. (*Objective 3.5*) |
| Perform a study of black-tailed deer populations on the POM and OMC. (*Objective 3.5*) |
| Conduct invasive species surveys. (*Objectives 3.4, 3.5*) |
| Perform invasive plant species control. (*Objective 3.5*) |
| Conduct periodic biological and ecological surveys to include flora, fauna, special status species, and vegetative communities. (*Objectives 1.1, 1.3*) |

### 4.1.7 Federally Threatened, Endangered, and Special Status Species Management

See Section 2.1.3.5 for legal requirements and policies regarding federally listed and special status species management. DPW-E has taken a proactive approach in managing federally listed and special status species on the installation. See Section 2.1.3.5 for definition of special status species. This proactive approach has greatly reduced any negative impacts to the military mission. The focus of federally endangered species management is Monterey pine forest habitat management, to enhance populations of the federally endangered Yadon's piperia and state protected plants and animal species, such as Hooker's manzanita, small-leaved lomatium, and the Santa Lucia slender salamander. The ESMCP in Appendix G is used as a tool to develop, manage, and maintain special status species and their habitats.

#### 4.1.7.1 Yadon's piperia

DPW-E consults and coordinates with the USFWS on any proposed action that may affect the species or its habitat, and implements the 2013 POM RPMP BO (# 8-8-13-F-29) requirements. This is primarily conducted through the NEPA review process. DPW-E reviews, on average, 100 projects (i.e., construction, repairs, landscape) per year to ensure specific projects minimize, avoid, and/or mitigate potential impacts to Yadon's piperia and its habitat. In addition, site visits are conducted on a regular basis:

- prior to commencement of a project to identify if Yadon's piperia plants occur within or near construction and maintenance areas, including staging and access areas (if present, plants are documented, counted, photographed, and conspicuously flagged and/or fenced to maximize avoidance);
- during project activities to ensure appropriate fencing has been installed and that only designated areas approved for staging and vehicles are used; and
- upon completion of project to ensure that all fencing is removed and that the project area has been restored to its original state.

DPW-E also performs annual surveys of Yadon's piperia to assist in documenting new plant locations and establishing areas to be protected from ongoing construction and maintenance activities. Annual survey acreage of the POM has increased through the years. However, surveys conducted during different phenological stages (vegetative or inflorescence) has resulted in varying quantities and distribution. This has made it difficult to truly track the population status over time. Surveys have been conducted intermittently from 1990 to 2014 by different surveyors, including contractors, volunteers, and a POM biologist. Since this species is listed under the ESA and considered to be a special protected species by the State of California, and occurs on POM property, POM's stewardship of Yadon's piperia should be consistent and contribute to recovery efforts. This includes long-term monitoring to track plant health, abundance, and distribution changes overtime. In FY16 DPW-E solicited a contract to

- conduct a comprehensive review of literature on the subject species;

- compile all POM existing Yadon's piperia data to organize and qualitatively, and, as most technically feasible, quantitatively analyze these data;
- develop appropriate scientific monitoring methods; and
- implement scientific methods for determining baseline conditions.

The deliverables of this project will be used to standardize future annual monitoring efforts. The goal is to conduct annual monitoring of Yadon's piperia using standard scientific methods to track plant health, abundance, and distribution changes over time.

Adverse effects of invasive plants, including shading and competition for resources, are believed to be the greatest threat to Yadon's piperia at POM. For this reason, invasive weed control is a priority and conducted on an annual basis. DPW-E has found that annual removal and control of French broom in Yadon's piperia habitat is critical because French broom accumulates a long-lived seed bank that can only be depleted through continuous attrition of new plants before they can set seed. To avoid or minimize impacts to habitat occupied by Yadon's piperia and potential habitat areas, the management strategies identified in the 2013 RPMP BO are implemented when controlling invasive, non-native plant species such as French broom, pampas grass, and rattle snake grass. Annual control efforts are documented and monitored regularly.

In addition, DPW-E performs the following for Yadon's piperia management:

- adopts, to the maximum extent possible, the USFWS recovery goals for Yadon's piperia management.
- maintains an open line of communication with all persons (internal and external stakeholders) and agencies interested in or who may impact Yadon's piperia and other special status plant and animal species on POM.
- works with other DPW divisions, USACE, and contractors to develop and implement appropriate impact avoidance and minimization measures for work performed adjacent to or in Yadon's piperia habitat or designated conservation areas this includes ensuring appropriate protective fencing and signs are installed and posted prior to commencing work, ensuring landscaping work is conducted outside of the flowering season (August to November), conducting surveys prior to commencement of projects, and providing workers with appropriate training.

#### 4.1.7.2 Other Federally Listed and Special Status Species

DPW-E performs the following for management of other federally listed and special status species:

- consults and coordinates with the USFWS on any proposed action on POM that may affect federally listed species or its habitat.
- conducts NEPA review of specific projects to minimize, avoid, and/or mitigate potential impacts to special status species and their habitat.

- this includes ensuring that appropriate biological monitoring occurs prior to project commencement.

- documents occurrence records for other federally listed and special status species.
- coordinates with the USAG POM Public Affairs Office to highlight special status species management actions in order to promote awareness among personnel, their dependents, and contractors.
- maintains existing Monterey pine forest habitat on the POM for preservation, such as the Huckleberry Hill Nature Preserve.
- works with other DPW divisions and USACE to develop appropriate minimization, mitigation, or avoidance measures to minimize impacts on special status species and their habitat from new construction, maintenance, and operation activities.

Table 4-12 outlines POM's federally listed and special status species management actions.

***Table 4-12: POM Federally Threatened, Endagered, and Special Status Species Management Actions***

| **Conservation Measures** |
|---|
| Avoid new construction and intrusive operation and maintenance practices in natural areas such as Monterey pine forest and riparian habitats to preserve native ecosystems. (*Objectives 1.2, 2.2, 3.3, 4.1, 4.2*) |
| Ensure that construction work occurring within occupied Yadon's piperia habitat is focused on existing access roads and limited to a minimal area of disturbance to the extent practicable. This includes ensuring staging areas and equipment and vehicle parking are located in designated areas outside of occupied habitat. (*Objectives 1.2, 3.1, 3.2, 3.3,*) |
| To the extent practical, remove intrusive non-native vegetation from natural areas. Attempt to bridge islands of native forest by creating corridors with supplemental plantings to reduce gap size and increase carrying capacity of forest habitat. (*Objectives 3.1, 3.4, 3.5*) |
| Develop and maintain working relations with local and regional natural resource agencies conducting conservation work on special status species found on the POM. (*Objectives 1.3, 1.2, 1.3, 7.1, 7.2*) |
| Implement vegetation management conservation measures (Section 4.1.3) to ensure conservation and restoration of wildlife habitat (i.e., using native plants and removing non-native plants in landscapes). |
| Implement forest and urban forest management conservation measures (Section 4.1.3.4 and 4.1.4) to ensure conservation and restoration of wildlife and their habitat (i.e., implementing the Huckleberry Hill Nature Preserve Forest Management Plan and enforcing tree removal ratio). (*Objectives 3.1, 3.4, 3.5, 4.4)* |
| Implement fish and wildlife management conservation measures (Section 4.1.6). |
| **Conservation Projects** |
| Produce environmental awareness materials and install informational signs to identify sensitive natural and cultural resources. (*Objectives 6.1, 6.3*) |
| Develop scientific methods for monitoring Yadon's piperia. (*Objectives 1.1*) |
| Conduct annual monitoring of Yadon's piperia. (*Objectives 1.1*) |
| Control invasive, nonnative plant species in habitat occupied by Yadon's piperia and potential habitat areas. (*Objectives 1.1, 3.5*) |
| Protect Yadon's piperia from impacts related to deer activity. (*Objectives 1.2*) |
| Implement an educational awareness program for Yadon's piperia. (*Objectives 5.5, 6.1, 6.2*) |

| |
|---|
| Create and implement a trail closure, re-route, and rehabilitation plan for Yadon's piperia Conservation Area No. 1. (*Objectives 1.2, 3.3*) |
| Perform Hooker's manzanita surveys. (*Objectives 1.1*) |
| Establish a propagation and planting program for Hooker's manzanita. (*Objectives 1.1*) |
| Conduct survey for pine rose in native Monterey pine forest habitat. (*Objectives 1.1*) |
| Develop and implement an Installation Conservation Design Plan (ICDP) to address stormwater pollution reduction, pollinator habitat establishment, urban tree planting opportunities, and wildlife habitat enhancement projects. (*Objectives 2.1, 2.2, 2.3, 3.2, 4.1, 4.2*) |
| Conduct special status and native plant species replacement plantings and maintenance projects as needed to mitigate construction impacts. (*Objectives 1.2, 3.3, 4.2, 4.3*) |
| Develop and implement training on sensitive resources for personnel, contractors, and other target audiences that identifies and discusses unique biological resources on USAG POM sites. (*Objectives 5.5, 6.1*) |
| Conduct periodic biological and ecological surveys to include flora, fauna, special status species, and vegetative communities. (*Objectives 1.1, 1.3*) |

### 4.1.8 Pest Management

The pest management program at the USAG POM sites operates consistently with, and under the authority of federal laws and military guidelines:

- *Federal Insecticide, Fungicide, and Rodenticide Ac*t
- EO 13112, Invasive Species Management
- Occupational Safety and Health Standards (29 CFR 1910)
- United States Environmental Protection Agency (USEPA) Regulations for Pesticide Programs (40 CFR 150-186)
- DOD Pest Management Program (DODI 4150.07)

These laws and regulations are implemented at the POM through the 2004 POM IPMP, which is currently being revised and updated to include SATCOM and the Benicia Army Cemetery. The IPMP is a framework through which pest management is defined and accomplished on the installation. It is written under the auspices of DODI 4150.07, DOD Pest Management Program, 2008, and AR 200-1, Environmental Protection and Enhancement.

DPW-E oversees development and implementation of the IPMP and works with other DPW divisions to ensure the pest management program is implemented accordingly. DPW O&M Division provides overall coordination and oversight for pest management activities at the POM and OMC. Pest management services are normally contracted to a commercial enterprise that provides services such as animal, insect, and weed control.

DPW-E emphasizes the use of IPMP principles that consist of the judicious use of both chemical and nonchemical control techniques to achieve effective pest management with minimal environmental contamination. DPW-E ensures that before any pesticides are applied, non-chemical control efforts are used to the maximum extent possible.

Presidio of Monterey, Ord Military Community, Satellite Communication Station at Camp Roberts, and Benicia Army Cemetery

#### 4.1.8.1 Animal Pests

California ground squirrels, Botta's pocket gophers, raccoons, rats, house mice, feral cats, and pigeons are the most common animal pests that occur on the POM. Measures identified in the IPMP are used to control these pests based on the surveillance and service requests submitted by building occupants, maintenance personnel, and residents. All animal pests are primarily controlled by mechanical, physical, and cultural methods such as trapping and sanitation.

For raccoons and feral cats, the pest control contractor provides trapping services if the pest is causing damage to property or threatening human health and safety. For raccoons, live trapping and release in approved locations is conducted. For feral cats, live trapping is conducted in coordination with the Monterey County Society for Prevention of Cruelty to Animals (SPCA). They are contacted before trapping to ensure they have room at the facility. Trapping and relocation or destruction of domestic animals is a potentially difficult community relations issue for the POM. Consequently, all trapping and relocation/dispatch of any wild animal is conducted in coordination with the SPCA, Humane Society, and the CDFW.

Cliff swallows nest colonies can damage equipment and supplies with their droppings. However, since cliff swallows are protected under the MBTA, removal of nests during the reproductive period is not allowed. In general, cliff swallows are managed by removal of partially built nests or removal of nests after the young have fledged and left the nest.

House sparrows and European starlings are not protected under the MBTA, so where feasible, bird deterrent devices are installed on buildings to reduce maintenance costs associated with cleaning up droppings. All other bird species are protected under the MBTA. To implement any action that impacts MBTA-protected birds, their nests, eggs (hatched or unhatched), egg shells, bird parts, etc., require coordination with, and possibly an MBTA permit issued by the USFWS. Protected migratory birds periodically occur on the installation and may need to be controlled. However, no such control has been conducted due to active implementation of conservation measures (Section 4.1.12).

Education and outreach plays an important role in IPM on the POM. DPW-E promotes implementation of IPM practices on the installation and continuously emphasizes that pest prevention—through good sanitation practices—is the responsibility of all individuals that occupy or maintain buildings or open spaces on the installation. Educating housing residents on the need to securely close garbage cans and keep pet food and water inside has significantly reduced the occurrences of raccoons within housing areas. Appendix O shows an example of an educational brochure that is distributed to personnel and residents of the POM.

#### 4.1.8.2 Plant Pests

The most common ornamental pest on coast live oak, is the oak moth. The moth larvae, a small inchworm, are known to defoliate coast live oak trees at the peak of its reproductive cycle. Although this pest can be controlled using *Bacillus thuringiensis* (Bt), trees are

able to survive defoliation, so the pest is typically allowed to complete its lifecycle. The oak moth seems to peak every 7 years, but the trees have adapted to the pest. The POM-contracted pest control company only applies Bt when aesthetic benefits outweigh the cost of control.

The most common plant pests on Monterey pine is pine pitch canker and beetles. Control of these pests are primarily conducted by the ISA-certified arborist and his field crew. According to the ISA-Arborist 2015 Tree Report, many of the trees on POM are infected with pine pitch canker disease and many are in poor health and condition. Hundreds of pine trees have been removed from the grounds of the POM due to death by pitch canker, or to control its spread. Lower to middle POM has a high incidence of pitch canker-infected trees and they are continually monitored by the ISA-Arborist and his crew to track the disease. Ongoing removal of severely infected material or dead trees is a maintenance standard to control the spread of the pathogen.

Monterey pines are at risk during times of drought stress, and pruning wounds can attract harmful twig and bark beetles. Insect infestations like these can devastate pine stands, so pruning is generally scheduled in cooler winter months to minimize these risks. In addition, an approved bark beetle preventative pesticide treatment is used as a prophylactic technique to protect healthy trees from infestation near construction sites. Prior to the start of construction, all Monterey pine trees scheduled for preservation within 100 feet of the project area shall be treated for bark beetle using standard practices recommended by the ISA-arborist and in accordance with the IPMP.

***Table 4-13: POM Pest Management Actions***

| **Conservation Measures** |
|---|
| Continue to coordinate with stakeholders to ensure that DPW-E is notified prior to removal of cliff swallow nests, as consultation with the USFWS and CDFW, in addition to the acquisition of a permit, may be necessary. (*Objectives 1.1, 1.2, 7.1)* |
| Encourage residents to spay or neuter cats as soon as they come of age. (*Objectives 6.1)* |
| Prohibit residents from feeding feral cats. (*Objectives 6.1)* |
| Encourage residents to decrease the available food, water, and habitation areas for raccoons in order to discourage raccoons from migrating to the lower POM from Huckleberry Hill Nature Preserve, which is their natural habitat. (*Objectives 3.4, 3.5, 6.1)* |
| Continue to work with DPW Operations and Maintenance Division to ensure that USEPA guidelines are followed for the appropriate use, handling, storage, and disposal of pesticides. (*Objectives 3.5)* |
| Continue to work with DPW Operations and Maintenance Division to ensure pest management activities are conducted to avoid adverse impacts on special status species. Prior to the start of construction, all Monterey pine trees scheduled for preservation within 100 feet of the project area shall be treated for bark beetle using standard practices recommended by the ISA-arborist and in accordance with the IPMP. (*Objectives 1.2, 3.5)* |
| Continue to ensure bark beetle and pine pitch canker conservation measures are implemented. (*Objectives 1.1, 1.2)* |
| **Conservation Projects** |
| Conduct a study to develop and implement a plan for raccoon population management. (*Objective 3.5*) |
| Continue to contract ISA-certified arborist to monitor trees on the POM and OMC for disease and potential hazards. (*Objectives 4.1, 4.2*) |

Presidio of Monterey, Ord Military Community, Satellite Communication Station at Camp Roberts, and Benicia Army Cemetery

| |
|---|
| Perform a study of black-tailed deer populations on the POM and OMC. (*Objective 3.5*) |
| Continue to coordinate and implement environmental education and outreach activities. (*Objectives 6.1, 6.2, 6.3*) |
| Revise and update the 2004 POM IPMP. (*Objectives 3.5*) |
| Develop and implement training on sensitive resources for personnel, contractors, and other target audiences that identifies and discusses unique biological resources on USAG POM sites. (*Objectives 5.5, 6.1*) |

### 4.1.9 Invasive Species Management

The authority on invasive species management is EO 13112, Invasive Species Management. The additional laws and guidelines that apply to managing invasive species on USAG POM sites are:

- *Federal Noxious Weed Act*
- *Carlson-Foley Act*
- *Endangered Species* Act
- Federal Insecticide
- *Fungicide, and Rodenticide Act*
- *Federal Land Policy and Management Act*
- *National Environmental Policy Act of 1969*
- *Noxious Weed Control and Eradication Act*
- AR 200-1

To effectively manage invasive species, DPW-E has developed BMPs following the framework of prevention; early detection; rapid assessment/response; control and management; and education and public awareness. Monitoring is also a key component. Appendix F, *Invasive Species Management Component Plan*, provides additional information on invasive plant prevention and control at USAG POM sites. The plan identifies invasive plants found on sites and control techniques used for management.

The focus of the DPW-E invasive species management program is on invasive weed management. Of particular concern on the POM is the threat of invasive plants, such as French broom, kikuyu grass, red brome, ice plant, and pampas grass to rare, endangered, or sensitive species habitat, specifically in Monterey pine forest vegetative communities. DPW-E is considering future adoption of the Weed Heuristics: Invasive Population Prioritization for Eradication Tool (WHIPPET) to assist in prioritizing management of invasive weed species on USAG POM sites.

Common land disturbance activities at the POM that provide vectors for invasive species introduction include site construction projects, facility and infrastructure maintenance and repair, utility installation, grounds maintenance, and pedestrian foot traffic. In addition, the choice of plants for landscaping offers another opportunity for the introduction of invasive species onto installation lands.

DPW-E performs periodic invasive species surveys in native forested areas on the POM and implements control efforts to manage invasive weed species populations that have the potential to affect Yadon's piperia (See Yadon's piperia Section 2.1.3.5.1). Table 4-14 outlines POM's invasive species management actions.

***Table 4-14: POM Invasive Species Management Actions***

| Conservation Measures |
|---|
| Ensure the use of drought-tolerant varieties of grasses for lawns, where deemed necessary, including Chewing's fescue, red fescue, and bentgrass. Tall fescue should be avoided because it is a non-native invasive species. Appendix M provides recommended grass varieties and planting specifications. Generally, lawns should be established with a balanced mixture of grass species depending on environmental conditions and projected use. (*Objectives 3.4, 4.4*) |
| Scout for invasive plants and evaluate risks before construction and maintenance projects occur. (*Objectives 3.4, 3.5)* |
| Develop site specific plans, where feasible, for controlling existing invasive plants before ground disturbing activities begin. (*Objectives 3.4, 3.5)* |
| Use xeriscaping and low-maintenance site specific native species in landscaping designs. (*Objectives 4.4, 6.3*) |
| Continue to conduct surveys and document occurrence of invasive plant species. (*Objectives 3.4, 3.5)* |
| Treat invasive plants along commonly-used access roads and staging areas to prevent the spread of seeds and propagules into work sites or unimproved areas. (*Objectives 3.4, 3.5)* |
| Designate specific areas for cleaning tools, vehicles, equipment, clothing, and gear to prevent the spread of seeds and propagules into work sites or unimproved areas. (*Objectives 3.4, 3.5)* |
| Minimize soil and vegetation disturbance, where feasible. (*Objectives 3.3)* |
| Ensure that invasive species construction mitigation measures identified in Appendix F are implemented accordingly. (*Objectives 3.4, 3.5)* |
| Ensure plant species used for landscaping do not include invasive or noxious species such as: eucalyptus, acacia, ice plant, pampas grass, and French broom. (*Objectives 3.4, 3.5)* |
| **Conservation Projects** |
| Control invasive, nonnative plant species in habitat occupied by Yadon's piperia and potential habitat areas. (*Objectives 1.1, 3.5*) |
| Conduct invasive species surveys. (*Objectives 3.4, 3.5)* |
| Perform invasive plant species control. (*Objectives 3.4, 3.5)* |
| Develop and print educational brochures or factsheets concerning special status species, invasive species, and other natural resource topics of interest. (*Objectives 5.5, 6.1*) |
| Continue to coordinate and implement environmental education and outreach activities. (*Objectives 6.1, 6.2, 6.3*) |
| Develop and implement training on sensitive resources for personnel, contractors, and other target audiences that identifies and discusses unique biological resources on USAG POM sites. (*Objectives 5.5, 6.1*) |

### 4.1.10 Outdoor Recreation Management

Outdoor recreation areas on the POM include Huckleberry Hill Nature Preserve and the Lower POM Historic Park. The City of Monterey leases Huckleberry Hill from the USAG POM, and manages it as both a forest and recreation area. Huckleberry Hill contains a trail system which provides access to various parts of the preserve for bird

watching, nature walking, bicycling, hiking, and general site seeing. The preserve's main feature is the dominant Monterey pine plant community. The Monterey pine has been designated as "rare" by the CNPS.

The Lower POM Historic Park are managed and used for various recreational activities, but mainly for the preservation and protection of historic properties. Sloat Monument provides one of the best on-base vantage points of the Monterey Bay. Few on-base sites have a clear views of the city of Monterey and Monterey Bay, and the monument is managed protect this aesthetic asset. In addition, Lower POM Historic Park is used by history-advocating groups for various historical ceremonies.

The City of Monterey manages the Huckleberry Hill Nature Preserve according to the Forest Management Plan (Appendix H) and the Lower Historic POM Park according to the Historic Park Operation Plan. Table 4-15 outlines POM's outdoor recreation management actions.

***Table 4-15: POM Outdoor Recreation Management Actions***

| Conservation Measures |
|---|
| Implement vegetation management conservation measures (Section 4.1.3). |
| Implement forest management conservation measures identified in (Section 4.1.4). |
| Implement fish and wildlife conservation measures identified in (Section 4.1.6). |
| Implement invasive species conservation measures identified in (Section 4.1.9). |
| **Conservation Projects** |
| Produce environmental awareness materials and install informational signs to identify sensitive natural and cultural resources. (*Objectives 6.1, 6.3*) |
| Continue to coordinate and implement environmental education and outreach activities. (*Objectives 6.1, 6.2, 6.3*) |
| Develop and print educational brochures or factsheets concerning special status species, invasive species, and other natural resource topics of interest. (*Objectives 5.5, 6.1*) |
| Develop and implement training on sensitive resources for personnel, contractors, and other target audiences that identifies and discusses unique biological resources on USAG POM sites. (*Objectives 5.5, 6.1*) |

### 4.1.11 Conservation Law Enforcement

Conservation law enforcement staff is not present on the POM. The Natural Resources Manager (NRM) serves as a liaison to the installation security, CDFW game wardens, and the POM police when any conservation law enforcement issues occur. However, a new Army memorandum was released in July 2015 that requires at least one police officer from POM be trained as a Conservation Law Enforcement Officer (CLEO). The NRM will continue to work with POM police to ensure training is fulfilled. Table 4-16 outlines POM's conservation law enforecement management actions.

***Table 4-16: POM Conservation Law Enforcement Management Actions***

| Conservation Measures |
|---|
| Continue to maintain an open line of communication with installation security, CDFW game wardens, and the POM police in regards to natural resources management (i.e., training opportunities, patrol strategies, coordination requirements). (*Objectives 7.1, 7.2*) |
| **Conservation Projects** |
| Continue to coordinate and implement environmental education and outreach activities. (*Objectives 6.1, 6.2, 6.3*) |
| Develop and implement training on sensitive resources for personnel, contractors, and other target audiences that identifies and discusses unique biological resources on USAG POM sites. (*Objectives 5.5, 6.1*) |

### 4.1.12 Environmental Awareness, Education, and Outreach

To successfully manage USAG POM site's natural resources, DPW-E engages and educates community members on and off the installation on a regular basis to increase environmental awareness. Each year, DPW-E coordinates Earth Day activities for POM personnel and residents. In coordination with internal and external stakeholders, periodic trash clean-ups, endangered species monitoring, invasive plant removal, and tree planting activities are also conducted to increase involvement and support for the installation's conservation programs. The official website of POM (http://www.monterey.army.mil/) is used to disseminate educational materials and notifications of outreach activities.

In addition, DPW-E has identified the need to ensure that installation personnel and contractors working near or adjacent to special status species on POM have the appropriate education and training through an environmental brief. The environmental brief should include a review of the legal requirements of the ESA, the findings for violating the ESA, and conservation measures to avoid impacts to listed species. DPW-E will continue to work on ensuring that either a classroom or field training/briefing is conducted for contractors and installation personnel prior to commencing a project. DPW-E will develop an environmental brief for target audiences that highlights sensitive resources on USAG POM sites. Table 4-17 outlines POM'S environmental, education, and outreach management actions.

***Table 4-17: POM Environmental, Education, and Outreach Management Actions***

| Conservation Measures |
|---|
| Continue to update the USAG POM Environmental Division webpage with new information and environmental education and outreach materials. (*Objectives 6.1*) |
| Continue to engage with community members on and off USAG POM sites to increase environmental awareness. (*Objectives 6.1*) |
| Continue to work with contractors to ensure workers are properly trained on natural resources on POM prior to starting any type of construction, maintenance, and landscaping project. *(Objectives 5.4, 6.1)* |
| Develop and maintain working relations with local and regional community groups, universities, and other natural resource management agencies to coordinate natural resource management strategies. *(Objectives 7.1, 7.2)* |

Presidio of Monterey, Ord Military Community, Satellite Communication Station at Camp Roberts, and Benicia Army Cemetery

| |
|---|
| Continue to develop and disseminate educational materials via websites, outreach activities, the local library, FMWR, etc. *(Objectives 6.1, 7.1)* |
| **Conservation Projects** |
| Produce environmental awareness materials and install informational signs to identify sensitive natural and cultural resources. (*Objectives 6.1, 6.3*) |
| Implement an awareness educational program for Yadon's piperia. *(Objectives 1.2, 6.1)* |
| Develop and print educational brochures or factsheets concerning special status species, invasive species, and other natural resource topics of interest. (*Objectives 5.5, 6.1*) |
| Continue to coordinate and implement environmental education and outreach activities. (*Objectives 6.1, 6.2, 6.3*) |
| Develop and implement training on sensitive resources for personnel, contractors, and other target audiences that identifies and discusses unique biological resources on USAG POM sites. (*Objectives 5.5, 6.1*) |

### 4.1.13 Training for Natural Resources Personnel

DPW-E encourages training opportunities for personnel to ensure that individuals engaged in natural resources management have the appropriate experience, knowledge, and technical skills required to implement this INRMP. Personnel shall be knowledgeable in regulatory laws and DOD- and Army-specific policies and guidelines for natural resources management. In addition, personnel shall be up to date with modern tools and techniques used in natural resources management (i.e., use of GPS/Geographic Information Systems [GIS], control techniques and procedures for invasive species management, LID designs, methods to preserve natural habitats). As the operational budget allows, typical training conferences and classes attended by the natural resources staff on an annual basis may include the following:

- Basic Environmental Law
- Natural Resources Management and Compliance
- NEPA Application
- Wildlife Population Conservation
- Forest Management
- ESA Implementation and Section 7 Consultation
- Environmental Geographic Information System/Geostatistics
- Ecology and Field Biology Training
- Habitat Conservation Planning for Endangered Species
- Migratory Bird Conservation
- Outreach and Partnership Training Programs

Table 4-18 outlines POM's training for natural resources personnel management actions.

***Table 4-18: POM Training for Natural Resources Personnel Management Actions***

| Conservation Measures |
|---|
| Continue to provide opportunities for personnel to enhance and gain new skills in natural resources management techniques. (*Objectives 5.3, 5.4, 5.5*) |
| **Conservation Projects** |
| Ensure natural resources management training opportunities. (*Objectives 5.3, 5.4, 5.5*) |

### 4.1.14 Geographic Information Systems (GIS) Management, Data Integration, Access, and Reporting

GIS management is a key element in all land management and planning activities. It provides a readily available analytical tool and is a major resource to archive actions taken within USAG POM sites. Using GIS as a tool to do queries to find the most suitable location for development will ultimately minimize the threat of expansion on sensitive biological resources and TES habitat at USAG POM sites.

GIS is used to document many of the surveys and management activities conducted at USAG POM sites, and DPW has established a GIS database for natural resources management. Examples of data layers created and maintained include: vegetative communities; invasive plant species occurrence and areas treated for invasive plant control; endangered species habitats; and occurrence records for listed and special status species. These data layers are routinely used to assess impacts of proposed projects on installation natural resources as well as in reports summarizing surveys and management actions completed. However, the database needs to be updated and GIS data collection and compilation methods need improvement. DPW-E plans to perform the following actions to move forward in enhancing its GIS management and reporting procedures:

- Update GIS mapping system and database for natural resource management at all USAG POM sites so that major accomplishments, events, and activities can be summarized and archived by the GIS database for use in annual reports, data calls, and planning.
- Update specific GIS data layers for special status and invasive species locations.
- Establish GIS standards for data collection and ensure long-term GIS database administration and management.

Table 4-19 outlines POM's GIS management, data integration, access, and reporting management actions.

***Table 4-19: POM GIS Management, Data Integration, Access, and Reporting Management Actions***

| Conservation Measures |
|---|
| Ensure that established GIS standards for data collection are written into contract specifications. This will assist in standardizing data collection and allow for ease of data input and analysis. (*Objectives 5.4, 5.5*) |
| Ensure that annual data and inventory maps are entered into the GIS mapping system and database. (*Objectives 5.4, 5.5*) |
| Ensure that new populations of special status species are mapped and entered into the GIS database. (*Objectives 5.4, 5.5*) |
| **Conservation Projects** |
| N/A; however, most projects in the Project Implementation Schedule (Appendix B) have requirements for GIS data collection and inclusion in GIS database updates. |

## 4.2 ORD MILITARY COMMUNITY

### 4.2.1 Water Resources Management

Refer to POM Section 4.1.1 for regulatory information. No natural surface waters occur on OMC, beyond stormwater runoff. Like POM, NRP works with DPW, CalAm, and other contractors to implement the Sediment Erosion and Sediment Control Component Plan (Appendix E) to reduce potential pollution to stormwater runoff. Stormwater management and erosion and sediment control are discussed below.

#### 4.2.1.1 Stormwater Management

OMC's stormwater management program mirrors that of the POM. Refer to Section 4.1.1.1 for a general overview of regulatory requirements and program management. Table 4-20 outlines OMC's stormwater management actions.

***Table 4-20: OMC Stormwater Management Actions***

| Conservation Measures |
|---|
| Ensure adherence to the Phase II MS4 permit requirements, CGP, and project-specific SWPPPs to reduce polluted runoff from emptying into the Monterey Bay. (*Objectives 2.1, 2.2, 2.3*) |
| Continue to work with stakeholders to implement the SESCCP for land-disturbing activities to reduce polluted runoff. (*Objectives 2.1, 2.3, 7.1*) |
| Continue to provide and solicit local and regional training opportunities on stormwater management for contractors and installation personnel. (*Objectives 2.1, 2.2, 5.5*) |
| Continue to implement education and outreach program to inform base personnel, their dependents, and contractors about stormwater pollution and steps that can be taken to reduce it. (*Objectives 2.1, 2.2, 6.1*) |
| **Conservation Projects** |
| Develop and implement an Installation Conservation Design Plan (ICDP) to address stormwater pollution reduction, pollinator habitat establishment, urban tree planting opportunities, and wildlife habitat enhancement projects. (*Objectives 2.1, 2.2, 2.3, 3.2, 4.1, 4.2*) |

### 4.2.1.2 Erosion and Sediment Control

OMC's stormwater management program mirrors that of POM. Refer to Section 4.1.1.2 for a general overview of regulatory requirements and program management. Table 4-21 outlines OMC's erosion and sediment control managemet actions.

***Table 4-21: OMC Erosion and Sediment Control Management Actions***

| Conservation Measures |
|---|
| Ensure adherence to the Phase II MS4 permit requirements, CGP, and project specific SWPPPs to reduce polluted runoff from emptying into the Monterey Bay. (*Objectives 2.1, 2.2, 2.3*) |
| Continue to work with stakeholders to implement the SESCCP for land disturbing activities to reduce polluted runoff. (*Objectives 2.1, 2.3, 7.1*) |
| **Conservation Projects** |
| Conduct special status and native plant species replacement plantings and maintenance projects as needed to mitigate construction impacts. (*Objectives 1.2, 3.3, 4.2, 4.3*) |
| Continue to coordinate and implement environmental education and outreach activities. (*Objectives 6.1, 6.2, 6.3*) |

### 4.2.1.3 Floodplain Management

EO 11988, Floodplain Management, requires federal agencies to manage floodplains and reduce adverse associated impacts. According to FEMA's most recent floodplain maps, OMC is in an area of minimal risk for flooding (FEMA 2009). Table 4-22 outlines OMC's floodplain management actions.

***Table 4-22: OMC Floodplain Management Actions***

| Conservation Measures |
|---|
| Continue to implement stormwater management conservation measures outlined in Section 4.1.1.1. (*Objectives 2.1, 2.2, 2.3*) |
| Continue to implement soil erosion and sediment control conservation measures outlined in Section 4.1.1.2. (*Objectives 2.1, 2.2, 2.3*) |
| **Conservation Projects** |
| N/A |

### 4.2.2 Coastal Zone Management

Coastal zone management on OMC mirrors that of POM. See Section 4.1.3 for a general overview of the regulatory requirements.

Although the CZMA (16 United States Code §1453) states, "*Excluded from the coastal zone are lands the use of which is by law subject solely to the discretion of or which is held in trust by the Federal Government, its officers or agents*", this does not obviate the

need for federal consistency where activites on OMC have effects on the coastal zone. Table 4-23 outlines OMC's coastal zone management actions.

***Table 4-23: OMC Coastal Zone Management Actions***

| Conservation Measures |
|---|
| Complete a federal consistency determination for any spillover effects on non-excluded lands, water use, or natural resources of the coastal zone. (*Objectives 7.1, 7.2*) |
| Continue to implement stormwater management conservation measures outlined in Section 4.1.1.1. (*Objectives 2.1, 2.2, 2.3*) |
| Continue to implement erosion and sediment control conservation measures outlined in Section 4.1.1.2. (*Objectives 2.1, 2.2, 2.3*) |
| **Conservation Projects** |
| Develop and implement an Installation Conservation Design Plan (ICDP) to address stormwater pollution reduction, pollinator habitat establishment, urban tree planting opportunities, and wildlife habitat enhancement projects. (*Objectives 2.1, 2.2, 2.3, 3.2, 4.1, 4.2*) |
| Continue to coordinate and implement environmental education and outreach activities. (*Objectives 6.1, 6.2, 6.3*) |

### 4.2.3 Vegetation Management and Grounds Maintenance

Vegetation management and grounds maintenance on OMC mirrors that of POM. See Section 4.1.3 for a general overview of the regulatory requirements and program management. OMC is primarily improved, developed land with some unimproved, open space areas.

#### 4.2.3.1 Improved Lands

This category includes intensive grounds maintenance activities that must be planned and performed annually as a fixed requirement. Activities include mowing; periodic irrigation (where designated), fertilization, cultivation, aeration, seeding, sodding, spraying, pruning, trimming; weed, dust, and erosion control; special plantings for drainage, landscape effect, wind, and sound abatement; supplemental plantings; and other intensive practices. Vegetative communities on improved lands include mixed coast live oak woodland and coast live oak woodland with landscaped trees.

Two special status species have been documented in improved areas on OMC: the federally threatened Monterey spineflower and the California tiger salamander. Figure 2-26 depicts the location of recently documented occurrence of the species. Monterey spineflower occurs close to roads and buildings; areas are marked and delineated so that no vegetation management and grounds maintenance occur within these areas. The California tiger salamander was documented within an operation and maintenance facility in the northwest corner of OMC. There is no California tiger salamander habitat in this area, as it is predominantly asphalt. See Section 2.2.3.5 for more information on these special status species.

For development of new landscapes, DPW-E works with other DPW divisions to design low-maintenance landscapes, such as xeriscaping, and using native plant species from the approved OMC planting list (Appendix J. DPW also maintains standards to ensure that invasive plant species are not used in landscape designs, see Appendix F).

#### 4.2.3.2 Unimproved Lands

Unimproved lands exist in patches throughout OMC and are known to support special status species described in Chapter 2.0. Therefore, no landscape maintenance is expected to be required or occur on unimproved lands except for removal and dead wooding of trees that pose a safety risk along walkways and roads, and grass cutting for fire management. Vegetative communities in this category include mixed coastal scrub/grassland, Monterey cypress stands, black sage scrub, coast live oak woodland, mixed grassland and maritime chaparral, and mixed grassland/shrub with scattered trees.

Planting in native plant communities on unimproved grounds, such as the coast live oak woodland and maritime chaparral, is not recommended and should only be done to enhance or restore habitat. Further, it should be strictly limited to species that are indigenous to those vegetative communities in order to preserve the integrity of the local genetic stock. The primary purpose of any planting in unimproved areas should be to increase the habitat value of native plant communities for wildlife and should only be done in close coordination with DPW-E. Table 4-24 outlines OMC's unimproved lands management actions.

***Table 4-24: OMC Vegetation and Ground Maintenance Management Actions***

| Conservation Measures |
|---|
| Ensure that lawns, where feasible, are not used in landscape designs and are instead replaced with other forms of plants and landscape elements that require less maintenance and are drought-resistant. (*Objective 4.4*) |
| Use drought tolerant varieties of grasses for lawns, where deemed necessary, including Chewing's fescue, red fescue, and bentgrass. Tall fescue should be avoided because it is a non-native invasive species. Appendix M provides recommended grass varieties and planting specifications. Generally, lawns should be established with a balanced mixture of grass species depending on environmental conditions and projected use. (*Objectives 3.4, 4.4*) |
| Ensure plant species used for landscaping do not include invasive or noxious species such as, eucalyptus, acacia, ice plant, pampas grass, or French broom. (*Objectives 3.4, 6.3*) |
| Use xeriscaping and low-maintenance site-specific native species in landscaping designs. (*Objectives 4.4, 6.3*) |
| Ensure that no irrigation occurs under established native California tree species in landscaping. (*Objective 4.1*) |
| Install landscaping, as opportunities arise, in non-landscaped areas, characterized by bare ground or a cover of non-native weed or ruderal species (a plant that grows in wasteland, trash, or disturbed ground). (*Objectives 3.1, 4.4, 6.3*) |
| Ensure that any tree work, including the cutting of roots, are supervised by an ISA-certified arborist. (*Objectives 4.1, 4.2*) |
| Avoid cutting live Monterey pine material (including roots) during the height of bark beetle season (generally March through October). Damaged live pine material emits a resin that attracts bark beetles which are the primary vector of pine pitch canker. (*Objective 4.2*) |

| |
|---|
| In cooperation with the City of Monterey and other agencies, conduct active management of Monterey pine forest to slow the spread of pine pitch canker. (*Objectives 4.1, 4.2, 7.2*) |
| Schedule grounds maintenance activities, where feasible, that could potentially disturb migratory birds outside the nesting season (February to August). Projects or activities that must occur during the bird nesting season will be reviewed and approved by DPW-E in advance and may require a nesting bird survey prior to commencing work. The survey(s) must be performed by an experienced biologist familiar with migratory birds of the central coast and their breeding behavior. The surveys will be accomplished during the morning hours (6:30 to 11:00 am) and will not take place during periods of excessive or abnormal cold, heat, wind, rain or other inclement weather that may reduce the likelihood of detection. Generally, the biologist will survey all areas that may provide suitable nesting habitat within 300 feet (500 feet for raptors) of project activities. (*Objectives 1.3, 3.3*) |
| **Conservation Projects** |
| Continue to contract ISA-certified arborist to monitor trees on the POM and OMC for disease and potential hazards. (*Objectives 4.1, 4.2*) |
| Conduct special status and native plant species replacement plantings and maintenance projects as needed to mitigate construction impacts. (*Objectives 1.2, 3.3, 4.2, 4.3*) |
| Conduct periodic biological and ecological surveys to include flora, fauna, special status species, and vegetative communities. (*Objectives 1.1, 1.3*) |
| Develop and implement training on sensitive resources for personnel, contractors, and other target audiences that identifies and discusses unique biological resources on USAG POM sites. (*Objectives 5.5, 6.1*) |
| Develop and print educational brochures or factsheets concerning special status species, invasive species, and other natural resource topics of interest. (*Objective 5.5, 6.1*) |

#### 4.2.3.3 Urban Forestry

Scattered stands of cypress pine and coast live oak woodland occur on OMC adjacent to developed areas. DPW-E works with stakeholders carefully care and manage these tree stands in order to advocate the role of trees as a critical part of the urban infrastructure, and to maintain forest stands as buffer areas between developed areas and undeveloped areas. Buffer areas serve as important habitat for native wildlife and migratory birds.

Like on the POM, DPW-E has adopted a 2:1 tree removal ratio. Replaced trees must be provided with supplementary care (water and weeding) for 3–5 years during the establishment stage. The placement of new, native trees will be determined by an arborist at the time of the planting. Coordination with DPW-E is required prior to any tree removal project. DPW-E works closely with other DPW divisions and the USACE to enforce and implement the tree removal ratio/mitigation.

***Table 4-25: OMC Urban Forestry Management Actions***

| **Conservation Measures** |
|---|
| Ensure that any tree work, including the cutting of roots, are supervised by an ISA-certified arborist. (*Objectives 4.1, 4.2*) |
| Avoid cutting live Monterey pine material (including roots) during the height of bark beetle season (generally March through October). Damaged live pine material emits a resin that attracts bark beetles which are the primary vector of pine pitch canker. (*Objectives 4.1, 4.2*) |
| Support and encourage research of other agencies/conservation groups that are monitoring and evaluating pine pitch canker. (*Objective 4.2, 7.2*) |

| |
|---|
| Ensure that any native trees removed during new construction are replaced with the same species at a ratio of 2:1. Replaced trees must be provided with supplementary care (water and weeding) for 3–5 years during the establishment phase. The placement of new, native trees will be determined by an arborist at the time of the planting. (*Objective 4.3*) |
| **Conservation Projects** |
| Continue to contract ISA-certified arborist to monitor trees on the POM and OMC for disease and potential hazards. (*Objectives 4.1, 4.2*) |
| Conduct special status and native plant species replacement plantings and maintenance projects as needed to mitigate construction impacts. (*Objectives 1.2, 3.3, 4.2, 4.3*) |
| Develop and implement training on sensitive resources for personnel, contractors, and other target audiences that identifies and discusses unique biological resources on USAG POM sites. (*Objectives 5.5, 6.1*) |
| Develop and implement Installation Conservation Design Plan (ICDP) to address stormwater pollution reduction, pollinator habitat establishment, urban tree planting opportunities, and wildlife habitat enhancement projects. (*Objectives 2.1, 2.2, 2.3, 3.2, 4.1, 4.2*) |

### 4.2.3.4 Pollinator Habitat

OMC pollinator habitat management mirrors that of POM. Refer to Section 4.1.3.5 for more information. Table 4-26 outlines OMC's pollinator habitat management actions.

***Table 4-26: OMC Pollinator Habitat Management Actions***

| **Conservation Measures** |
|---|
| Use low-maintenance site-specific native species in landscaping designs. (*Objectives 4.1, 4.4*) |
| Avoid, where feasible, using herbicides and pesticides in sensitive pollinator habitats. (*Objectives 3.2, 3.5*) |
| Develop and maintain working relationships with other organizations addressing pollinator habitat issues. (*Objectives 7.1, 7.2*) |
| **Conservation Projects** |
| Develop and implement an Installation Conservation Design Plan (ICDP) to address stormwater pollution reduction, pollinator habitat establishment, urban tree planting opportunities, and wildlife habitat enhancement projects. (*Objectives 2.1, 2.2, 2.3, 3.2, 4.1, 4.2*) |

### 4.2.3.5 Construction Mitigation Measures

Although land on OMC has been designated as "development" with no management restrictions placed upon them as the result of the 1997 Fort Ord HMP, DPW-E is still required to identify any sensitive biological resources within developable areas to determine if any biological resources can be salvaged for use in restoration activities within reserve areas. Per this requirement, biological surveys are conducted prior to any proposed construction project that may affect sensitive biological resources. If found, resources are documented and, if feasible, project scopes are altered to minimize or avoid impacts to resources. Documentation data is then compiled and used for future NEPA review of proposed projects occurring on OMC.

During project construction, DPW-E staff works with stakeholders on a regular basis to ensure that appropriate mitigation measures and BMPs are implemented accordingly for all construction projects. DPW-E has also developed a set of site-specific construction mitigation measures that, where feasible, are written directly into the contract specifications or are required per the individual project NEPA review. Mitigation measures encompass all components of natural resources management on OMC, such as soil erosion, vegetation management, and endangered species protection. These mitigation measures are outlined in Appendix N. Table 4-27 outlines OMC's construction mitigation management actions.

***Table 4-27: OMC Construction Mitigation Measures Management Actions***

| Conservation Measures |
|---|
| Avoid negative impacts to protected trees, including Monterey pine, coast live oak, and Monterey cypress, to the maxim extent feasible, for any planned construction and/or lands management activities. This includes temporarily fencing all trees identified for preservation during construction activities. Generally fencing shall be located at the edge of the root zone. The root zone is determined to be that area located out a distance 15 times the DBH in all directions. (*Objectives 3.3, 4.1, 4.2*) |
| Avoid, where feasible, new construction and intrusive operation and maintenance practices in oak woodland and maritime chaparral habitats to preserve sensitive biological resources. (*Objectives 3.3, 4.1, 4.2*) |
| Prohibit irrigation, trenching, compaction, or other soil condition-altering activities that occur within the drip line of naturally occurring Monterey pine, coast live oak trees, and horticultural trees (including Monterey cypress and eucalyptus trees) unless necessary or unavoidable. Such activities can compromise the health and structural stability of the tree, and can create a safety hazard. If unavoidable, the proponent shall coordinate the activity with an ISA-certified arborist and DPW-E. (*Objectives 4.1, 4.2*) |
| Ensure that any tree work, including the cutting of roots, are supervised by an ISA-certified arborist. (*Objectives 4.1, 4.2*) |
| Ensure that any native trees removed during new construction are replaced with the same species at a ratio of 2:1. Replaced trees must be provided with supplementary care (water and weeding) for 3–5 years during the establishment phase. The placement of new, native trees will be determined by an arborist at the time of the planting. (*Objective 4.3*) |
| Ensure that prior to the start of construction, all Monterey pine trees scheduled for preservation within 100 feet of the project area shall be treated for bark beetle using standard practices recommended by the ISA-arborist and in accordance with the IPMP. Unseasoned lumber or newly cut pine trees give off a fragrance that attracts the beetles to the site. (*Objectives 4.1, 4.2*) |
| Schedule construction projects, where feasible, that could potentially disturb migratory birds outside the nesting season (February to August). Projects or activities that must occur during the bird nesting season will be reviewed and approved by DPW-E in advance and may require a preconstruction nesting bird survey. The survey(s) must be performed by an experienced biologist familiar with migratory birds of the central coast and their breeding behavior. The surveys will be accomplished during the morning hours (6:30 to 11:00 am) and will not take place during periods of excessive or abnormal cold, heat, wind, rain or other inclement weather that may reduce the likelihood of detection. Generally, the biologist will survey all areas that may provide suitable nesting habitat within 300 feet (500 feet for raptors) of project activities. (*Objectives 1.3, 3.3*) |
| **Conservation Projects** |
| Continue to contract ISA-certified arborist to monitor trees on the POM and OMC for disease and potential hazards. (*Objectives 4.1, 4.2*) |

| |
|---|
| Conduct special status and native plant species replacement plantings and maintenance projects as needed to mitigate construction impacts. (*Objectives 1.2, 3.3, 4.2, 4.3*) |
| Develop and implement training on sensitive resources for personnel, contractors, and other target audiences that identifies and discusses unique biological resources on USAG POM sites. (*Objectives 5.5, 6.1*) |

### 4.2.4 Wildland Fire Management

OMC is highly developed and is the site of the vast majority of USAG POM base housing. No prescribed burning occurs on OMC. However, OMC is located adjacent to undeveloped portions of the former Fort Ord, which contains lands that are highly susceptible to wildfires and pose an urban interface hazard. Additionally, the area once used as a range, on the former Fort Ord, is subject to prescribed burns to aid in detection and ordinance removal.

#### 4.2.4.1 Fire Service

The USAG POM Fire Department provides fire management at OMC. Through a state-wide mutual agreement, county and state resources are also available to OMC for wildfire service support. Area fire departments respond as either auto-aid or per mutual aid agreement. Reporting of wildland fires is executed and maintained on Monterey's internal data collection program. Additionally, Monterey Fire forwards a monthly summary of all emergency responses on USAG POM sites to the POM Fire Department for tracking and data collection.

#### 4.2.4.2 Prevention

Fire prevention activities to mitigate the threat of wildland fire are focused on maintaining defensible space between the facilities and all wildland areas that surround OMC. On a semi-annual basis, the POM Fire Department conducts a survey of OMC to ensure grass and shrubs do not encroach on facilities, trees are trimmed, and access roads are clear. In the event of grass and shrub encroachment, the appropriate agency (DPW or RCI) is notified of the hazard so that a clearing activity can be scheduled. Table 4-28 outlines OMC's wildland fire management actions.

***Table 4-28: OMC Wildland Fire Management Actions***

| **Conservation Measures** |
|---|
| Continue to work with the POM Fire Department, DPW O&M Division, and contractors to ensure fuel breaks are surveyed and maintained. (*Objectives 6.1, 7.1*) |
| **Conservation Projects** |
| Produce environmental awareness materials and install informational signs to identify sensitive natural and cultural resources. (*Objectives 6.1, 6.3*) |
| Continue to coordinate and implement environmental education and outreach activities. (*Objectives 6.1, 6.2, 6.3*) |

### 4.2.5 Fish and Wildlife Management

Refer to Section 4.1.6 for the regulatory requirements for fish and wildlife management on OMC. Unlike the POM, land on OMC has been designated as "development" with no management restrictions placed upon them as the result of the 1997 Former Fort Ord HMP. Therefore, the focus of the fish and wildlife management program on OMC is to minimize and avoid impacts to fish and wildlife species and their habitat. The goal is to enhance and maintain native plant and wildlife populations, communities, and assemblages. Per the 1997 Former Fort Ord HMP requirement, biological surveys are conducted prior to any proposed construction project that may affect sensitive biological resources. If found, resources are documented and, where feasible, project scopes are altered to minimize or avoid impacts to resources. Documentation data is then compiled and used for future NEPA review of proposed projects occurring on OMC.

Based on the land use classifications and typical wildlife associations, the primary native wildlife habitats on OMC are the coast live oak woodland, mixed coastal scrub/grassland, maritime chaparral, and Monterey cypress stands. No native or game fish populations occur on OMC due to the lack of natural bodies of surface water. To enhance and maintain native plant and wildlife populations, communities, and assemblages, DPW-E performs the following actions:

- conducts NEPA review of specific projects to evaluate potential impacts of new construction and operation and maintenance projects. DPW-E reviews, on average, 100 projects (i.e., construction, repairs, landscape, and environmental planning documents) per year to minimize, avoid, and/or mitigate potential impacts to wildlife and their habitat
- preserves and restores urban forest through enforcement of tree removal ratios
- prohibits the use of non-native plants in landscape designs and promotes the use of native species
- removes non-native species in landscapes and, where feasible, replaces them with native species on the OMC approved planting list
- enforces implementation of cultural practices to reduce the need for implementing detrimental control techniques to raccoons, deer, and coyotes
- reviews contractor's construction project plans and conducts site visits to ensure appropriate soil erosion and sediment control and BMPs are implemented to minimize impacts to native plant communities
- reviews landscaping contractor's project plans and conducts site visits to ensure new landscape designs utilize native plants beneficial to wildlife and pesticide and herbicide use are not detrimental to wildlife species or their habitat

#### 4.2.5.1 Migratory Bird Management

OMC's migratory bird management programs mirrors that of POM. Refer to Section 4.1.6.2 for regulatory information and a general overview of management.

***Table 4-29: OMC Fish and Wildlife Management Actions***

| Conservation Measures |
|---|
| Implement vegetation management conservation measures listed in Section 4.1.3 to ensure conservation and restoration of wildlife habitat (i.e., using native plants and removing non-native plants in landscapes). (*Objectives 3.1, 3.4, 3.5, 4.4*) |
| Implement stormwater runoff conservation measures (Section 4.1.1.1) to reduce pollutants into Monterey Bay. (*Objectives 2.1, 2.3*) |
| Add avian data to the DOD Coordinated Bird Monitoring Database. (*Objectives 1.1, 1.3*) |
| Work with stakeholders to identify appropriate, non-lethal bird deterrent options for facility use such as, rooting and landing prevention devices and visual scare devices. (*Objectives 1.3, 5.3, 7.2*) |
| Develop working relationships with other agencies and organizations to identify bird conservation sites, participate in efforts to collect data on migratory bird species biology, and actions for conservation management. (*Objectives 1.3, 7.2*) |
| Remove feral cats from the installation and educate the public about keeping cats indoors (Section 4.1.8). (*Objectives 3.5, 6.1*) |
| Schedule construction and maintenance projects, where feasible, that could potentially disturb migratory birds outside the nesting season (February to August). Projects or activities that must occur during the bird nesting season will be reviewed and approved by DPW-E in advance and may require a preconstruction nesting bird survey. The survey(s) must be performed by an experienced biologist familiar with migratory birds of the central coast and their breeding behavior. The surveys will be accomplished during the morning hours (6:30 to 11:00 am) and will not take place during periods of excessive or abnormal cold, heat, wind, rain or other inclement weather that may reduce the likelihood of detection. Generally, the biologist will survey all areas that may provide suitable nesting habitat within 300 feet (500 feet for raptors) of project activities. (*Objectives 1.3, 3.3*) |
| **Conservation Projects** |
| Develop and implement an Installation Conservation Design Plan (ICDP) to address stormwater pollution reduction, pollinator habitat establishment, urban tree planting opportunities, and wildlife habitat enhancement projects. (*Objectives 2.1, 2.2, 2.3, 3.2, 4.1, 4.2*) |
| Conduct special status and native plant species replacement plantings and maintenance projects as needed to mitigate construction impacts. (*Objectives 1.2, 3.3, 4.2, 4.3*) |
| Develop and implement training on sensitive resources for personnel, contractors, and other target audiences that identifies and discusses unique biological resources on USAG POM sites. (*Objectives 5.5, 6.1*) |
| Conduct a study to develop and implement a plan for raccoon population management. (*Objective 3.5*) |
| Perform a study of black-tailed deer populations on the POM and OMC. (*Objective 3.5*) |
| Conduct invasive species surveys. (*Objectives 3.4, 3.5*) |
| Perform invasive plant species control. (*Objective 3.5*) |
| Conduct periodic biological and ecological surveys to include flora, fauna, special status species, and vegetative communities. (*Objectives 1.1, 1.3*) |

### 4.2.6 Federally Threatened, Endangered, and Special Status Species Management

Refer to Section 2.1.3.5 for regulatory requirements and policies regarding federally listed and special status species management. Although, OMC has been designated as "development" with no management restrictions placed upon them (1997 Former Fort Ord HMP), DPW-E is still required to identify any sensitive biological resources within "developable" area to determine if any biological resources can be salvaged for use in restoration activities within reserve areas. Per this requirement, biological surveys are

conducted prior to any proposed construction project that may affect sensitive biological resources. If found, resources are documented and, if feasible, project scopes are altered to minimize or avoid impacts to resources. Documentation data is then compiled and used for future NEPA review of proposed projects occurring on OMC. Two federally listed species occur on OMC: Monterey spineflower and California tiger salamander. See Table 2-6 and Table 2-7 for a complete listing of federally listed and special status species known to occur on OMC.

#### 4.2.6.1 Monterey Spineflower

DPW-E coordinates and consults with the USFWS on any proposed action that may affect the species or its habitat and implements the 1997 Former Fort Ord HMP requirements. This is primarily conducted through the NEPA review process. In addition, site visits are conducted on a regular basis

- prior to commencement of a project to identify if Monterey spineflower occur within or near construction and maintenance areas, including staging, and access areas (if present, plants are documented, counted, photographed, and conspicuously flagged and/or fenced to maximize avoidance);
- during project activities to ensure appropriate fencing has been installed and that only designated areas approved for staging and vehicles are used; and
- upon completion of project, to ensure that all fencing is removed and that the project area has been restored to its original state.

DPW-E also performs periodic surveys of Monterey spineflower to assist in documenting new plant locations and establishing areas to be protected from ongoing construction and maintenance activities.

In addition, DPW-E performs the following for Monterey spineflower management:

- adopts, to the maximum extent possible, the USFWS recovery goals for Monterey spineflower management
- maintains an open line of communication with all persons (internal and external stakeholders) and agencies interested in or who may impact Monterey spineflower and other special status plant and animal species on OMC
- works with other DPW divisions, USACE, and contractors to develop and implement appropriate impact avoidance and minimization measures for work performed adjacent to or in Monterey spineflower habitat
    - this includes ensuring appropriate protective fencing and signs are installed and posted prior to commencing work, conducting surveys prior to commencement of projects, and providing workers with appropriate training

### 4.2.6.2 Other Federally Listed and Special Status Species

DPW-E performs the following for management of other federally listed and special status species:

- consults and coordinates with the USFWS on any proposed action on OMC that may affect federally listed species or its habitat
- conducts NEPA review of specific projects to minimize, avoid, and/or mitigate potential impacts to special status species and its habitat
    - this includes ensuring that appropriate biological monitoring occurs prior to project commencement
- documents occurrence records for other federally listed and special status species
- coordinates with USAG POM Public Affairs Office to highlight special status species management actions to promote awareness among personnel, their dependents, and contractors
- works with other DPW divisions and USACE to develop appropriate minimization, mitigation, or avoidance measures to minimize impacts on special status species and their habitat from new construction, maintenance, and operation activities

***Table 4-30: OMC Federally Threatened, Endangered, and Special Status Species Management Actions***

| **Conservation Measures** |
|---|
| Develop and maintain working relations with local and regional natural resource agencies conducting conservation work on special status species found on OMC. (*Objectives 1.3, 1.2, 1.3, 7.1, 7.2*) |
| Implement vegetation management conservation measures listed in Section 4.1.3 to ensure conservation and restoration of wildlife habitat (i.e., using native plants and removing non-native plants in landscapes). (*Objectives 3.1, 3.4, 3.5, 4.4*) |
| Implement forest and urban forest management conservation measures listed in Section 4.1.4 and 4.1.3.4 to ensure conservation and restoration of wildlife and their habitat (i.e., enforcing tree removal ratio). (*Objectives 1.2, 2.1, 2.2, 2.3, 3.2, 3.3, 4.1, 4.2, 4.3, 5.5, 6.1, 7.2*) |
| Implement fish and wildlife management conservation measures identified in Section 4.1.6. (*Objectives 1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 3.1, 3.2, 3.3, 3.5, 3.5, 4.1, 4.2, 4.3, 4.4, 5.5, 6.1, 7.2)* |
| **Conservation Projects** |
| Produce environmental awareness materials and install informational signs to identify sensitive natural and cultural resources. (*Objectives 6.1, 6.3*) |
| Conduct Monterey spineflower surveys. |
| Establish an educational awareness program for Monterey spineflower. |
| Control invasive, nonnative plant species in habitat occupied by Monterey spineflower. |
| Establish an awareness education program for California tiger salamanders. |
| Develop and implement an Installation Conservation Design Plan (ICDP) to address stormwater pollution reduction, pollinator habitat establishment, urban tree planting opportunities, and wildlife habitat enhancement projects. (*Objectives 2.1, 2.2, 2.3, 3.2, 4.1, 4.2*) |

Presidio of Monterey, Ord Military Community, Satellite Communication Station at Camp Roberts, and Benicia Army Cemetery

| |
|---|
| Conduct special status and native plant species replacement plantings and maintenance projects as needed to mitigate construction impacts. (*Objectives 1.2, 3.3, 4.2, 4.3*) |
| Develop and implement training on sensitive resources for personnel, contractors, and other target audiences that identifies and discusses unique biological resources on USAG POM sites. (*Objectives 5.5, 6.1*) |
| Conduct periodic biological and ecological surveys to include flora, fauna, special status species, and vegetative communities. (*Objectives 1.1, 1.3*) |

### 4.2.7 Pest Management

Pest management on OMC mirrors that of POM. Refer to Section 4.1.8 for information on regulatory requirements. Like POM, California ground squirrels, Botta's pocket gophers, raccoons, pigeons, and mice are the most common animal pests. See Section 4.1.8.1 and 4.1.8.2 for a general overview on how animal and plant pests are managed on OMC. Table 4-31 outlines OMC's pest management actions.

***Table 4-31: OMC Pest Management Actions***

| **Conservation Measures** |
|---|
| Encourage residents to spay or neuter cats as soon as they come of age. (*Objectives 6.1)* |
| Prohibit residents from feeding feral cats. (*Objectives 6.1)* |
| Encourage residents to decrease the available food, water, and habitation areas for raccoons, in order to discourage raccoons from migrating to developed areas on OMC. (*Objectives 3.4, 3.5, 6.1)* |
| Continue to work with DPW Operations and Maintenance Division to ensure that USEPA guidelines are followed for the appropriate use, handling, storage, and disposal of pesticides. (*Objectives 3.5)* |
| Continue to work with DPW Operations and Maintenance Division to ensure pest management activities are conducted to avoid adverse impacts on special status species. Prior to the start of construction, all Monterey pine trees scheduled for preservation within 100 feet of the project area shall be treated for bark beetle using standard practices recommended by the ISA-arborist and in accordance with the IPMP. Unseasoned lumber or newly cut pine trees give off a fragrance that attracts the beetles to the site. (*Objectives 1.2, 3.5)* |
| Continue to ensure bark beetle and pine pitch canker conservation measures are implemented. (*Objectives 1.2, 3.5)* |
| **Conservation Projects** |
| Conduct a study to develop and implement a plan for raccoon population management. (*Objective 3.5*) |
| Continue to contract ISA-certified arborist to monitor trees on the POM and OMC for disease and potential hazards. (*Objectives 4.1, 4.2*) |
| Perform a study of black-tailed deer populations on the POM and OMC. (*Objective 3.5*) |
| Continue to coordinate and implement environmental education and outreach activities. (*Objectives 6.1, 6.2, 6.3*) |
| Revise and update the 2004 POM IPMP. (*Objectives 3.5*) |
| Develop and implement training on sensitive resources for personnel, contractors, and other target audiences that identifies and discusses unique biological resources on USAG POM sites. (*Objectives 5.5, 6.1*) |

### 4.2.8 Invasive Species Management

Refer to Section 4.1.9 for the laws, guidelines, and BMPs that apply to managing invasive species on OMC. Appendix F, the *Invasive Species Management Component Plan* provides additional information on invasive plant prevention and control on OMC. The plan identifies invasive plants found on sites and control techniques used for management.

Like on the POM, the focus of the OMC invasive species management program is on invasive weed management. Of particular concern on OMC is the threat of invasive plants, such as red brome and ice plant, to rare, endangered, or sensitive species habitat. DPW-E is considering future adoption of WHIPPET to assist in prioritizing management of invasive weed species on OMC.

Like on the POM, common land disturbance activities provide vectors for invasive species introduction include site construction projects, facility and infrastructure maintenance and repair, utility installation, grounds maintenance, and pedestrian foot traffic. In addition, the choice of plants for landscaping offers another opportunity for the introduction of invasive species onto installation lands.

***Table 4-32: OMC Invasive Species Management Actions***

| Conservation Measures |
|---|
| Ensure the use of drought tolerant varieties of grasses for lawns, where deemed necessary, including Chewing's fescue, red fescue, and bentgrass. Tall fescue should be avoided because it is a non-native invasive species. Appendix M provides recommended grass varieties and planting specifications. Generally, lawns should be established with a balanced mixture of grass species depending on environmental conditions and projected use. (*Objectives 3.4, 4.4*) |
| Scout for invasive plants and evaluate risks before construction and maintenance projects occur. (*Objectives 3.4, 3.5)* |
| Develop site specific plans, where feasible, for controlling existing invasive plants before ground disturbing activities begin. (*Objectives 3.4, 3.5)* |
| Use xeriscaping and low-maintenance site-specific native species in landscaping designs. (*Objectives 4.4, 6.3*) |
| Continue to conduct surveys and document occurrence of invasive plant species. (*Objectives 3.4, 3.5)* |
| Treat invasive plants along commonly used access roads and staging areas to prevent the spread of seeds and propagules into work sites or unimproved areas. (*Objectives 3.4, 3.5)* |
| Designate specific areas for cleaning tools, vehicles, equipment, clothing, and gear to prevent the spread of seeds and propagules into work sites or unimproved areas. (*Objectives 3.4, 3.5)* |
| Minimize soil and vegetation disturbance, where feasible. (*Objectives 3.3)* |
| Ensure that Invasive Species Construction Mitigation Measures identified in Appendix F and N are implemented accordingly**.** (*Objectives 3.4, 3.5)* |
| Ensure plant species used for landscaping do not include invasive or noxious species, such as eucalyptus, acacia, ice plant, pampas grass, and French broom. (*Objectives 3.4, 3.5)* |
| **Conservation Projects** |
| Control invasive, nonnative plant species in habitat occupied by Monterey spineflower. (*Objectives 3.4, 3.5)* |
| Conduct invasive species surveys. (*Objectives 3.4, 3.5)* |

| |
|---|
| Perform invasive plant species control. (*Objectives 3.4, 3.5)* |
| Continue to coordinate and implement environmental education and outreach activities. (*Objectives 6.1, 6.2, 6.3*) |
| Develop and print educational brochures or factsheets concerning special status species, invasive species, and other natural resource topics of interest. (*Objectives 5.5, 6.1*) |
| Develop and implement training on sensitive resources for personnel, contractors, and other target audiences that identifies and discusses unique biological resources on USAG POM sites. (*Objectives 5.5, 6.1*) |

### 4.2.9 Outdoor Recreation Management

There are no recreation lands on OMC; however, adjacent non-developed lands are currently being used by the general public, military personnel, and civilians for hiking and biking. For this reason, DPW-E implements the following to reduce impacts to surrounding natural resources.

***Table 4-33: OMC Outdoor Recreation Management Actions***

| Conservation Measures |
|---|
| Implement vegetation management conservation measures identified in Section 4.1.3. |
| Implement forest management conservation measures identified in Section 4.1.4. |
| Implement fish and wildlife conservation measures identified in Section 4.1.6. |
| Implement invasive species conservation measures identified in Section 4.1.9. |
| **Conservation Projects** |
| Produce environmental awareness materials and install informational signs to identify sensitive natural and cultural resources. (*Objectives 6.1, 6.3*) |
| Continue to coordinate and implement environmental education and outreach activities. (*Objectives 6.1, 6.2, 6.3*) |
| Develop and print educational brochures or factsheets concerning special status species, invasive species, and other natural resource topics of interest. (*Objectives 5.5, 6.1*) |
| Develop and implement training on sensitive resources for personnel, contractors, and other target audiences that identifies and discusses unique biological resources on USAG POM sites. (*Objectives 5.5, 6.1*) |

### 4.2.10 Conservation Law Enforcement

Like the POM, conservation law enforcement staff is not present on OMC. The NRM serves as a liaison to the installation security, CDFW game wardens, and the POM police when any conservation law enforcement issues occur. However, a new Army memorandum was released in July 2015 that requires at least one police officer from the POM be trained as a CLEO. NRM will continue to work with the POM police to ensure training is fulfilled. Table 4-34 outlines OMC's conservation law enforcement management actions.

***Table 4-34: OMC Conservation Law Enforcement Management Actions***

| Conservation Measures |
|---|
| Continue to maintain an open line of communication with installation security, CDFW game wardens, and the POM police in regards to natural resources management (i.e., training opportunities, patrol strategies, coordination requirements). (*Objectives 7.1, 7.2*) |
| **Conservation Projects** |
| Continue to coordinate and implement environmental education and outreach activities. (*Objectives 6.1, 6.2, 6.3*) |
| Develop and implement training on sensitive resources for personnel, contractors, and other target audiences that identifies and discusses unique biological resources on USAG POM sites. (*Objectives 5.5, 6.1*) |

### 4.2.11 Environmental Awareness, Education, and Outreach

Environmental awareness, education, and outreach programs mirrors that of POM. Refer to Section 4.1.12 for more information.

***Table 4-35: OMC Environmental Awareness, Education, and Outreach Management Actions***

| Conservation Measures |
|---|
| Continue to update the USAG POM Environmental Division webpage with new information and environmental education and outreach materials. (*Objectives 6.1*) |
| Continue to engage with community members on and off USAG POM sites to increase environmental awareness. (*Objectives 6.1*) |
| Continue to work with contractors to ensure workers are properly trained on natural resources on OMC prior to starting any type of construction, maintenance, and landscaping project. *(Objectives 5.4, 6.1)* |
| Develop and maintain working relations with local and regional community groups, universities, and other natural resource management agencies to coordinate natural resource management strategies. *(Objectives 7.1, 7.2)* |
| Continue to develop and disseminate educational materials via websites, outreach activities, the local library, FMWR, etc. *(Objectives 6.1, 7.1)* |
| **Conservation Projects** |
| Produce environmental awareness materials and install informational signs to identify sensitive natural and cultural resources. (*Objectives 6.1, 6.3*) |
| Develop and print educational brochures or factsheets concerning special status species, invasive species, and other natural resource topics of interest. (*Objectives 5.5, 6.1*) |
| Continue to coordinate and implement environmental education and outreach activities. (*Objectives 6.1, 6.2, 6.3*) |
| Develop and implement training on sensitive resources for personnel, contractors, and other target audiences that identifies and discusses unique biological resources on USAG POM sites. (*Objectives 5.5, 6.1*) |

### 4.2.12 Training for Natural Resources Personnel

Training for natural resources personnel on OMC mirrors that of POM. Refer to Section 4.1.13 for more information. Table 4-36 outlines OMC's training for natural resources personnel management actions.

Presidio of Monterey, Ord Military Community, Satellite Communication Station at Camp Roberts, and Benicia Army Cemetery

***Table 4-36: OMC Training for Natural Resources Personnel Management Actions***

| Conservation Measures |
|---|
| Continue to provide opportunities for personnel to enhance and gain new skills in natural resources management techniques. (*Objectives 5.3, 5.4, 5.5*) |
| **Conservation Projects** |
| Ensure natural resources management training opportunities. (*Objectives 5.3, 5.4, 5.5*) |

### 4.2.13 Geographic Information Systems (GIS) Management, Data Integration, Access, and Reporting

The GIS management, data integration, access, and reporting program mirrors that of the POM. Refer to Section 4.1.14 for more information.

***Table 4-37: OMC GIS Management, Data Integration, Access, and Reporting Management Actions***

| Conservation Measures |
|---|
| Ensure that established GIS standards for data collection are written into contract specifications. This will assist in standardizing data collection and allow for ease of data input and analysis. (*Objectives 5.4, 5.5*) |
| Ensure that annual data and inventory maps are entered into the GIS mapping system and database. (*Objectives 5.4, 5.5*) |
| Ensure that new populations of special status species are mapped and entered into the GIS database. (*Objectives 5.4, 5.5*) |
| **Conservation Projects** |
| N/A; however, most projects listed in the Project Implementation Schedule in Appendix B have requirements for GIS data collection, of which will be used to update GIS database. |

## 4.3 SATCOM

### 4.3.1 Water Resources Management

#### 4.3.1.1 Surface Waters

Refer to Section 4.1.1 for regulatory information.

Surface water on the SATCOM consists of four intermittent streams. The ephemeral streams on the southern boundary drain into the Nacimiento River Watershed and along the eastern boundary into the San Marcos Creek Sub-Watershed. The San Marcos Creek eventually contributes to the flow of the Salinas River. The water quality and biological resources of surface waters can be affected by runoff carrying sediments, nutrients, and toxic chemicals from land uses within the watersheds. Maintaining the water quality of runoff in the intermittent streams during precipitation events is a key component of

protecting the Nacimiento River and the Salinas River that flow through Camp Roberts, as well as vernal pool habitat.

Water quality at SATCOM is regulated by the CCRWQCB, SWRCB, and the CalEPA, which implement the Water Quality Control Plan for the Central Coastal Basin (CalEPA 2013a). Refer to Section 4.1.1 for more information concerning this Water Quality Control Plan.

Water quality in California is monitored through the Surface Water Ambient Monitoring Program, the Central Coast Ambient Monitoring Program, and through water quality data gathered by other federal, state, and local agencies (CCRWQCB 2011). These programs' water quality data collection develops a statewide picture of the status and trends in surface water quality, and identifies areas that do not meet water quality objectives. Under Section 303(d) of the CWA, the intermittent streams on SATCOM and nearby surface waters are not listed as impaired and are currently unassessed (USEPA 2013). The Upper Salinas River, which flows through Camp Roberts, is listed as impaired for most designated uses because of chloride, sodium, pathogens, and flow alternation. Agriculture, hydromodification, and natural sources are the primary sources of impairment (USEPA 2004a; USEPA 2004b).

To maintain the water quality of runoff in the intermittent streams during precipitation events at SATCOM, the NRP implements erosion and sediment control, and stormwater management, as discussed in the following sections and in the associated Sediment Erosion and Sediment Control Component Plan (Appendix E). In addition, the NRP manages hazardous waste through the Hazardous Waste Management Plan (USAG POM 2007) and is addressing regional water scarcity issues through the POM Integrated Water Management Plan (USACE 2013b).

#### 4.3.1.2 Erosion and Sediment Control

Ground-disturbing activities and military operations can remove and/or reduce the vegetation in an area, which exposes the soil and makes it susceptible to erosion. In addition, the amount of developed land correlates to higher volumes of stormwater runoff, which can also increase erosion. Sedimentation typically occurs as a result of erosion, and is the largest pollutant source for aquatic habitats and can impair water quality, degrade riverine habitat, and reduce biodiversity. Similar to the POM, the SATCOM's primary causes of soil erosion and sedimentation are site construction and grounds maintenance. Landscaping activities also have the potential to cause soil erosion, due to disturbing the soil. The SATCOM has severe erosion potential across the land extent of the current site and the land expansion area. The SATCOM facility has steep slopes that are prone to rapid runoff and high erosion. Sedimentation and erosion control measures are employed to mitigate or lessen the impact of soil disturbance actions from construction projects and weather events.

Appendix E, *Soil Erosion and Sediment Control Component Plan*, identifies BMPs and management actions to minimize soil erosion for long term sustainable conditions. In addition, the plan also discusses the regulatory requirements, the soil erosion and sedimentation control program, and erosion prevention and sedimentation control measures. Table 4-38 outlines SATCOM's erosion and sediment control management actions.

***Table 4-38: SATCOM Erosion and Sediment Control Management Actions***

| Conservation Measures |
|---|
| Ensure adherence to State Stormwater CGP requirements and project-specific SWPPs to reduce polluted runoff from construction activities. (*Objectives 2.1, 2.2, 2.3*) |
| Continue to work with stakeholders to ensure implementation of the *Soil Erosion and Sediment Control Component Plan* for land disturbing activities to reduce polluted runoff. (*Objectives 2.1, 2.3, 7.1*) |
| **Conservation Projects** |
| N/A |

#### 4.3.1.3 Stormwater Management

Runoff from storm events can contain nonpoint source pollutants that contribute to water quality concerns of the Nacimiento and Salinas rivers, as well as the San Marcos Creek. The SATCOM's natural drainage channels empty into the Nacimiento River and the San Marcos Creek, which drains to the Salinas River. Facilities located on SATCOM utilize septic tanks and are not connected to a sewer system. Given the small size, and the SATCOM's location outside of a local municipality, the facility is not subject to an industrial or MS4 permit under the NPDES permitting program (refer to Section 4.1.1.1).

SATCOM's cooling tower operations release treated water into a natural drainage channel, where the water is allowed to percolate and evaporate while minimizing erosion. The SWRCB granted a General Waiver of Waste Discharge Requirement for Specific Types of Discharges (Resolution No. R3-2008-0010) to the SATCOM for the operations and discharges associated with the cooling towers (CCRWQCB 2013).

Under the NPDES, the SATCOM must comply with the state's CGP for regulation of stormwater runoff from construction sites over an acre in size. Refer to Section 4.1.1.1 for further discussion on the State Stormwater CGP for regulation of stormwater runoff. New development, and potentially the proposed boundary expansion of the SATCOM, will require the compliance with the CGP through the development of an SWPPP to protect stormwater runoff quality during the specific projects. Table 4-39 outlines SATCOM's stormwater management actions.

***Table 4-39: SATCOM Stormwater Management Actions***

| Conservation Measures |
|---|
| Ensure adherence to the state stormwater CGP requirements and project-specific SWPPPs to reduce polluted runoff from construction activities. (*Objectives 2.1, 2.2, 2.3*) |
| Continue to work with stakeholders to implement the *Soil Erosion and Sediment Control Plan* for land-disturbing activities to reduce polluted runoff. (*Objectives 2.1, 2.3, 7.1*) |
| Continue to provide and solicit local and regional training opportunities on stormwater management for contractors and installation personnel. (*Objective 5.5*) |
| **Conservation Projects** |
| N/A |

#### 4.3.1.4 Floodplain Management

Floodplain management is required of federal agencies under EO 11988 to reduce the risk of adverse associated impacts from flooding. For a further discussion of regulatory information, refer to Section 4.1.1.3. FEMA designates the SATCOM as Zone D, area of undetermined flood risk. However, northern Camp Roberts and areas south of the installation are listed as Zone X, areas of minimal risk for flooding. Given the location, elevation, hydrology, and climate, flooding is unlikely to occur. Table 4-40 outlines SATCOM's floodplain management actions.

***Table 4-40: SATCOM Floodplain Management Actions***

| Conservation Measures |
|---|
| Continue to implement soil erosion and sediment control conservation measures (Section 4.3.1.2). (*Objectives 2.1, 2.2, 2.3*) |
| Continue to implement stormwater management conservation measures (Section 4.3.1.3). (*Objectives 2.1, 2.2, 2.3*) |
| **Conservation Projects** |
| N/A |

### 4.3.2 Coastal Zone Management

The SATCOM has no coastal zone resources.

### 4.3.3 Vegetation Management and Grounds Maintenance

Currently there is minimal landscaping associated with developed areas of SATCOM. Grounds maintenance services in developed areas are contracted to a landscape maintenance firm.

For development of new landscapes, DPW-E works with other DPW divisions to design low maintenance landscapes, such as xeriscaping and utilizing native plant species from the approved POM planting list (Appendix L). DPW-E also maintains standards to ensure

that invasive plant species are not used in landscape designs (Appendix O). Table 4-41 outlines SATCOM's vegetation and grounds maintenance management actions.

***Table 4-41: SATCOM Vegetation and Grounds Maintenance Management Actions***

| Conservation Measures |
|---|
| Ensure the use of drought tolerant varieties of grasses for lawns, where deemed necessary, including Chewing's fescue (*Festuca rubra commutate*), red fescue (*Festuca rubra*), and bentgrass (*Agrostis* spp.). Tall fescue (*Festuca arundinacea*) should be avoided because it is a non-native invasive species. Appendix M provides recommended grass varieties and planting specifications. Generally, lawns should be established with a balanced mixture of grass species depending on environmental conditions and projected use. (*Objectives 3.4, 4.4*) |
| Ensure plant species used for landscaping do not include invasive or noxious species such as eucalyptus, acacia, ice plant, pampas grass, or French broom. (*Objectives 3.4, 6.3*) |
| Use xeriscaping and low-maintenance site specific native species in landscaping designs. (*Objectives 4.4, 6.3*) |
| Develop a list of SATCOM site-specific native species suitable for landscaping in developed areas. (*Objectives 3.4, 4.4*) |
| **Conservation Projects** |
| N/A |

### 4.3.4 Forest Management

The current blue oak woodland forest ecosystem at SATCOM has been greatly influenced by grazing animals, invasive plants and animals, and shifted fire regimes. These factors have contributed to near zero natural regeneration of blue oaks (D. Applegate personal communication, 25 March 2014). Historical grazing of sheep has contributed to soil compaction challenges on Camp Roberts (D. Applegate personal communication, 25 March 2014). Currently, invasive feral pigs are problematic, digging up the soils for grubs and vegetative roots, and voraciously eating blue oak acorns (as do ground squirrels, elk, and badgers) (D. Applegate personal communication, 25 March 2014). Non-native Mediterranean annual grasses have invaded the region, causing the groundcover structure to change from partially open (with bare soil exposed) to a more consistent cover. This prevents blue oak acorns from touching the soil to trigger germination. The highly invasive yellow-star thistle also competes for space, crowding out oak seedlings (D. Applegate personal communication, 25 March 2014).

Because the above threats contribute to near-zero oak regeneration, the blue oak community on the SATCOM is composed of an even-aged stand. In addition, 90 to 95 percent of these blue oaks have heart rot, a natural process of fungal infection for older trees (D. Applegate personal communication, 25 March 2014). For these reasons, the blue oak forest ecosystem is highly vulnerable to stand removal from wildfire.

To preserve trees, DPW-E has established tree ordinance and protection procedures, similar to those at POM (see Appendix P for these procedures). At SATCOM, the tree removal ratio is 3:1 in-kind of native trees. This means that any native trees removed

during new construction must be mitigated through replacement of the same species at a ratio of 3:1. The placement of new, native trees will be determined by an arborist at the time of the planting. Coordination with DPW-E is required prior to any tree removal project. DPW-E works closely with SATCOM tenants, other DPW Divisions, and the USACE to enforce and implement these tree ordinances.

Standards have been established for tree mitigation/replacement requirements. Replaced trees must be from locally collected acorns and be provided with supplementary care (water and weeding) and ungulate proof fencing for 3-5 years during the establishment stage. It is also recommended to use a nurse tree approach: joint plantings of blue oaks with coyote brush. The coyote brush appears to create a shaded micro-environment and catches fog precipitation. These factors seem to give the accompanying blue oak seedling a survival advantage (CA ARNG 2012; D. Applegate personal communication, 25 March 2014).

At this time DPW-E is working with other DPW divisions, USACE, and a private contractor to implement a blue oak tree mitigation project for the SATCOM fence realignment, SATCOM South Fiber, and the SATCOM Earth Terminal Station construction projects. Approximately 2,500 blue oak will be planted at five different sites on Camp Roberts to mitigate the removal of 980 blue oak trees.

Additional blue oak specific mitigation measures, included in Appendix N, are modeled on the Oak Woodland Mitigation Program developed by the California Oak Foundation (2007), the University of California Oak Woodland Conservation Working Group (UCANR 2013), and the County of Santa Barbara Deciduous Oak Tree Protection and Regeneration Plan (Santa Barbara County 2003).

***Table 4-42: SATCOM Forest Management Actions***

| **Conservation Measures** |
|---|
| Support and encourage research of other agencies/conservation groups that are monitoring and evaluating blue oak heart rot or any other type of ecological studies being conducted on the species, including reforestation projects. (*Objective 4.2, 7.2*) |
| Ensure that tree protection measures are implemented for all construction projects and other activities on SATCOM. (*Objectives 1.2, 3.3, 4.1, 4.2*) |
| Ensure that any native trees removed during new construction are replaced with the same species at a ratio of 3:1. The placement of new, native trees will be determined by an arborist at the time of the planting. (*Objective 4.3*) |
| Perform firebreak maintenance in a manner that decreases soil loss from oak woodland communities. (*Objectives 4.1, 4.2*) |
| **Conservation Projects** |
| Conduct blue oak replacement plantings and maintenance projects as needed to mitigate construction impacts. (*Objective 4.3*) |
| Develop and implement a training on sensitive resources for personnel, contractors, and other target audiences that identifies and discusses unique resources on USAG POM sites. (*Objective 6.1*) |
| Conduct periodic biological and ecological surveys to include flora, fauna, and special status species, and vegetative communities. (*Objectives 1.1, 1.3*) |
| Conduct invasive species surveys and perform invasive plant species control. (*Objectives 3.4, 3.5*) |

Presidio of Monterey, Ord Military Community, Satellite Communication Station at Camp Roberts, and Benicia Army Cemetery

### 4.3.5 Wildland Fire Management

#### 4.3.5.1 Fire Service

A large water tank in the northern portion of the facility remains full at all times to provide sufficient water for fire suppression flows for the existing building inventory (ICF International 2010). Wildland fires at Camp Roberts are managed by the Emergency Services Incident Commander. Fire service at the SATCOM is provided by Camp Roberts, who will take whatever action is necessary to control the fire, including cutting emergency firebreaks (USFWS 2009).

#### 4.3.5.2 Fuel Breaks

Fires are managed on the SATCOM by maintaining firebreaks along the security fence (ICF International 2010). In 2013, the USAG POM completed an EA for building a fence and the associated buffer around the SATCOM site and facilities that would satisfy Army requirements for anti-terrorism force protection measures (U.S. Army 2013a). In addition to the existing firebreaks along the fence line, the new fence and the 40-foot-wide clear zone buffer will serve as firebreaks between the SATCOM facilities and wildlands outside the fence boundary.

#### 4.3.5.3 Prescribed Burning

If prescribed burning are to be conducted to reduce fuel loads on the SATCOM, it will be done in compliance with requirements of the San Luis Obispo County Air Pollution Control Districts.

#### 4.3.5.4 Integrated Wildland Fire Management Plan

The CA ARNG IWFMP encompasses those lands owned and managed by Camp Roberts. The SATCOM is an inholding within Camp Roberts, and protections and services provided for by the CA ARNG IWFMP will benefit the SATCOM as well. Table 4-43 outlines SATCOM's wildland fire management actions.

***Table 4-43: SATCOM Wildland Fire Management Actions***

| **Conservation Measures** |
|---|
| Coordinate with the CA ARNG at Camp Roberts on integrated wildlife fire management. (*Objective 7.1*) |
| **Conservation Projects** |
| Produce environmental awareness materials and install informational signs to identify sensitive natural and cultural resources. (*Objectives 6.1, 6.3*) |
| Continue to coordinate and implement environmental education and outreach materials. (*Objectives 6.1, 6.2, 6.3*) |

### 4.3.6 Fish and Wildlife Management

Additional targeted surveys are necessary to generate a more comprehensive species list for SATCOM.

The purpose of fish and wildlife management on SATCOM is to protect, conserve, and sustain biodiversity at a level that is compatible with the military mission and compliant with federal and state laws, guidance, and policy. Refer to Section 4.1.6 for regulatory requirements. Like, POM the focus of fish and wildlife management is habitat management. The goal is to protect native ecosystems to enhance and maintain native plant and wildlife populations, communities, and assemblages.

No native or game fish populations are known to occur on SATCOM at this time. To enhance and maintain native plant and wildlife populations, communities, and assemblages, DPW-E performs the following actions:

- conducts NEPA review of specific projects to evaluate potential impacts of new construction and operation and maintenance projects and, where feasible, develops appropriate minimization, avoidance, or mitigation measures to reduce impacts to wildlife and their associated habitat
- preserves and restores native wildlife habitat through enforcement of tree protection and tree replacement ordinances
- prohibits the use of non-native plants in landscape designs and promotes the use of native species

Migratory bird management on SATCOM mirrors that of POM. Please refer to Section 4.1.6.2 for regulatory requirements and a general overview of how migratory birds are managed.

Since four bat species (pallid bat, western red bat, hoary bat, and California myotis) were identified in the proposed expansion area and a pallid roosting box is located nearby on Camp Roberts, roost site surveys will need to be conducted prior to any new construction within the SATCOM expansion area. In addition, appropriate minimization, avoidance, and mitigation measures for these species will have to be established. Table 4-44 outlines SATCOM's fish and wildlife management actions.

***Table 4-44: SATCOM Fish and Wildlife Management Actions***

| Conservation Measures |
|---|
| Avoid, where feasible, new construction in blue oak woodland to preserve native ecosystems. (*Objectives 3.3, 4.1, 4.2*) |
| Implement forest management conservation measures listed in Section 4.3.4 and Table 4-42 to ensure conservation and restoration of wildlife and their habitat. (*Objectives 3.1, 3.2, 4.1, 4.2, 4.3*) |
| Add avian data to the DOD Coordinated Bird Monitoring Database and participate in efforts to collect data on migratory bird species and habitat. (*Objectives 1.1, 1.3*) |
| Work with internal and external stakeholders to identify appropriate, non-lethal bird deterrent options for facility use, such as rooting and landing prevention devices and visual scare devices. (*Objectives 1.3, 5.3, 7.2*) |
| Schedule construction and maintenance projects, where feasible, that could potentially disturb migratory birds outside the nesting season. Ensure appropriate surveys are performed for projects or activities that must occur during the nesting season (February to August). See Section 4.1.6.2 and Table 4-11 for more information. (*Objectives 1.3, 3.3*) |

Presidio of Monterey, Ord Military Community, Satellite Communication Station at Camp Roberts, and Benicia Army Cemetery

| |
|---|
| When necessary, conduct pre-activity surveys prior to the onset of construction and maintenance activities. (*Objective 1.2, 3.3, 4.2*) |
| Maintain 30 meters (100 feet) riparian buffers on intermittent streams. (*Objective 2.2*) |
| Develop appropriate minimization, avoidance, and mitigation measures for bat species, this may include standards for conducting tree removal outside of the breeding season (April -September) to avoid disturbance to maternal colonies. (*Objectives 1.3, 3.3*) |
| **Conservation Projects** |
| Conduct special status and native plant species replacement plantings and maintenance projects as needed to mitigate construction impacts. (*Objectives 1.2, 3.3, 4.2, 4.3*) |
| Conduct invasive plant species surveys and perform invasive plant species control. (*Objectives 3.4, 3.5*) |
| Conduct periodic biological and ecological surveys to include flora, fauna, special status species, and vegetative communities. (*Objectives 1.1, 1.3*) |
| Develop and implement training on sensitive resources for personnel, contractors, and other target audiences that identifies and discusses unique biological resources on USAG POM sites. (*Objectives 5.5, 6.1*) |

### 4.3.7 Federally Threatened, Endangered, and Special Status Species Management

Refer to Section 2.1.3.5 for regulatory requirements for management of federally listed and special status species.

#### 4.3.7.1 Federally Protected and Candidate Species

DPW-E takes a proactive approach for managing federally listed species, by managing species that are not known to occur on SATCOM property, but are known to occur on Camp Roberts. This proactive approach will greatly reduce any negative impact to the military mission and to federally listed species found on Camp Roberts. As discussed in Chapter 2.0, there are no federally protected species known to occur on the SATCOM. However, there a federally protected species that occur on Camp Roberts, and thus have the potential to occur at the SATCOM. Discussions and listing of federally listed TES are included in Section 2.3.3.5 and the ESMCP (Appendix G).

The USAG POM manages federally protected species in accordance with an ESMCP (Appendix G), AR 200-1, and relevant BOs to develop, manage, and maintain TES on SATCOM. Four animal species with the potential to occur on the SATCOM are included in the ESMCP: bald eagle, delisted and protected by MBTA and the *Bald and Golden Eagle Protection Act*; California condor, federally endangered; San Joaquin kit fox, federally endangered; and vernal pool fairy shrimp, federally threatened.

#### 4.3.7.2 Other Federally Listed and Special Status Species

Other special status species known to occur on SATCOM include the pallid bat and western red bat. These bat species were recently detected in 2014 surveys. Since pallid bats have exhibited high sensitivity to disturbance at roost sites and suburbanization of habitat (Pierson and Rainy 1998), future management efforts will focus on

- avoiding, where feasible, new construction in natural areas such as blue oak woodland to preserve bat habitat;
- developing and implementing appropriate mitigation and minimization/avoidance measures to reduce impact to bats and their habitat; and
- conducting additional biological surveys to increase our understanding of habitat use and the biology of the species.

Table 4-45 outlines SATCOM's federally threatened, endangered, and special status species management actions.

***Table 4-45: SATCOM Federally Threatened, Endangered, and Special Status Species Management Actions***

| **Conservation Measures** |
|---|
| Avoid new construction, where feasible in natural areas such as blue oak woodlands to preserve native ecosystems. (*Objectives 1.2, 2.2, 3.3*) |
| Ensure pre-activity surveys, for proposed construction projects in natural areas, are conducted for federally listed species and special status species. (*Objectives 1.1, 1.2*) |
| Develop appropriate mitigation and minimization/avoidance measure to reduce impacts to bats and their habitat. (*Objectives 1.1, 1.3*) |
| Implement forest management and fish and wildlife management conservation measures outlined in Section 4.3.6 and Table 4-44. |
| Develop and maintain working relations with local and regional natural resources agencies conducting conservation work on federally listed and special status species that have the potential to occur on SATCOM. (*Objectives 7.1, 7.2*) |
| **Conservation Projects** |
| Conduct periodic biological and ecological surveys to include flora, fauna, special status species, and vegetative communities. (*Objectives 1.1, 1.3*) |
| Conduct blue oak replacement plantings and maintenance projects as needed to mitigate construction impacts. *(Objectives 4.3*) |
| Develop and implement training on sensitive resources for personnel, contractors, and other target audiences that identifies and discusses unique biological resources on USAG POM sites. (*Objectives 5.5, 6.1*) |
| Conduct invasive species surveys and control. (*Objectives 3.4, 3.5)* |
| Conduct annual surveys for the western red bat. (*Objectives 1.1, 1.3)* |
| Conduct multiple-method focused studies for pallid bats to locate any roosts that may be present and determine the nature of pallid bat habitat use on SATCOM. (*Objectives 1.3)* |
| Conduct project specific kit fox surveys and annual kit fox surveys. (*Objectives 1.1, 1.2)* |
| Install "Bird and Raptor Guards" on power poles and where the potential exists for bald eagles to perch. (*Objectives 1.1, 6.1)* |
| Develop and print educational brochures or factsheets concerning special status species, invasive species, and other natural resource topics of interest. (*Objectives 5.5, 6.1*) |
| Develop a climate change vulnerability assessment and adaptation plan. (*Objectives 5.1)* |

Presidio of Monterey, Ord Military Community, Satellite Communication Station at Camp Roberts, and Benicia Army Cemetery

### 4.3.8 Pest Management

For regulatory background, refer to Section 4.1.8. The current POM IPMP does not include the SATCOM; however, it is being updated to include it.

Like POM, SATCOM pest management services are contracted to a commercial enterprise that provides services such as animal and insect control. DPW O&M Division provides overall coordination and oversight for pest management activities. The NRP works closely with DPW O&M personnel and contractors to emphasize the use of IPMP principles that consist of the judicious use of both chemical and nonchemical control techniques to achieve effective pest management with minimal environmental impact. Table 4-46 outlines SATCOM's pest management actions.

***Table 4-46: SATCOM Pest Management Actions***

| Conservation Measures |
|---|
| Continue to work with DPW O&M Division to ensure that USEPA guidelines are followed for the appropriate use, handling, storage, and disposal of pesticides. (*Objectives 3.5)* |
| Ensure that herbicides and pesticides are not used within 76 meters (250 feet) of potential or known fairy shrimp habitat (vernal/seasonal wetlands, clay flats, reservoirs, ponds). (*Objectives 3.5)* |
| Ensure no pesticides are applied directly to streams unless their use is specifically approved on the label and is consistent with the installation's Approved Pesticide List. (*Objectives 3.5)* |
| Ensure that no Diphacinone is used unless authorized by the USFWS. The risk of secondary poisoning to San Joaquin kit fox is high with use of this anticoagulant. (*Objectives 3.5)* |
| Ensure that proposed rodent control activities are reviewed and approved by the IPMC to minimize potential impacts on San Joaquin kit fox. (*Objectives 3.5)* |
| **Conservation Projects** |
| Revise and update POM IPMP to include SATCOM. (*Objectives 3.5)* |
| Develop and print educational brochures or factsheets concerning special status species, invasive species, and other natural resource topics of interest. (*Objectives 5.5, 6.1*) |

### 4.3.9 Invasive Species Management

Refer to Section 4.1.9 for regulatory requirements for invasive species management. On SATCOM, of particular concern is feral pigs and invasive weeds. In addition, common land disturbance activities at SATCOM provide vectors for invasive species introduction include site construction projects, and choice of plants for landscaping. DPW-E performs periodic invasive species surveys and incorporates BMPs for invasive weed management into construction project contracts.

DPW-E does not manage the feral hog population on its property at this time. The proposed construction of a perimeter fence around SATCOM will serve as a barrier to feral hogs and facilitate depredation and eradication efforts. In addition, DPW-E will implement a solution to do away with the artificial drainage, thus discouraging feral hogs from attracted to the area. In the meantime, DPW-E will continue to monitor the feral hog population and habitat degradation and where feasible support Camp Roberts' efforts to control feral hogs.

***Table 4-47: SATCOM Invasive Species Management Actions***

| Conservation Measures |
|---|
| Continue to incorporate BMPs for invasive weed management into construction project contracts. (*Objectives 3.4, 3.5)* |
| Monitor and enforce implementation of BMPs for invasive weed management. (*Objectives 3.4, 3.5)* |
| Support Camp Roberts' efforts to control feral hogs. (*Objectives 3.4, 3.5)* |
| Scout for invasive plants and evaluate risks before construction and maintenance projects occur. (*Objectives 3.4, 3.5)* |
| Develop site specific plans, where feasible, for controlling existing invasive plants before ground disturbing activities begin. (*Objectives 3.4, 3.5)* |
| Minimize soil and vegetation disturbance, where feasible. (*Objectives 3.4, 3.5)* |
| Ensure that invasive plant species are not used in landscaping. (*Objectives 3.4, 3.5)* |
| **Conservation Projects** |
| Implement a solution to inhibit the SATCOM air cooling units from providing a water source for feral hogs. (*Objectives 3.4, 3.5)* |
| Conduct periodic biological and ecological surveys to include flora, fauna, special status species, and vegetative communities. (*Objectives 1.1, 1.3*) |
| Conduct invasive species surveys and perform invasive plant species control. (*Objectives 3.4, 3.5)* |
| Develop and implement training on sensitive resources for personnel, contractors, and other target audiences that identifies and discusses unique resources on USAG POM sites. (*Objectives 5.5, 6.1)* |
| Develop and print educational brochures or factsheets concerning special status species, invasive species, and other natural resource topics of interest. (*Objectives 5.5, 6.1*) |

### 4.3.10 Outdoor Recreation Management

The SATCOM facility is a fenced, 81.5-acre area within the larger Camp Roberts that does not have any outdoor recreation available to personnel. Open space exists on the site, but the site is primarily an operations center, and is not used for recreation.

### 4.3.11 Conservation Law Enforcement

Like POM and other USAG POM sites, a conservation law enforcement staff is not present on SATCOM. The NRM serves as a liaison to the installation security, CDFW game wardens, and the POM police when any conservation law enforcement issues occur. However, a new Army memorandum was released in July 2015 that requires at least one police officer from POM be trained as a CLEO. The NRM will continue to work with POM police to ensure training is fulfilled. Table 4-48 outlines SATCOM's conservation law enforcement management actions.

***Table 4-48: SATCOM Conservation Law Enforcement Management Actions***

| Conservation Measures |
|---|
| Continue to maintain an open line of communication with installation security, CDFW game wardens, and the POM police in regards to natural resources management (i.e., training opportunities, patrol strategies, coordination requirements). (*Objectives 7.1, 7.2*) |

Presidio of Monterey, Ord Military Community, Satellite Communication Station at Camp Roberts, and Benicia Army Cemetery

| Conservation Projects |
|---|
| Continue to coordinate and implement environmental education and outreach activities. (*Objectives 6.1, 6.2, 6.3*) |
| Develop and implement training on sensitive resources for personnel, contractors, and other target audiences that identifies and discusses unique biological resources on USAG POM sites. (*Objectives 5.5, 6.1*) |

### 4.3.12 Environmental Awareness, Education, and Outreach

Due to the geographic location of SATCOM in relation to POM, where DPW-E base of operations is located, the NRP actively engages with and educates SATCOM staff and contractors working on the site to ensure successful management of natural resources. This includes participating in monthly teleconferences and physical meetings with USACE, contractors, and tenants. In addition, like other USAG POM sites, DPW-E has identified the need to ensure that tenants and contractors working at SATCOM have the appropriate education and training through an environmental briefing. All contractors working at SATCOM are required to attend an environmental briefing prior to commencing a project. Table 4-49 outlines SATCOM's environmental awareness, education, and outreach management actions.

***Table 4-49: SATCOM Environmental Awareness, Education, and Outreach Management Actions***

| Conservation Measures |
|---|
| Continue to update the USAG POM Environmental Division webpage with new information and environmental education and outreach materials. (*Objectives 6.1*) |
| Continue to engage with community members on and off USAG POM sites to increase environmental awareness. (*Objectives 6.1*) |
| Continue to work with contractors to ensure workers are properly trained on natural resources on SATCOM prior to starting any type of construction, maintenance, and landscaping project. *(Objectives 5.4, 6.1)* |
| Develop and maintain working relations with local and regional community groups, universities, and other natural resource management agencies to coordinate natural resource management strategies. *(Objectives 7.1, 7.2)* |
| **Conservation Projects** |
| Produce environmental awareness materials and installation of informational signs to identify sensitive natural and cultural resources. (*Objectives 5.5, 6.1*) |
| Develop and print educational brochures or factsheets concerning special status species, invasive species, and other natural resource topics of interest. (*Objectives 5.5, 6.1*) |
| Continue to coordinate and implement environmental education and outreach activities. (*Objectives 6.1, 6.2, 6.3*) |
| Develop and implement a training on sensitive resources for personnel, contractors, and other target audiences that identifies and discusses unique resource son USAG POM sites. |

### 4.3.13 Training for Natural Resources Personnel

DPW-E encourages training opportunities for personnel to ensure that individuals engaged in natural resources management have the appropriate experience, knowledge, and technical skills required to implement this INRMP. Management actions for ensuring personnel are trained in natural resource management mirrors that of POM; refer to Section 4.1.13 for more information.

***Table 4-49: SATCOM Training for Natural Resources Personnel Management Actions***

| Conservation Measures |
|---|
| Continue to provide opportunities for personnel to enhance and gain new skills in natural resources management techniques. (*Objectives 5.3, 5.4, 5.5*) |
| **Conservation Projects** |
| Ensure natural resources management training opportunities. (*Objectives 5.3, 5.4, 5.5*) |

### 4.3.14 Geographic Information Systems (GIS) Management, Data Integration, Access, and Reporting

The GIS management, data integration, access, and reporting program mirrors that of the POM. Refer to Section 4.1.14 for more information.

***Table 4-50: SATCOM GIS Management, Data Integration, Access, and Reporting Management Actions***

| Conservation Measures |
|---|
| Ensure that established GIS standards for data collection are written into contract specifications. This will assist in standardizing data collection and allow for ease of data input and analysis. (*Objectives 5.4, 5.5*) |
| Ensure that annual data and inventory maps are entered into the GIS mapping system and database. (*Objectives 5.4, 5.5*) |
| Ensure that new populations of special status species are mapped and entered into the GIS database. (*Objectives 5.4, 5.5*) |
| **Conservation Projects** |
| N/A; however, most projects in the Project Implementation Schedule (Appendix B) have requirements for GIS data collection and inclusion in GIS database updates. |

# 4.4 BENICIA ARMY CEMETERY

## 4.4.1 Water Resources Management

Refer to POM Section 4.1.1 for regulatory information. No natural surface waters occur on Benicia Army Cemetery, beyond stormwater runoff. Maintaining stormwater runoff is key to protecting adjacent bodies of water such as the Carquinez Strait and the San Francisco Bay. Like other USAG POM sites, DPW-E implements the Sediment Erosion and Sediment Control Component Plan (Appendix E) to reduce potential pollution to stormwater runoff. Stormwater management and erosion and sediment control are discussed below.

### 4.4.1.1 Stormwater Management

Refer to Section 4.1.1.1 for regulatory information. Since the Benicia Army Cemetery site is small, it does not require an MS4 or industrial permit under the NPDES permitting program. However, since it is located within the city of Benicia, water resource management must comply with the city's Phase II MS4 permit for any construction or other projects on site. Typically, only landscaping occurs on the cemetery, but a Stormwater Control Plan under the city's MS4 permit would be necessary for any projects that create or replace one or more acres of impervious surface. The control plan would have to specify design characteristics, landscape features, and BMPs that would minimize imperviousness, retain or detain stormwater, slow runoff rates, and reduce pollutants in post development runoff (City of Benicia 2011). Currently, DPW-E does not foresee any large-scale construction or development projects for this site. Table 4-51 outlines Benicia's stormwater resources management actions.

***Table 4-51: Benicia Stormwater Resources Management Actions***

| Conservation Measures |
|---|
| Continue to work with stakeholders to implement the SESCCP for land disturbing activities to reduce polluted runoff. (*Objectives 2.1, 2.2, 2.3, 7.2*) |
| Continue to provide and solicit local and regional training opportunities on stormwater management for contractors and installation personnel. (*Objectives 2.1, 2.2, 5.5*) |
| Continue to implement an education and outreach program to inform base personnel, their dependents, and contractors about stormwater pollution and steps that can be taken to reduce it. (*Objectives 2.1, 2.2, 6.1*) |
| **Conservation Projects** |
| Develop and implement an Installation Conservation Design Plan (ICDP) to address stormwater pollution reduction, pollinator habitat establishment, urban tree planting opportunities, and wildlife habitat enhancement projects. (*Objectives 2.1, 2.2, 2.3, 3.2, 4.1, 4.2*) |

### 4.4.1.2 Erosion and Sediment Control

Benicia Army Cemetery erosion and sediment control mirrors that of POM. Refer to Section 4.1.1.2 and Appendix E for a general overview of the regulatory requirements and program management. Unlike other USAG POM sites, Benicia Army Cemetery

consists of well-drained soils that exhibit a moderate erosion hazard with medium runoff. Primary causes of erosion are grounds maintenance and landscaping. Table 4-52 outlines Benicia's erosion and sediment control management actions.

***Table 4-52: Benicia Erosion and Sediment Control Management Actions***

| Conservation Measures |
|---|
| Adhere to the Phase II MS4 permit requirements, CGP, and project specific SWPPPs to reduce polluted runoff from emptying into adjacent waterbodies. (*Objectives 2.1, 2.2, 2.3*) |
| Continue to work with stakeholders to implement the SESCCP for land disturbing activities to reduce polluted runoff. (*Objectives 2.1, 2.3, 7.1*) |
| **Conservation Projects** |
| Conduct a soil condition assessment. (*Objective 2.1*) |

#### 4.4.1.3 Floodplain Management

EO 11988, Floodplain Management, requires federal agencies to manage floodplains and reduce adverse associated impacts. According to FEMA's most recent floodplain maps, Benicia Army Cemetery is outside of the 100-year floodplain and is designated as Zone X, an area of minimal risk of flooding (FEMA 2009). Table 4-53 outlines Benicia's floodplain management actions.

***Table 4-53: Benicia Floodplain Management Actions***

| Conservation Measures |
|---|
| Continue to implement stormwater management conservation measures outlined in Section 4.1.1.1. (*Objectives 2.1, 2.2, 2.3*) |
| Continue to implement soil erosion and sediment control conservation measures outlined in Section 4.1.1.2. (*Objectives 2.1, 2.2, 2.3*) |
| **Conservation Projects** |
| N/A |

### 4.4.2 Coastal Zone Management

The Benicia Army Military Cemetery has no coastal zone resources.

### 4.4.3 Vegetation Management and Grounds Maintenance

The majority of the Benicia Army Cemetery is maintained for aesthetic purposes and is considered an improved area with horticultural landscaping. Vegetation management and grounds maintenance services are contracted to a commercial enterprise that provides landscaping services such as mowing, trimming, edging, irrigation, weed removal, pruning, fertilization, irrigation, and planting annuals to maintain blooming flowers in decorative planters throughout the year. When performing grounds maintenance

activities, maintenance crews are required to follow BMPs for vegetation management practices, landscaping, and pruning (Appendix N). Unimproved lands at Benicia Army Cemetery consist of a naturalized woodland forest of historically planted cork oak located in the northern corner of the property, encompassing an area just over a quarter-acre. No landscape maintenance is expected to be required in this area except for removal and dead wooding of trees that pose a safety risk along walkways. However, the forest should be managed for sustainment. Table 4-54 outlines Benicia's vegetation and grounds maintenance management actions.

***Table 4-54: Benicia Vegetation and Grounds Maintenance Management Actions***

| Conservation Measures |
|---|
| Use native plants for future plantings, where feasible. (*Objective 4.4*) |
| Minimize use of herbicides. If herbicide use is necessary, a broad-spectrum herbicide will not be used and care will be taken to not apply the herbicide to the cork oak trees or the soil surrounding the cork oak woodland forest. (*Objective 4.2*) |
| Ensure that landscaping activities do not intrude into unimproved areas. (*Objective 6.3*) |
| Consult with regional state forestry office or the local cooperative extension if a forest pest/pathogen is affecting the cork oak woodland. (*Objective 3.5, 7.2*) |
| **Conservation Projects** |
| Develop and implement training on sensitive resources for personnel, contractors, and other target audiences that identifies and discusses unique biological resources on USAG POM sites. (*Objectives 5.5, 6.1*) |
| Develop and print educational brochures or factsheets concerning special status species, invasive species, and other natural resource topics of interest. (*Objective 5.5, 6.1*) |

### 4.4.3.1 Pollinator Habitat

Benicia Army Cemetery pollinator habitat management mirrors that of POM. Refer to Section 4.1.3.5 for more information. Table 4-55 outlines Benicia's pollinator habitat management actions.

***Table 4-55: Benicia Pollinator Habitat Management Actions***

| Conservation Measures |
|---|
| Use low-maintenance site-specific native species in landscaping designs. (*Objectives 3.2, 4.1, 4.4*) |
| Avoid, where feasible, using herbicides and pesticides in sensitive pollinator habitats. (*Objectives 3.2, 3.5*) |
| Develop and maintain working relationships with other organizations addressing pollinator habitat issues. (*Objectives 3.2, 7.2*) |
| **Conservation Projects** |
| Develop and implement an Installation Conservation Design Plan (ICDP) to address stormwater pollution reduction, pollinator habitat establishment, urban tree planting opportunities, and wildlife habitat enhancement projects. (*Objectives 2.1, 2.2, 2.3, 3.2, 4.1, 4.2*) |

### 4.4.4 Fish and Wildlife Management

Refer to Section 4.1.6 for the regulatory requirements for fish and wildlife management on Benicia Army Cemetery. No native or game fish populations occur on Benicia Army Cemetery due to the lack of natural bodies of surface water. Benicia Army Cemetery is managed to sustain and enhance habitat for bird species. Almost forty bird species were observed during a winter 2013 survey by the National Audubon Society, indicating that this small cemetery provides valuable bird habitat. Table 4-56 outlines Benicia's fish and wildlife management actions.

***Table 4-56: Benicia Fish and Wildlife Management Actions***

| Conservation Measures |
|---|
| Implement vegetation management conservation measures listed in Section 4.1.3 to ensure conservation and restoration of wildlife habitat (i.e., using native plants and removing non-native plants in landscapes). (*Objectives 3.1, 3.4, 3.5, 4.4*) |
| Implement stormwater runoff conservation measures (Section 4.1.1.1) to reduce pollutants into adjacent water bodies. (*Objectives 2.1, 2.3*) |
| Add avian data to the DOD Coordinated Bird Monitoring Database. (*Objectives 1.1, 1.3*) |
| Develop working relationships with other agencies and organizations to identify bird conservation sites, participate in efforts to collect data on migratory bird species biology, and actions for conservation management. (*Objectives 1.3, 7.2*) |
| **Conservation Projects** |
| Develop and implement an Installation Conservation Design Plan (ICDP) to address stormwater pollution reduction, pollinator habitat establishment, urban tree planting opportunities, and wildlife habitat enhancement projects. (*Objectives 2.1, 2.2, 2.3, 3.2, 4.1, 4.2*) |
| Develop and implement training on sensitive resources for personnel, contractors, and other target audiences that identifies and discusses unique biological resources on USAG POM sites. (*Objectives 5.5, 6.1*) |

### 4.4.5 Federally Threatened, Endangered, and Special Status Species Management

No federally listed species or special status species are known to occur at Benicia Army Cemetery. Table 4-57 outlines Benicia's federal threatened, endangered, and special status species management actions.

***Table 4-57: Benicia Federally Threatened, Endangered, and Special Status Species Management Actions***

| Conservation Measures |
|---|
| Assess potential presence of special status species, prior to any federal proposed action at the site to ensure that impacts on special status species are analyzed, and appropriated mitigated, if necessary. (*Objectives 1.1, 1.2)* |
| Implement vegetation management conservation measures listed in Section 4.1.3 to ensure conservation and restoration of wildlife habitat (i.e., using native plants and removing non-native plants in landscapes). (*Objectives 3.1, 3.4, 3.5, 4.4)* |
| Implement fish and wildlife management conservation measures identified in Section 4.1.6. |

Presidio of Monterey, Ord Military Community, Satellite Communication Station at Camp Roberts, and Benicia Army Cemetery

| Conservation Projects |
|---|
| Develop and implement training on sensitive resources for personnel, contractors, and other target audiences that identifies and discusses unique biological resources on USAG POM sites. (*Objectives 5.5, 6.1*) |
| Conduct periodic biological and ecological surveys to include flora, fauna, special status species, and vegetative communities. (*Objectives 1.1, 1.3*) |

### 4.4.6 Pest Management

Refer to Section 4.1.8 for information on regulatory requirements. Raccoons have been a problem in the past, digging up the sod for grub worms. When necessary, raccoons are trapped and relocated. Currently, aphids are the only pests of concern for plants, which is controlled by periodically releasing ladybugs (J. Vanier personal communication, 17 Dec 2013). Pesticides are not used to the extent feasible and natural control measures are preferred (i.e., use of ladybugs and hand-pulling weeds) (K. Vanier personal communication, 26 January 2015). Table 4-58 outlines Benicia's pest management actions.

***Table 4-58: Benicia Pest Management Actions***

| Conservation Measures |
|---|
| Follow IPMP practices for control of pests. (*Objectives 3.5*) |
| Follow USEPA guidelines for appropriate use, handling, storage, and disposal of pesticides. (*Objectives 3.5*) |
| **Conservation Projects** |
| Revise and update the 2004 POM IPMP. (*Objectives 3.5*) |
| Develop and implement training on sensitive resources for personnel, contractors, and other target audiences that identifies and discusses unique biological resources on USAG POM sites. (*Objectives 6.1*) |

### 4.4.7 Invasive Species Management

Refer to Section 4.1.9 for the laws and guidelines and BMPs that apply to managing invasive species at Benicia Army Cemetery. Like other USAG POM sites, the focus of the invasive species management program is on invasive weed management. Of particular concern at the Benicia Army Cemetery is the California privet and mimosa tree (*Albizia julibrissin*). DPW-E is considering future adoption of WHIPPET to assist in prioritizing management of invasive weed species at Benicia Army Cemetery. Appendix F, the *Invasive Species Management Component Plan* provides additional information on invasive plant prevention and control. Table 4-59 outlines Benicia's invasive species management actions.

***Table 4-59: Benicia Invasive Species Management Actions***

| Conservation Measures |
|---|
| Scout for invasive plants and evaluate risks before construction and maintenance projects occur. (*Objectives 3.4, 3.5)* |
| Develop site-specific plans, where feasible, for controlling existing invasive plants before ground disturbing activities begin. (*Objectives 3.5*) |
| Use xeriscaping and low-maintenance site specific native species in landscaping designs. (*Objectives 4.4, 6.3*) |
| Continue to conduct surveys and document occurrence of invasive plant species. (*Objectives 3.4, 3.5)* |
| Treat invasive plants along commonly used access roads and staging areas to prevent the spread of seeds and propagules into work sites or unimproved areas. (*Objectives 3.4, 3.5)* |
| Designate specific areas for cleaning tools, vehicles, equipment, clothing, and gear to prevent the spread of seeds and propagules into work sites or unimproved areas. (*Objectives 3.4, 3.5)* |
| Minimize soil and vegetation disturbance, where feasible. (*Objectives 3.3)* |
| Ensure plant species used for landscaping do not include invasive or noxious species. (*Objectives 3.4, 3.5)* |
| **Conservation Projects** |
| Conduct invasive species surveys. (*Objectives 3.4, 3.5)* |
| Perform invasive plant species control. (*Objectives 3.4, 3.5)* |
| Continue to coordinate and implement environmental education and outreach activities. (*Objectives 6.1, 6.2, 6.3*) |
| Develop and print educational brochures or factsheets concerning special status species, invasive species, and other natural resource topics of interest. (*Objectives 5.5, 6.1*) |
| Develop and implement training on sensitive resources for personnel, contractors, and other target audiences that identifies and discusses unique biological resources on USAG POM sites. (*Objectives 5.5, 6.1*) |

### 4.4.8 Outdoor Recreation Management

Benicia Army Cemetery comprises 1.8 acres of graves, hard-surface walkways, and landscaping. It is open to the public, but has no areas designated for recreation. The Audubon Society conducts annual bird surveys at the site, but the facility is not an active bird watching area for public recreation. Grounds at the cemetery are primarily managed to retain an aesthetically pleasing natural landscaped environment to achieve maximum physical, cultural, and spiritual benefits for users within the principles of multiple land use and consistent with the military mission. Table 4-60 outlines Benicia's outdoor recreation management actions.

***Table 4-60: Benicia Outdoor Recreation Management Actions***

| Conservation Measures |
|---|
| Implement vegetation management conservation measures identified in Section 4.1.3. |
| Implement fish and wildlife conservation measures identified in Section 4.1.6. |
| Implement invasive species conservation measures identified in Section 4.1.9. |
| **Conservation Projects** |
| Produce environmental awareness materials and install informational signs to identify sensitive natural and cultural resources. (*Objectives 6.1, 6.3*) |

Presidio of Monterey, Ord Military Community, Satellite Communication Station at Camp Roberts, and Benicia Army Cemetery

| |
|---|
| Continue to coordinate and implement environmental education and outreach activities. (*Objectives 6.1, 6.2, 6.3*) |
| Develop and print educational brochures or factsheets concerning special status species, invasive species, and other natural resource topics of interest. (*Objectives 5.5, 6.1*) |
| Develop and implement training on sensitive resources for personnel, contractors, and other target audiences that identifies and discusses unique biological resources on USAG POM sites. (*Objectives 5.5, 6.1*) |

### 4.4.9 Conservation Law Enforcement

Like other USAG POM sites, conservation law enforcement staff is not present at the site. The NRM serves as a liaison to the installation security, CDFW game wardens, and the POM police when any conservation law enforcement issues occur. However, an Army Memorandum released in July 2015 requires at least one police officer from POM be trained as a CLEO. NRM will continue to work with POM police to ensure training is fulfilled.

Table 4-61 outlines Benicia's conservation law enforcement management actions.

***Table 4-61: Benicia Conservation Law Enforcement Management Actions***

| Conservation Measures |
|---|
| Continue to maintain an open line of communication with installation security, CDFW game wardens, and the POM police in regards to natural resources management (i.e., training opportunities, patrol strategies, coordination requirements). (*Objectives 7.1, 7.2*) |
| **Conservation Projects** |
| Continue to coordinate and implement environmental education and outreach activities. (*Objectives 6.1, 6.2, 6.3*) |
| Develop and implement training on sensitive resources for personnel, contractors, and other target audiences that identifies and discusses unique biological resources on USAG POM sites. (*Objectives 5.5, 6.1*) |

### 4.4.10 Environmental Awareness, Education, and Outreach

Benicia Army Cemetery Environmental Awareness, Education, and Outreach programs mirrors that of POM. Refer to Section 4.1.12 for more information. Table 4-62 outlines Benicia's environmental awareness, education, and outreach management actions.

***Table 4-62: Benicia Environmental Awareness, Education, and Outreach Management Actions***

| Conservation Measures |
|---|
| Continue to update the USAG POM Environmental Division webpage with new information and environmental education and outreach materials. (*Objectives 6.1*) |
| Continue to engage with community members on and off USAG POM sites to increase environmental awareness. (*Objectives 6.1*) |

| |
|---|
| Continue to work with contractors to ensure workers are properly trained on natural resources on USAG POM sites prior to starting any type of construction, maintenance, and landscaping project. *(Objectives 5.4, 6.1)* |
| Develop and maintain working relations with local and regional community groups, universities, and other natural resource management agencies to coordinate natural resource management strategies. *(Objectives 7.1, 7.2)* |
| Continue to develop and disseminate educational materials via websites, outreach activities, the local library, FMWR, etc. *(Objectives 6.1, 7.1)* |
| **Conservation Projects** |
| Produce environmental awareness materials and install informational signs to identify sensitive natural and cultural resources. (*Objectives 6.1, 6.3*) |
| Develop and print educational brochures or factsheets concerning special status species, invasive species, and other natural resource topics of interest. (*Objectives 5.5, 6.1*) |
| Continue to coordinate and implement environmental education and outreach activities. (*Objectives 6.1, 6.2, 6.3*) |
| Develop and implement training on sensitive resources for personnel, contractors, and other target audiences that identifies and discusses unique biological resources on USAG POM sites. (*Objectives 5.5, 6.1*) |

### 4.4.11 Training for Natural Resources Personnel

Training for natural resources personnel mirrors that of POM. Refer to Section 4.1.13 for more information. Table 4-63 outlines Benicia's training for natural resources personnel management actions.

***Table 4-63: Benicia Training for Natural Resources Personnel Management Actions***

| |
|---|
| **Conservation Measures** |
| Continue to provide opportunities for personnel to enhance and gain new skills in natural resources management techniques. (*Objectives 5.3, 5.4, 5.5*) |
| **Conservation Projects** |
| Ensure natural resources management training opportunities. (*Objectives 5.3, 5.4, 5.5*) |

### 4.4.12 Geographic Information Systems (GIS) Management, Data Integration, Access, and Reporting

The GIS management, data integration, access, and reporting program mirrors that of POM. Refer to Section 4.1.14 for more information. Table 4-64 outlines Benicia's GIS management, data integration, access, and reporting management actions.

Presidio of Monterey, Ord Military Community, Satellite Communication Station at Camp Roberts, and Benicia Army Cemetery

***Table 4-64: Benicia GIS Management, Data Integration, Access, and Reporting Management Actions***

| Conservation Measures |
|---|
| Ensure that established GIS standards for data collection are written into contract specifications. This will assist in standardizing data collection and allow for ease of data input and analysis. (*Objectives 5.4, 5.5*) |
| Ensure that annual data and inventory maps are entered into the GIS mapping system and database. (*Objectives 5.4, 5.5*) |
| Ensure that new populations of special status species are mapped and entered into the GIS database. (*Objectives 5.4, 5.5*) |
| **Conservation Projects** |
| N/A, however, most projects listed in the Project Implementation Schedule in Appendix B have requirements for GIS data collection, of which will be used to update GIS database. |

*This page intentionally left blank.*

# 5.0 REFERENCES

Ackerly, David D. 2012. *Future Climate Scenarios for California: Freezing Isoclines, Novel Climates, and Climatic Resilience of California's Protected Areas*. California Energy Commission. Publication number: CEC-500-2012-022.

Adams, Theodore E. 2014a. "Predation in Restoration and Mitigation." University of California Oak Woodland Management, Oak Regeneration/Restoration. Available online: http://ucanr.edu/sites/oak_range/Oak_Articles_On_Line/Oak_Regeneration_Restoration/Predation_in_Restoration_and_Mitigation/. Accessed 25 March 2014.

Adams, Theodore E. 2014b. "Techniques to Enhance Oak Regeneration Studied." University of California Oak Woodland Management, Oak Regeneration/Restoration. Available online: http://ucanr.edu/sites/oak_range/Oak_Articles_On_Line/Oak_Regeneration_Restoration/Techniques_to_Enhance_Oak_Regeneration_Studied/. Accessed 25 March 25, 2014.

Allen, D. 1996. *Results of Two Consecutive Years of Surveys for Yadon's Piperia (Piperia yadonii) 1995 and 1996*.

Alsop, Fred J. 2001. "Smithsonian Handbooks: Birds of North America." London, New York, Sydney: DK Publishing, Inc.

Altman, Bob and Rex Sallabanks. 2012. Olive-sided Flycatcher (*Contopus cooperi*), The Birds of North America Online (A. Poole, Ed.). Ithaca, N.Y.: Cornell Lab of Ornithology. Available online: http://bna.birds.cornell.edu/bna/species/502.

Alexander, J.M. and S.V. Swain. September 2010. "Sudden Oak Death: Integrated Pest Management in the Landscape." *Pest Notes University of California Statewide Integrated Pest Management Program.* Publication 74151. Available online: http://www.ipm.ucdavis.edu/PDF/PESTNOTES/pnsuddenoakdeath.pdf. Accessed 17 July 2014.

American Bird Conservancy (ABC). 2007. United States WatchList of Birds of Conservation Concern. Available online: http://www.abcbirds.org/abcprograms/science/watchlist/watchlist.html.

American National Standard Institute (ANSI). 2001. *ANSI A300 (Part 1) 2001 Revision Tree, Shrub and Other Woody Plant Maintenance Standard Practices*.

Benicia Tree Foundation. 2011. "Trees in Benicia." Available online: http://www.beniciatrees.org/programs/trees-benicia. Accessed 14 March 2014.

Benton, N., J.D. Ripley, and F. Powledge, Eds. 2008. Conserving Biodiversity on Military Lands: A Guide for Natural Resources Managers. ISBN 0-9711053-8-3. Arlington, VA: NatureServe. Available online: http://www.dodbiodiversity.org.

Bihler, A. and A. Hewitt. Benicia Army Cemetery Field Observations. Marstel-Day Site Visit. December 2013.

Bonds, J.D., K.J. Tribbey, and K.A. Civitarrese. 1986. *Update of the Initial Installation Assessments of Fort Ord and Subinstallations, Presidio of Monterey and Fort Hunter Liggett*.

Brooks, W. 1997. *A literature review of California domestic cork production*. USDA Forest Service Gen. Tech. Rep. PSW-GTR-160. Available online: http://www.fs.fed.us/psw/publications/documents/psw_gtr160/psw_gtr160_04e_brooks.pdf. Accessed 2 September 2014.

Bunn, D., A. Mummert, M. Hoshovsky, K. Gilardi, and S. Shanks. 2005. *California Wildlife: Conservation Challenges, California's Wildlife Action Plan*. Prepared by the Wildlife Health Center, School of Veterinary Medicine, University of California, Davis, CA. Available online: http://www.dfg.ca.gov/swap/. Accessed 4 March 2014.

Burchyns, Tony. 2010. "Benicia Deal Will Beautify Pine Lake Site." Solano County Business News. Available online: http://solanocountybusinessnews.blogspot.com/2010/05/benicia-deal-will-beautify-pine-lake.html. Accessed 21 February 2014.

Bureau of Land Management (BLM). 2013. "Fort Ord History – Fort Ord National Monument." U.S. Department of the Interior. Available online: http://www.blm.gov/ca/st/en/fo/hollister/cultural/lightfighters.html. Last updated 18 July 2013.

Cal Poly Land. n.d. "Plant Communities: Coastal Scrub." Available online: http://polyland.calpoly.edu/overview/archives/derome/scrub.html. Accessed 16 January 2014.

Calflora. 2014. The Calflora Database. Berkeley, California. Available online: http://www.calflora.org. Accessed 25 July 2014.

California Army National Guard (CA ARNG). 2012. *Camp Roberts Training Site Integrated Natural Resources Management Plan Update, Planning Period Fiscal Year 2012-2017, Agency Review Draft.*

CA ARNG. 2013a. *DRAFT Integrated Wildland Fire Management Plan*. Prepared by The Center for Environmental Management of Military Lands and CA ARNG NGCA-ARH Environmental-Division.

*California Coastal Act of 1976*, Public Resources Code Division 20, 2013, §30000 - §30012.

California Coastal Commission (CCC). 2001. "Federal Consistency in a Nutshell: A Guide Concerning the Operations of the Federal Consistency Provisions of the *Coastal Zone Management Act of 1972*, as Amended." Available online: http://www.coastal.ca.gov/fedcd/guidecd.pdf. Accessed 25 January 2016.

California Coastal Commission (CCC). 2012. "Program Overview." California Coastal Commission. Available online: http://www.coastal.ca.gov/whoweare.html. Accessed 25 March 2014.

California Department of Fish and Game (CDFG). 2001. California Natural Diversity Database. Available online: http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/CNDDB_ReadOverlays.pdf. Accessed 18 March 2014.

CDFG. 2008. *California Bird Species of Special Concern*. Available online: http://www.dfg.ca.gov/wildlife/nongame/ssc/birds.html.

CDFG. 2011. California Natural Diversity Database, Special Animals. Available online: http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/SPAnimals.pdf.

California Department of Fish and Wildlife (CDFW). 2013. "About the California Department of Fish and Wildlife." Available online: http://www.dfg.ca.gov/about/. Accessed 20 December 2013.

CDFW. 2014a. "California Condor". Available online: https://www.dfg.ca.gov/wildlife/nongame/t_e_spp/condor/. Accessed 30 April 2014.

CDFW. 2014b. Natural Diversity Database. Special Vascular Plants, Bryophytes, and Lichens List. Quarterly publication.

California Department of Food and Agriculture. 2014. "California Noxious Weeds." Plant Health & Pest Prevention Services. Available online: http://www.cdfa.ca.gov/plant/ipc/weedinfo/winfo_table-sciname.html. Accessed 19 August 2014.

California Department of Pesticide Regulation (CDPR). n.d. *Vernal Pool Fairy Shrimp. California Department of Pesticide Regulation Endangered Species Project*. Available online: http://www.cdpr.ca.gov/docs/endspec/espdfs/vpool1.pdf. Accessed 30 April 2014.

California Department of Water Resources (DWR). 2008. *Managing an Uncertain Future Climate: Change Adaptation Strategies for California's Water*. http://www.water.ca.gov/climatechange/docs/ClimateChangeWhitePaper.pdf. Accessed 12 February 2014.

DWR. 2010. "Hydrologic Regions of California: San Francisco Bay". Available online: http://www.water.ca.gov/groundwater/bulletin118/san_francisco_bay.cfm. Accessed 21 February 2014.

*California Endangered Species Act*. 1984. Fish and Game Code 2050 – 2116. Available online: http://www.leginfo.ca.gov/cgi-bin/calawquery?codesection=fgc&codebody=&hits=20. Accessed 28 February 2014.

CalEPA. 2013a. "Water Quality Standards, Plans and Policies. California Water Quality Monitoring Council". Available online: http://www.mywaterquality.ca.gov/water_quality_standards/#surface.

CalEPA. 2013b. "CalEPA Office of the Secretary." Available online: http://www.calepa.ca.gov/About/OfficeSec.htm. Accessed 20 December 2013.

California Environmental Resources Evaluation System (CERES). n.d. "California's Coastal Mountains". Available online: http://ceres.ca.gov/ceres/calweb/coastal/mountains.html. Last accessed 9 January 2014.

California Herps. 2014. "California State Rules and Regulations Regarding Hunting and Collecting California Reptiles and Amphibians." Avaliable online: http://www.californiaherps.com/info/herpinglaws.html. Accessed 13 Janurary 2015.

California Invasive Plant Council (Cal-IPC). 2006. California Invasive Plant Inventory. Available online: http://www.cal-ipc.org/ip/inventory/pdf/Inventory2006.pdf. Accessed 19 August 2014.

Cal-IPC. 2012. *Preventing the Spread of Invasive Plants: Best Management Practices for Transportation and Utility Corridors*. Cal-IPC Publication 2012-01. California Invasive Plant Council, Berkeley, CA. Available online: www.cal-ipc.org.

Cal-IPC. 2014a. "California Invasive Plant Council." California Invasive Plant Council. Available online: http://www.cal-ipc.org/. Accessed April 23, 2014.

Cal-IPC. 2014b. "California Invasive Plant Inventory." California Invasive Plant Council. Available online: http://www.cal-ipc.org/ip/inventory/index.php. Accessed May 1, 2014.

CNPS. 1997. "California Vegetation Database". Available online: http://davisherb.ucdavis.edu/cnpsActiveServer/index.html. Accessed 24 January 2014.

CNPS. 2014. Inventory of Rare and Endangered Plants (online edition, v8002). California Native Plant Society, Sacramento, CA. Available online: http://www.rareplants.cnps.org. Accessed 25 July 2014.

Presidio of Monterey, Ord Military Community, Satellite Communication Station at Camp Roberts, and Benicia Army Cemetery

California Natural Resources Agency. 2013. *Safeguarding California: Reducing Climate Risk*. Available online: http://resources.ca.gov/docs/climate/Final_Safeguarding_CA_Plan_July_31_2014.pdf. Last accessed 8 January 2016.

California Oak Foundation. 2007. *Oak Woodland Mitigation Program*. Available online: http://www.californiaoaks.org/ExtAssets/OakWdlandMitigationProg.pdf. Accessed 25 March 2014.

Cayan, D., M. Tyree, K. E. Kunkel, C. Castro, A. Gershunov, J. Barsugli, A. Ray, J. Overpeck, M. Anderson, J. Russell, B. Rajagopalan, I. Rangwala, and P. Duffy. 2012. "The Southwest Climate of the Future—Projections of Mean Climate." Assessment of Climate Change in the Southwest United States: A Technical Report Prepared for the U.S. National Climate Assessment. Garfin, Gregg, Angela Jardine, Robert Merideth, Mary Black, and J. Overpeck, Eds. Available online: http://swccar.org/sites/all/themes/files/SW-NCA-color-FINALweb.pdf.

Central Coast Regional Water Quality Control Board (CCRWQCB). 2011. Water Quality Control Plan for the Central Coast Basin. Available online: http://www.waterboards.ca.gov/centralcoast/publications_forms/publications/basin_plan/docs/basin_plan_2011.pdf.

CCRWQCB. 2013. Enrollment in General Waiver of Waste Discharge Requirements for Specific Types of Dischagres (Resolution No, R3-2008-0010) for the Camp Roberts Satellite Communication (SATCOM) Station Cooling Tower Operations, Camp Roberts, San Luis Obispo County. 31 July 2013.

Cicero, Carla. 2000. "Oak Titmouse (*Baeolophus inornatus*)." The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America online: http://bna.birds.cornell.edu/bna/species/485a.

Center for Information Dominance Unit Monterey (CIDU). 2013. "Mission and Vision." *Center for Information Dominance Unit Monterey*. Available online: https://www.netc.navy.mil/centers/ceninfodom/monterey/CommandInfo.aspx?ID=0. Last modified 17 July 2013.

City of Benicia. 2011. "Stormwater Management Plan." Available online: http://www.ci.benicia.ca.us/vertical/sites/%7B3436CBED-6A58-4FEF-BFDF-5F9331215932%7D/uploads/%7BE61263F5-2CD8-4246-95EB-F4105923D226%7D.PDF.

City of Benicia. 2012. Planning Division Zoning Map. April 2012.

City of Benicia. 2015. *Benicia Water Reuse Project*. April 2015. Available online: http://www.ci.benicia.ca.us/vertical/sites/%7B3436CBED-6A58-4FEF-BFDF-

5F9331215932%7D/uploads/Benicia_SWRCB_planning_grant_app_Apr_2015(1).pdf. Accessed 8 January 2016.

City of Monterey. n.d. City of Monterey Zoning Map. Available online: http://www.monterey.org/Portals/1/peec/maps/Zoning.Map.pdf. Accessed 14 January 2014.

City of Pacific Grove. 2015. City of Pacific Grove Zoning Map. Available online: http://www.cityofpacificgrove.org/sites/default/files/general-documents/planning-codes-regulations-and-maps/zoning-map-ord-13-0033-21-13.pdf. Accessed 13 January 2015.

City of Seaside. 2004. Land Use Policy Map. Available online: http://www.ci.seaside.ca.us/Modules/ShowDocument.aspx?documentid=591. Accessed 20 December 2013.

Clayton, W.D., M.S. Vorontsova, K.T. Harman, and H. Williamson. 2006. "GrassBase - The Online World Grass Flora." Available online: http://www.kew.org/data/grasses-db.html. Accessed 7 January 2014.

*Coastal Zone Management Act of 1972* (CZMA). 16 U.S.C. §§1451-1465.

Colorado Parks & Wildlife. 2005. *Colorado Sagebrush: A Conservation Assessment and Strategy; Vesper Sparrow* (*Pooesetes gramineus*). Available online: https://cpw.state.co.us/Documents/WildlifeSpecies/Sagebrush/VesperSparrow.pdf. Accessed 19 November 2015

Commission for Environmental Cooperation (CEC). 1997. *Ecological Regions of North America: Toward a Common Perspective*. Available online: http://www3.cec.org/islandora/en/item/1701-ecological-regions-north-america-toward-common-perspective-en.pdf. Accessed 9 January 2014.

CEC. 2008. *North American Monarch Conservation Plan*. Available online: http://www.mlmp.org/Resources/pdf/5431_Monarch_en.pdf.

CEC. 2011. *North American Terrestrial Ecoregions-Level III*. Available online: http://www3.cec.org/islandora/en/item/10415-north-american-terrestrial-ecoregionslevel-iii-en.pdf. Accessed 9 January 2014.

Cooperative Extension Service, University of California, Division of Agriculture and Natural Resources (CES UC). 1987. Leaflet 21426, Determining Daily Reference Evapotranspiration (ETo). April 1987.

CES UC. 1988. Leaflet 21432 Lawn Watering Requirements along California's Central California Coast.

CES UC. 1993. Leaflet 21493 Estimating Water Requirements of Landscape Plantings.

Cornwell, William K., Stephanie Stuart, Aaron Ramirez, Christopher R. Dolanc, James H. Thorne, and David A. Ackerly. 2012. Climate Change Impacts on California Vegetation: Physiology, Life History, and Ecosystem Change. California Energy Commission. Publication number: CEC-500-2012-023. Berkley, CA.

Dagit, R and A.J. Downer. 2002. To Prune or Not to Prune: Response of Coast Live Oaks (*Quercus agrifolia*) to Canopy Retention during Transplanting. IN: Proceedings of the 5th Oak Symposium: Oaks in California's Changing Landscape, San Diego, CA, October 2001. Pacific Southwest Research Station Gen. Tech. Rpt. PSW-GTR-184. Berkeley, CA.

Davis, J.B. 2011. "Ceremony at Benicia Army Cemetery will Honor Fallen Military Men and Women." Benicia Patch. [Newsletter]. Available online: http://benicia.patch.com/groups/politics-and-elections/p/ceremony-at-benicia-military-cemetery-will-honor-fall6c4768b893. Accessed 20 January 2014.

Defenders of Wildlife. 2015. "Threats to California Condor". Available online: http://www.defenders.org/california-condor/threats. Accessed 19 November 2015.

Department of Defense (DOD). 2008. Department of Defense Instruction (DODI) 4150.07: Pest Management Program (PMP). Available online: http://www.dtic.mil/whs/directives/corres/pdf/415007p.pdf. Accessed 27 April 2014.

DOD. 2011. Department of Defense Instruction (DODI) 4715.03: Natural Resources Conservation Program. Available online: http://www.dtic.mil/whs/directives/corres/pdf/471503p.pdf. Accessed 29 January 2014.

DOD. 2013. Department of Defense Manual (DODM) 4715.03: Integrated Natural Resources Management Plan (INRMP) Implementation Manual. Available online: http://www.dtic.mil/whs/directives/corres/pdf/471503m.pdf. Accessed 20 February 2014.

DOD Natural Resources Program. 2011. *Adaptation Planning for Climate Change in Integrated Natural Resource Management Plans*. Available online: http://www.dodnaturalresources.net/files/DoD_CC_INRMP_Fact_Sheet_01-16-12.pdf.

Department of Defense Partners in Flight (DOD PIF). 2013. "Homepage". Available at: http://www.DoDpif.org/. Accessed 8 August 2013.

DOD and The Nature Conservancy (TNC). n.d. Cooperative Agreement the Department of Defense and The Nature Conservancy. Available online: http://www.denix.osd.mil/nr/upload/MOU-Nature-Conservancy-all-signed-copy.pdf. Accessed 17 July 2014.

Department of Defense (DOD) and U.S. Fish and Wildlife Service (USFWS). 2002. *Integrated Natural Resources Management Plans*. Available online: library.fws.gov/Pubs9/es_integrated_nrplans02.pdf.

DOD and U.S. Fish and Wildlife Service (USFWS). 2006. Memorandum of Understanding Between the U.S. Department of Defense and the U.S. Fish and Wildlife Service to Promote the Conservation of Migratory Birds. http://www.fws.gov/migratorybirds/partnerships/dodmoufinalsignature.pdf.

DOD Legacy Program. n.d. *Updated Guidance for Implementation of the Sikes Act Improvement Act, Coordination Requirements of the Sikes Act*. Available online: http://www.denix.osd.mil/nr/upload/SIKES_ACT_GUIDANCE_0810.DOC. Accessed 20 December 2013.

Earle, Christopher J. 2013a. "Cupressus macrocarpa." The Gymnosperm Database. Available online: http://www.conifers.org/cu/Cupressus_macrocarpa.php. Accessed 24 January 2014.

Elliott, John. 1997. Presidio of Monterey, Department of Public Works. Personal communication. June 18.

*Endangered Species Act of 1973*. 7 U.S.C. § 136, 16 U.S.C. § 1531, et seq., as amended.

Eng, L. L., D. Belk, and C. H. Eriksen. 1990. Californian Anostraca: Distribution, Habitat, and Status. Journal of Crustacean Biology 10(2):247-277.

Environmental Chemical Corporation. 1998. (Final) Closure Report Landfill Repair, Presidio of Monterey, California.

Eriksen, C. H. and D. Belk. 1999. Fairy Shrimps of California's Puddles, Pools, and Playas. Eureka, CA: Mad River Press.

Ertter, Barbara. 2001. Native California Roses: Rosa pinetorum A.A. Heller "Pine Rose". University of California at Berkeley University and Jepson Herbaria. Available online: http://ucjeps.berkeley.edu/ina/roses/rosa_pinetorum.html. Accessed 13 May 2014.

Farr, Sam. 2014. *Farr Secures over $40 Million for Camp Roberts Improvements*. Congressman Sam Far (CA-20) Press Release. 04 September 2014. Available online: http://farr.house.gov/index.php/press-releases/71-newsroom/2014-press-releases/1116-farr-secures-over-40-million-for-camp-roberts-improvements. Accessed 26 January 2016.

Federal Emergency Management Agency (FEMA). 2009. Map Service Center – FIRM. Available online: https://msc.fema.gov/webapp/wcs/stores/servlet/mapstore/homepage/MapSearch.html?isFloodMap=true&AddressQuery=monterey#. Accessed 20 February 2014.

Gershunov A, D.R. Cayan and S.F. Iacobellis. 2009. "The Great 2006 Heat Wave over California and Nevada: Signal of an Increasing Trend." Journal of Climate 22(23): 6181–6203.

Goodman, S.W. 1994. Memorandum from Under Secretary of Defense for Environmental Security, Subject: Implementation of Ecosystem Management in the DOD.

Grinnell, J., and A. H. Miller. 1944. *The Distribution of the Birds of California*. Pac. Coast Avifauna No. 27.

Guretzky, J.A., E.R. Clark, and D. Woodbury. 2005. *Life History Traits of the Threatened Purple Amole (Chlorogalum purpureum var. purpureum)*. Prepared for Fort Hunter Liggett by the Construction Engineering Research Laboratory, U.S. Army Corps of Engineers, Champaign, Illinois.

Harding Lawson Associates (HLA). 1989. *Remedial Investigation Presidio of Monterey Landfill, Monterey, California (Volume D)*.

HLA. 1995. *Environmental Assessment Landfill Closure Presidio of Monterey Landfill Monterey, California*. Prepared for Preisido of Monterey, U.S. Army.

Harper, John M., Richard B. Standiford, and John W. LeBlanc. 2014. "Growing Bareroot Blue Oak Seedlings." University of California Oak Woodland Management, Oak Regeneration/Restoration. Available online: http://ucanr.edu/sites/oak_range/Oak_Articles_On_Line/Oak_Regeneration_Restoration/Growing_Bareroot_Blue_Oak_Seedlings/. Accessed 25 March 2014.

Hawk Mountain. 2015. "RaptorPedia: Sharp-shinned Hawk". Available online: http://www.hawkmountain.org/raptorpedia/hawks-at-hawk-mountain/hawk-species-at-hawk-mountain/sharp-shinned-hawk/page.aspx?id=575. Accessed 19 November 2015.

ICF International. 2011. *POM Hooker's Manzanita Survey Report*. Prepared for Presidio of Monterey, Sacramento, California.

ICF International. 2010. *Final Environmental Assessment and Finding of No Significant Impact SATCOM Regional Hub Node Project, Camp Roberts, California*. Prepared for U.S. Army Garrison Presidio of Monterey.

ICF International. 2013. *Final Biological Assessment for the Presidio of Monterey Real Property Master Plan*.

ICF Jones & Stokes. 2009. *Field Memorandum of Results for the Presidio of Monterey/Ord Military Community Planning Level Surveys, Monterey County, California*. Prepared for the Presidio of Monterey.

Jennings, M. R., and M. P. Hayes. 1994. Amphibian and Reptile Species of Special Concern in California. Final Report to the California Department of Fish and Game, Inland Fisheries Division, Rancho Cordova, CA. 225 pp.

Jockusch, E. L. 2001. Molecular phylogenetic analysis of slender salamanders, Genus Batrachoseps (Amphibia: Plethodontidae), from central coastal California with descriptions of four new species. Herpetological Monographs 15:54-99.

Jones & Stokes Associates, Inc. (Jones & Stokes). 1984. *Final Environmental Assessment, Master Plan, Presidio of Monterey*. Prepared for Presidio of Monterey, U.S. Army.

Jones & Stokes. 1992a. *Other Physical Attributes of Fort Ord, California*. Prepared for the U.S. Army Corps of Engineers, Sacramento District.

Jones & Stokes. 1992b. *Environmental Impact Statement Fort Ord Disposal and Reuse*. Prepared for the U.S. Army Corps of Engineers, Sacramento District.

Jones & Stokes. 1994a. *Environmental Assessment for the Presidio of Monterey General Instructional Facility, Audio Visual Center, Academic Auditorium, and Other Improvements*. Prepared for the U.S. Army Corps of Engineers. Sacramento, California.

Jones & Stokes. 1994b. *The Monterey Ecological Staircase: The Nature of Vegetation and Soils on Different Geomorphic Surfaces of the Monterey Peninsula with an Emphasis on Monterey Pine Forest*. Prepared for the California Department of Fish and Game, Natural Heritage Division, Sacramento, California.

Jones & Stokes. 1994c. *Monterey Pine Forest Ecological Assessment: Historical Distribution, Ecology, and Current Status of Monterey Pine.* Submitted to California Department of Fish and Game. September 12, 1994.

Jones & Stokes. 1995a. *Baseline Flora and Fauna Study Presidio of Monterey, Monterey, California*. Prepared for Presidio of Monterey, U.S. Army.

Jones & Stokes. 1996a. *Monterey Pine Conservation Strategy Report*. Prepared for California Native Plant Society (CNPS) and California Department of Fish and Game (CDFG) Natural Heritage Division

Presidio of Monterey, Ord Military Community, Satellite Communication Station at Camp Roberts, and Benicia Army Cemetery

Jones & Stokes. 1996b. *Results of a Delineation of Waters of the United States Conducted at Camp Roberts Army National Guard Training Facility, California*. State Military Department. Sacramento, CA.

Jones & Stokes. 1997. *Installation-wide Multi-species Habitat Management Plan for Former Fort Ord, California*. Prepared for U. S. Army Corps of Engineers.

Jones & Stokes. 2005. *Final Programmatic Environmental Assessment and Finding of No Significant Impact SATCOM Area Development Plan. Camp Roberts, California*. Prepared for U.S. Army Network Enterprise Technology Command.

Kelly, N. M. and K.A. Tuxen. 2003. WebGIS for sudden oak in coastal California. Computers. Environment and Urban Systems 27(5): 527-547.

Kelly, N.M, K.A. Tuxen, and F.R. Kearns. 2004. Geospatial informatics for management of a new forest disease: Sudden Oak Death. Photogrammetric Engineering and Remote Sensing 70(9): 1001-1004.

Kotlier, N.B. 2007. Olive-sided Flycatcher (*Contopus cooperi*): A Technical Conservation Assessment. U.S. Forest Service, Rocky Mountain Region. Available online: http://www.sierraforestlegacy.org/Resources/Conservation/SierraNevadaWildlife/OliveSidedFlycatcher/OSF-Kotliar07.pdf.

Krawchuk, M.A., M.A. Moritz, M.A. Parisien, J. Van Dorn, and K. Hayhoe. 2009. "Global Pyrogeography: The Current and Future Distribution of Wildfire." PLoS ONE 4(4): e5102.

Kunkel, K.E, L.E. Stevens, S.E. Stevens, L. Sun, E. Janssen, D. Wuebbles, K.T. Redmond, and J.G. Dobson. 2013. Regional Climate Trends and Scenarios for the U.S. National Climate Assessment, Part 5. Climate of the Southwest U.S. NOAA Technical Report NESDIS 142-5.

Lee, Chris, Yana Valachovic, and Matteo Garbelotto. 2011. *Protecting Trees from Sudden Oak Death before Infection.* University of California Agriculture and Natural Resources. Accessed 17 July 2014. http://anrcatalog.ucdavis.edu/pdf/8426.pdf.

Litschert, S.E., T.C. Brown, and D.M. Theobald. 2012. "Historic and Future Extent of Wildfires in the Southern Rockies Ecoregion, USA." Forest Ecology and Management 269:124-133.

MACTEC. 2005. *Habitat Assessment Report: Flora and Fauna Baseline Study of the Presidio of Monterey, California*. Prepared for the U.S. Army Corps of Engineers.

MACTEC. 2007. *2007 Yadon's Piperia Survey, Presidio of Monterey, Monterey County, California.* Prepared for U.S. Department of the Army.

Madison, Lorrie. 2014. U.S. Army Garrison Presidio of Monterey. Personal communication. July 2014.

MARDET Presidio of Monterey (MARDET POM). "Mission." *MARDET Presidio of Monterey.* Available online: https://www.mcis.usmc.mil/presidio/default.aspx. Accessed 21 July 2014.

Marina Coast Water District. 2012. *2012 Consumer Confidence Report for Central Marina and Ord Community*.

Martin, A. C., H. S. Zim, and A. L. Nelson. 1961. American Wildlife and Plants, a Guide to Wildlife Food Habits. Dover Publ., Inc., New York.

Matthews, Mary Ann. 1997. "An Illustrated Field Key to the Flowering Plants of Monterey County and Ferns, Fern Allies, and Conifers." Sacrament, California: California Native Plant Society.

Maurer E.P, A.W. Wood, J.C. Adam, D.P. Lettenmaier, and B. Nijssen. 2002. "A Long-Term Hydrologically Based Dataset of Land Surface Fluxes and States for the Conterminous United States." Journal of Climate 15(22): 3237-3251. Available online: http://dx.doi.org/10.1175/1520-0442(2002)015<3237:ALTHBD>2.0.CO;2. Data updated to 2010 at: http://www.engr.scu.edu/~emaurer/gridded_obs/index_gridded_obs.html.

McCreary, Douglas D. 2004. "Oak Woodland Conservation Act of 2001". Available online: http://escholarship.org/uc/item/87r5z127. Accessed 10 November 2015.

McCreary, Douglas D. and Jerry Tecklin. 2014. "Effects of Tree Shelters and Weed Control on Blue Oak Growth and Survival." University of California Oak Woodland Management, Oak Regeneration/Restoration. Available online: http://ucanr.edu/sites/oak_range/Oak_Articles_On_Line/Oak_Regeneration_Restoration/Effects_of_Tree_Shelters_and_Weed_Control_on_Blue_Oak_Growth_and_Survival/. Accessed 25 March 2014.

McDonald, Philip M., and Robert J. Laacke. n.d. "Monterey Pine." Available online: http://www.na.fs.fed.us/pubs/silvics_manual/Volume_1/pinus/radiata.htm. Accessed 14 February 2014.

Michael Backer Jr, Inc., AECOM JV, and The Urban Collective, LLC. 2013. *Presidio of Monterey Area Development Plan*. Prepared for U.S. Army Corps of Engineers.

Monterey County. n.d. "A Brief History of Monterey County – The Indians." *Monterey County History.* Available online: http://www.mtycounty.com/pgs-history/indians.html. Accessed 21 July 2014.

Monterey County Water Resources Agency and State Water Resources Control Board (SWRCB). 2008. *San Antonio and Nacimiento Rivers Watershed Management Plan*. Prepared by the Nacitone Watersheds Steering Committee and Central

Coast Salmon Enhancement, Inc. Available online: http://www.mcwra.co.monterey.ca.us/Agency_data/Nacitone%20Study%20Group/Nacitone_Watershed_Plan.pdf. Accessed 21 February 2014.

Monterey County Water Resources Agency. 2006. *Salinas Valley Integrated Regional Water Management Functional Equivalent Plan Summary Document Update*. Prepared by RMC. Available online: http://www.mpwmd.dst.ca.us/mbay_irwm/irwm_library/Salinas_Valley_FEP_May_2006.pdf. Accessed 20 February 2014.

Morton, Stephen, City of Monterey Arborist, 2007a. Personal communication with Lenore Grover-Bullington regarding Western Gall Rust. May 2007.

Morton, Stephen, City of Monterey Arborist. 2007b. Personal communication with Lenore Grover-Bullington regarding bark beetles. May 2007.

Morton, Stephen, City of Monterey Arborist. 2015. Personal communication regarding plant pests on POM. November 2015.

Mountain Lion Foundation. 2015. "When is Enough, Enough?" Available online: http://www.mountainlion.org/portalthreats.asp. Accessed 19 November 2015.

N.H. Sandburg. 2014. *Draft Benicia Military Cemetery Planning Level Survey Report Benicia, California*. September 2014. Prepared for U.S. Army Corps of Engineers.

National Climate Assessment and Development Advisory Committee (NCADAC). 2013. *Draft for Public Comment, National Climate Assessment Report*. Available online: http://ncadac.globalchange.gov/download/NCAJan11-2013-publicreviewdraft-fulldraft.pdf.

*National Defense Authorization Act for Fiscal Year 2013*. Enacted 2012. H.R. 4310 (112th). Available online: https://www.govtrack.us/congress/bills/113/s1034. Accessed 10 March 2014.

National Guard Bureau and CA ARNG. 1991. *Biological Assessment of the Effects of Activities Conducted at Camp Roberts Army National Guard Training Site, Monterey and San Luis Obispo Counties, California, on Endangered Species.*

National Oceanic and Atmospheric Administration (NOAA). 2013. *National Climate Data Center. State of the Climate: National Overview for Annual 2013*. Available online: http://www.ncdc.noaa.gov/sotc/2013/13.

NOAA. 2014. "Sea Level Trends." Available online: http://tidesandcurrents.noaa.gov/sltrends/sltrends.html. Accessed 02 April 2014.

Natural Resources Conservation Service (NRCS). 2001. *United States Department of Agriculture Official Soil Series Descriptions, Balcom*. Available online:

https://soilseries.sc.egov.usda.gov/OSD_Docs/B/BALCOM.html. Accessed 21 January 2014.

NRCS. 2015. *Oak Habitat Restoration*.

NatureServe n.d. "Ecosystems". http://www.natureserve.org/biodiversity-science/species-ecosystems/ecosystems. Accessed 10 February 2014.

NatureServe. 2011. *Species at Risk on Department of Defense Lands: Updated Analysis, Report, and Maps*. Available online: https://connect.natureserve.org/services/assessments/dod/department-of-defense. Accessed 18 August 2014.

Oak Mortality Task Force. 2014. "Sudden Oak Death Overview." California Oak Mortality Task Force. Available online: http://www.suddenoakdeath.org/about-sudden-oak-death/history-background/. Accessed 04 August 2014.

Oak Woodlands Conservation: Environmental Quality. 2005. California Public Resources Code §21083.4. Available online: http://www.leginfo.ca.gov/cgi-bin/displaycode?section=prc&group=21001-22000&file=21080-21098. Accessed 18 August 2014.

Office of Environmental Health Hazard Assessment (OEHHA). 2013. *Indicators of Climate Change in California*.

Office of the Agricultural Commissioner. 2014. "Pitch Canker: A Decade of Differences in Pitch Canker Infestation of Monterey Pines in Asilomar Forest Project." *Monterey County Office of the Agricultural Commissioner*. Accessed 17 July 2014. http://ag.co.monterey.ca.us/pages/pitch-canker.

Office of the President. 1977. Executive Order 11988, Floodplain Management. 42 Federal Register 26971, 3 CFR.

Office of the President. 1999. Executive Order 13112, Invasive Species. Federal Register, 64 (25): 6183-6186.

Office of the President. 2001. Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds. Federal Register, 66 (11): 3853-3856.

Office of the President. 2007. Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management. Federal Register, 72 (17): 3919-3923.

Office of the Under Secretary of Defense. 2005. Memorandum: Supplemental Guidance to Leased Lands, dated 17 May 2005.

Office of the Under Secretary of Defense. 2006. Memorandum: Integrated Natural Resource Management Plan (INRMP) Template, dated 14 August 2006. Available online: http://www.denix.osd.mil/nr/upload/INRMP-TEMPLATE.PDF.

Ohlone Costanoan Esslen Nation. 2014. "Ohlone/Costanoan-Esselen Indians of the Greater Monterey Bay Area". Available Online: http://www.ohlonecostanoanesselennation.org/index.html. Accessed 21 July 2014.

Oiseaux-Birds. N.d. Allen's Hummingbird (*Selasphorus sasin*) Card. Available online: http://www.oiseaux-birds.com/card-allen-hummingbird.html. Accessed 19 November 2015.

Page & Turnbull. 1994. *Presidio of Montery Historic Preservation Plan and Maintenance Manual.* Prepared for U.S. Army Corps of Engineers Sacramento, California. October 1994. Available online: http://www.monterey.army.mil/DPW/inc/historic_preservation_plan.pdf. Accessed 2 February 2016.

Paso Robles Groundwater Advisory Committee (PRGAC). 2010a. *Overview of the Bradley Subarea of the Paso Robles Groundwater Basin*. Available online: http://www.prcity.com/government/departments/publicworks/water/pdf/GBMP/presentations/BradleySubarea2.25.10.pdf. Accessed 21 February 2014.

PRGAC. 2010b. *Overview of the Estrella Subarea of the Paso Robles Groundwater Basin*. Available online: http://www.prcity.com/government/departments/publicworks/water/pdf/GBMP/presentations/EstrellaSubarea2.25.10.pdf. Accessed 21 February 2014.

PRGAC. 2011. *Paso Robles Basin Groundwater Management Plan*. Available online: http://www.slocounty.ca.gov/Assets/PL/PR+Groundwater/gwp.pdf. Accessed 21 February 2014.

Pierson, E. D., and W. Rainey. 1998. In Bolster, B. C. (ed.), *Terrestrial Mammal Species of Special Concern in California*, pp.31–34. Available online: http://www.dfg.ca.gov/wildlife/nongame/ssc/docs/mammal/species/08.pdf. Accessed 9 January 30, 2014.

Pike, John. 2014. "1st Satellite Control Battalion." Available online: http://www.globalsecurity.org/space/agency/1sat.htm. Accessed 20 January 2014.

Pilotte, Eric, Napa-Solano Audubon Society President. 2014. Personal communication. February 2014.

Preston, Robert and John Holson. 2012. *Presidio of Monterey Invasive Plant Survey Report*. Prepared by ICF International for Presidio of Monterey.

Pronos, John, Robert L. Mathiasen, and Jerome S. Beatty. 2004. *Gray Pine Dwarf Mistletoe*. U.S. Department of Agrilculture Forest Service, *Forest Insect & Disease Leaflet 173*. August 2004. Available online: http://www.ncrcd.org/files/5613/5837/5399/Gray_Pine_Dwarf_Mistletoe.pdf

Rahmstorf, S. 2007. A Semi-Empirical Approach to Projecting Future Sea-Level Rise. Science 315(5810): 368–370.

Reese, Mark, Presidio of Monterey, Directorate of Public Works, Environmental Division Chief, 2007. Personal communication with Lenore Grover-Bullington regarding mountain lions on the Presidio. May 2007.

Regional Water Quality Control Board (RWQCB). 1990. *Presidio of Monterey Landfill Closure Plan*.

Reid, Robert. 1987. *Huckleberry Hill Forest Management Plan*. Prepared by Urban Forester for U.S. Army Garrison, Presidio of Monterey.

Reid, Robert. City of Monterey. 1998. Personal communication with Robert Reid, City of Monterey Forester, regarding management of the Huckleberry Hill Nature Preserve. September.

Reid, Robert. City of Monterey. 2007. Personal communication between Robert Reid, City of Monterey Forester, and Lenore Grover-Bullington regarding management of the Huckleberry Hill Nature Preserve. April.

San Luis Obispo County. 2008. Rural Land Use Category Map. San Luis Obispo County Department of Planning & Building. Available online: http://www.sloplanning.org/gis/mapimagepdf/Rural_LUC_Map.pdf. Accessed 22 January 2014.

Sanderson, Brandon. California Department of Fish & Wildlife, San Luis Obispo County. 2014. Personal communication between Brandon Sanderson, Environmental Scientist, and Lorrie Madison.

Santa Barbara County. 2003. Deciduous Oak Tree Protection and Regeneration. Article IX of Chapter 35, Santa Barbara County Code. June 2003.

Shaw Environmental, Inc. 2007. *Operations and Maintenance Plan, Presidio of Monterey Landfill, California*. Prepared for U.S. Army Corps of Engineers.

Sierra Club. N.d. "Arizona's Bats". Available online: http://www.sierraclub.org/sites/www.sierraclub.org/files/sce/grand-canyon-chapter/conservation/Bats%20and%20climate%20change.pdf. Last accessed 08 January 2016.

*Sikes Act Improvement Act of 1997*. U.S.C. Title 16 § 670a. Cooperative Plan for Conservation and Rehabilitation. Available online: http://www.law.cornell.edu/uscode/text/16/670a. Accessed 5 February 2014.

Snyder N.F., and J.J. Schmitt. 2002. California Condor (*Gymnogyps californianus*). *In* The Birds of North America, No. 610 (A. Poole, ed.). Ithaca: Cornell Lab of Ornithology, Retrieved from the Birds of North America Online:

http://bna.birds.cornell.edu/bna/species/610/articles/introduction. Accessed 23 July 2014.

Snyder, N., and H.A. Snyder. 2005. Introduction to the California condor. California Natural History Guides No. 81. University of California Press, Berkeley and Los Angeles, CA.

State Water Resources Control Board (SWRCB). 2012a. NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities. NPDES No. CAS000002. Available online: http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2012/wqo2012_0006_dwq.pdf.

SWRCB. 2012b. Construction General Permit Fact Sheet. Available online: http://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/constpermits/wqo_2009_0009_factsheet.pdf.

SWRCB. 2013. Waste Discharge Requirements for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (MS4s) (General Permit). Available online: http://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/phsii2012_5th/order_final.pdf. Accessed 5 February 2013.

Stebbins, R. C. 1954. Amphibians and Reptiles of Western North America. McGraw-Hill, New York.

Stebbins, R. C. 2003. Western Reptiles and Amphibians. Third edition. Houghton Mifflin Co. Boston and New York.

Swain, S., S.A. Tjosvold, and S.H. Dreistadt. 2009. "California Oakworm." *Pest Notes University of California Statewide Integrated Pest Management Program.* Publication 7422. Accessed 29 July 2014. http://www.ipm.ucdavis.edu/PDF/PESTNOTES/pncaliforniaoakworm.pdf.

Swett, C.L. and T.R. Gordon. 2013. "Pitch Canker: Integrated Pest Management for Home Gardeners and Landscape Professionals." *Pest Notes. University of California Agriculture and Natural Resources Statewide Integrated Pest Management Program.* Accessed 17 July 2014. http://www.ipm.ucdavis.edu/PDF/PESTNOTES/pnpitchcanker.pdf.

Tetra Tech, Inc. and ICF International. 2013. *Draft Vernal Pool Fairy Shrimp Habitat Survey Report for the Satellite Communications Facility, California*. Prepared for Presidio of Monterey.

Tetra Tech, Inc. and ICF International. 2014. *Satellite Communications Station Planning-Level Surveys Report, Draft*. Prepared for U.S. Army Garrison Presido of Monterey.

The Xerces Society, 2013. "Monarch Butterflies". Available online: http://www.xerces.org/monarchs/, Accessed 23 January 2014.

U.S. Army. 1994. *Interim Action, Record of Decision, Contaminated Surface Soil Remediation, Fort Ord, California*.

U.S. Army. 1995a. *No Action Record of Decision, Fort Ord, California*.

U.S. Army. 1995b. "Welcome to the Presidio of Monterey". Prepared by the Presidio of Monterey Public Affairs Office.

U.S. Army. 2004a. *Presidio of Monterey and Ord Military Community Installation Pest Management Plan*.

U.S. Army. 2004b. *United States Army Presidio of Monterey Integrated Cultural Resources Management Plan.* Directorate, Environmental and Natural Resources, U.S. Army Presidio of Monterey, Monterey California. December 2004. Available online: http://www.monterey.army.mil/DPW/inc/cultural_resources_mgt_pln.pdf. Accessed 2 February 2016.

U.S. Army. 2007. Army Regulation 200-1 Environmental Protection and Enhancement. Headquarters, Department of Army, Washington, DC. December.

U.S. Army. 2011. Track 1 Plug-in Approval Memorandum, MRS-24A, MRS-24C, and Parcel E20c.1, Former Fort Ord, California. March 24, 2011. Available online: http://www.fortordcleanup.com/ar_pdfs/AR-OE-0741/OE-0741.pdf.

U.S. Army. 2013a. *Final Supplemental Environmental Assessment for Anti-Terrorism Force Protection Measures, SATCOM Camp Roberts, San Luis Obispo County, California.*

U.S. Army. 2013b. *Finding of No Significant Impact and the Environmental Assessment for the Huckleberry Hill Waterline Restoration Project, DRAFT*.

U.S Army. 2015. *Draft Environmental Assessment for Multiple Construction Projects: SATCOM, Camp Roberts, San Luis Obispo County, CA.*

USACE. 2012. *Five-Year Review Report, Presidio of Monterey Landfill, California*. Prepared for U.S. Army Garrison POM and U.S Army Environmental Command.

USACE. 2013a. *Final Environmental Impact Statement Real Property Master Plan, Presidio of Monterey California*.

USACE. 2013b. *Presidio of Monterey Integrated Water Management Plan*. Prepared for Presidio of Monterey Department of Public Works.

U.S. Army Fort Ord Cleanup. 2014. "Fort Ord and BRAC History." Available online: http://www.fortordcleanup.com/about/fort-ord-and-brac-history/. Accessed 18 July 2014.

U.S. Army Garrison Presidio of Monterey (USAG POM). 2007. *Department of Army Defense Language Institute, Foreign Language Center, Presidio of Monterey, and Ord Military Community Hazardous Waste Management Plan*. *Standard Operating Procedures for the Management of Hazardous Wastes.*

USAG POM. 2008. *Integrated Natural Resource Management Plan, Presidio of Monterey and Ord Military Community, Monterey County, California*.

USAG POM. 2010. Shapefile: Hooker's Manzanite_J_&S_1995_2010 update. Provided by the POM.

USAG POM. 2012a. "U.S. Air Force 517th Training Group." *The Official Website of Presidio of Monterey.* Available online: http://www.monterey.army.mil/Tenant_units/517th.html. Accessed 21 July 2014.

USAG POM. 2012b. *Integrated Wildland Fire Management Plan*. 24 July 2012.

USAG POM. 2014a. "About Us." Available online: http://www.monterey.army.mil/About/about_main.html. Accessed 3 January 2014.

USAG POM. 2014b. "229th Military Intelligence Battalion (DLI)." *The Official Website of Presidio of Monterey.* Available online: http://www.monterey.army.mil/Tenant_units/229th_mib.html. Accessed 21 July 2014.

U.S. Department of Agriculture – Forest Service (USDA-FS). 2014. "Program Overview." Available online: http://www.fs.fed.us/ucf/about_overview.shtml. Accessed 1 April 2014.

U.S. Department of Agriculture (USDA). 1977. *Soil Survey of Solano County, California*. USDA Soil Conservation Service, in cooperation with University of California Agricultural Experiment.

USDA. 1978. *Soil Survey of Monterey County, California*. United States Department of Agriculture, Soil Conservation Service, in cooperation with U.S. Forest Service and University of California Agricultural Experiment Station. Available online: http://soildatamart.nrcs.usda.gov/manuscripts/CA053/0/monterey.pdf. Last accessed 17 January 2014.

U.S. Drought Monitor. 2014. "Tabular Data Archive: California". University of Nebraska-Lincoln, National Drought Mitigation Center. Available online: http://droughtmonitor.unl.edu/MapsAndData/DataTables.aspx?CA. Accessed 25 July 2014.

U.S. Environmental Protection Agency (USEPA). 1995. *Guidance for Presidential Memorandum on Environmentally and Economically Beneficial Landscape Practices on Federal Landscaped Grounds.*

USEPA. 2004a. *2004 Waterbody Report for Salinas River (Upper, Confluence of Nacimiento River to Santa Margarita). Watershed Assessment, Tracking, and Environmental Results*. Available online: http://ofmpub.epa.gov/waters10/attains_waterbody.control?p_list_id=CAR309811772002031911222 6&p_report_type=T&p_cycle=2004. Accessed 25 March 2014.

USEPA. 2004b. *Water Quality Assessment Status Reporting Year 2004 for Salinas River (Upper, Confluence of Nacimiento River to Santa Margarita). Watershed Assessment, Tracking, and Environmental Results*. Available online: http://ofmpub.epa.gov/waters10/attains_waterbody.control?p_au_id=CAR309811772002031911222 6_00&p_cycle=2004. Accessed 25 March 2014.

USEPA. 2006. *Ecological Regions of North America map, Level I-III.* Available online: ftp://ftp.epa.gov/wed/ecoregions/cec_na/NA_LEVEL_III.pdf. Accessed 9 January 2014.

USEPA. 2010. *Endangered Species Facts: San Joaquin Fox (Vulpes Macrotis Mutica).* Available online: http://www.epa.gov/espp/factsheets/san-joaquin-kitfox.pdf.

USEPA. 2013. "How's My Waterway". Available online: http://watersgeo.epa.gov/mywaterway/rlist.html. Accessed 19 March 2014.

USEPA. 2014. *Climate Change Indicators in the United State*. Available online: http://www.epa.gov/climatechange/pdfs/climateindicators-full-2014.pdf.

USEPA Region 9. 2014. "National Pollutant Discharge Elimination System (NPDES): NPDES Wastewater & Stormwater Permits." Available online: http://www.epa.gov/region9/water/npdes/stormwater.html#phase2. Last modified 14 March 2014.

U.S. Fish and Wildlife Service (USFWS) 1976. Determination of Critical Habitat for American Crocodile, California Condor, Indiana Bat, and Florida Manatee, Federal Register 41 (187): 41914-41916.

USFWS. 1993. *Biological Opinion for the Disposal and Reuse of Fort Ord, Monterey County, California*.

USFWS. 1994. Endangered and Threatened Wildlife and Plants; Determination of Endangered Status the Conservancy Fairy Shrimp, Longhorn Fairy Shrimp, and the Vernal Pool Tadpole Shrimp; and Threatened Status for the Vernal Pool Fairy Shrimp; Final Rule. Federal Register 59 (180): 48136-48153.

USFWS. 1995. *Migratory Non-game Birds of Management Concern*.

Presidio of Monterey, Ord Military Community, Satellite Communication Station at Camp Roberts, and Benicia Army Cemetery

USFWS. 1998a. 50 CFR Part 17, Endangered and Threatened Wildlife and Plants; Final Rule Listing Five Plants From Monterey County, CA, as Endangered or Threatened; Final Rule. Federal Register, 63 (155): 43100-43116.

USFWS.1998b. *Recovery Plan for Upland Species of the San Joaquin Valley, California*. Region 1, Portland, OR.

USFWS. 2000. Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for Chlorogalum purpureum (Purple Amole), a Plant from the South Coast Ranges of California; Final Rule. Federal Register 65 (54):14878-14888.

USFWS. 2001. Endangered and Threatened Wildlife and Plants; Proposed Designation of Critical Habitat for Chlorogalum purpureum, a Plant from the South Coast Ranges of California; Proposed Rule. Federal Register 66 (217): 56508-56531.

USFWS. 2002. 50 CFR Part 17, Endangered and Threatened Wildlife and Plants; Final Designation of Critical Habitat for Chlorogalum purpureum, a Plant from the South Coast Ranges of California; Final Rule. Federal Register, 67 (206): 65414-65445.

USFWS. 2003. 50 CFR Part 17, Endangered and Threatened Wildlife and Plants; Final Designation of Critical Habitat for Four Vernal Pool Crustaceans and Eleven Vernal Pool Plants in California and Southern Oregon; Final Rule. Federal Register, 68 (151): 46684-46867.

USFWS. 2004. *Recovery Plan for Five Plants from Monterey County, California*. U.S. Fish and Wildlife Service, Portland, Oregon.

USFWS. 2005. *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon, Contra Costa Goldfields*. Region 1 U.S. Fish and Wildlife Service, Portland, Oregon. December 15, 2005. P. II-24-II-32. Available online: http://www.fws.gov/sacramento/es/Recovery-Planning/Vernal-Pool/es_recovery_vernal-pool-recovery.htm. Accessed 21 January 2016.

USFWS. 2008a. *Birds of Conservation Concern*. http://www.fws.gov/migratorybirds/NewReportsPublications/SpecialTopics/BCC2008/BCC2008.pdf.

USFWS. 2008b. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Monterey Spineflower (Chorizanthe pungens var. pungens). 50 Federal Register Part 17 (09 January 2008). 1525-1554.

USFWS. 2008c. Monterey Gilia (*Gilia tenuiflora* ssp. *arenaria*) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service Ventura Fish and Wildlife Office, Ventura, California. March 2008. Available online:

https://ecos.fws.gov/docs/five_year_review/doc1899.pdf. Accessed 21 January 2016.

USFWS. 2008c. *Purple Amole (Chlorogalum pupureum), Five-year Review: Summary and Evaluation*.

USFWS. 2009. Programmatic Biological Opinion for Multiple Activities at Camp Roberts, San Luis Obispo and Monterey Counties, California (1-8-08-F-24).

USFWS. 2013a. *Formal Consultation for the Presidio of Monterey Real Property Master Plan, Monterey, Monterey County, California*.

USFWS. 2013b. *List of Migratory Bird Species Protected by the Migratory Bird Treaty Act as of December 2, 2013*. http://www.fws.gov/migratorybirds/RegulationsPolicies/mbta/List%20of%20MBTA%20Protected%20Species%20December%202013.pdf.

USFWS. 2016. "Who We Are". http://www.fws.gov/who/. Accessed 1 February 2016.

U.S. Fish and Wildlife Service Pacific Southwest Region (USFWS PSR). 2013. *California Condor (Gymnogyps californianus) 5-Year Review: Summary and Evaluation*. Available online: http://ecos.fws.gov/docs/five_year_review/doc4163.pdf. Accessed 23 July 2013.

U.S. Fish and Wildlife Service Sacramento (USFWS Sacramento). 2010. *San Joaquin Kit Fox (Vulpes macrotis mutica) 5 –Year Review: Summary and Evaluation*. Available online: http://ecos.fws.gov/docs/five_year_review/doc3222.pdf. Accessed 25 July 2014.

U.S. Fish and Wildlife Service Ventura Fish and Wildlife Office (USFWS Ventura). 2009. *Piperia Yadonii (Yadon's Piperia) 5-Year Review: Summary and Evaluation*. Available online: http://ecos.fws.gov/docs/five_year_review/doc2575.pdf. Accessed 25 July 2014.

U.S. Geological Survey (USGS). 1984. *Analysis of the Carmel Valley Alluvial Ground-water Basin, Monterey, California*. Prepared for the Monterey Peninsula Water Management District. Available online: http://pubs.usgs.gov/wri/1983/4280/report.pdf. Accessed 20 February 2014.

University of California, Berkeley (UC Berkeley). 2013. The Jepson Flora Project, Jepson Manual, "A. pumila Nutt. Sandmat Manzanita." Available at: http://ucjeps.berkeley.edu/cgi-bin/get_IJM.pl?tid=13972. Last accessed 13 May 2014.

University of California Division of Agricultural and Natural Resources (UCANR). 2013. "Home." University of California Oak Woodland Management. Available online http://ucanr.edu/sites/oak_range/. Accessed 25 March 2014.

UCANR. 2014a. "Livestock Management on Rangelands." University of California Oak Woodland Management. Available online http://ucanr.edu/sites/oak_range/Livestock_Management_on_Rangelands/. Accessed 04 August 2014.

UCANR. 2014b. "Oak Woodland Conservation Program Up and Running." University of California Oak Woodland Management. Available online http://ucanr.edu/sites/oak_range/Oak_Articles_On_Line/Oak_Regeneration_Restoration/Oak_Woodland_Conservation_Program_Up_and_Running/. Accessed 04 August 2014.

Ventura Wildlife Society. 2013. *Avian Protection Plan for Camp Roberts, California Army National Guard Training Site, 2013 Update*. Prepared for CA ARNG.

Weiner, Joan. 2013. "Water Supply – CSU Monterey Bay". Available online: http://about.csumb.edu/fort-ord-land-use/water-supply. Accessed 20 February 2014.

Westerling, A., B. Bryant, H. Preisler, T. Holmes, H. Hidalgo, T. Das, and S. Shrestha. 2012. "Climate Change and Growth Scenarios for California Wildfire." Climatic Change 109 (1 Supplement): 445-463.

Western Regional Climate Center (WRCC). 2013a. *California Climate Tracker: Tracking Climate Vulnerability and Change for the State.* Available online: http://www.wrcc.dri.edu/monitor/cal-mon/.

WRCC. 2013b. "Weather Data for the Paso Robles Federal Aviation Administration Airport from July 1, 1948 through March 31, 2013". Available online: http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca6742. Accessed 21 February 2014.

WRCC. 2014a. "Period of Record Monthly Climate Summary, Period of Record 3/1/1906 to 2/28/2013." Monterey, California (045795). Available online: http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca5795. Accessed 2 April 2014.

WRCC. 2014b. "Period of Record Monthly Climate Summary, Period of Record 3/1/1906 to 11/30/1971." Bradley, California (041034). Available online: http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca1034. Accessed 2 April 2014.

WRCC. 2014c. "Period of Record Monthly Climate Summary, Period of Record 4/27/1946 to 9/30/1975." Port Chicago Naval Dep, California (047070). Available online: http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca7070. Accessed 2 April 2014.

Williams, D.F. 1986. Mammalian Species of Special Concern in California. (Administrative Report 86-1:1-112). California Department of Fish and Game, Wildlife Management Division. Sacramento, CA.

World Wildlife Fund (WWF). 2015a. *California Interior Chaparral and Woodlands*. Available online: http://www.worldwildlife.org/ecoregions/na1202. Accessed 19 November 2015.

WWF. 2015b. *Mediterranean Forests, Woodlands, and Scrub Ecoregions*. Available online: http://wwf.panda.org/about_our_earth/ecoregions/about/habitat_types/selecting_terrestrial_ecoregions/habitat12.cfm. Accessed 16 November 2015.

Yates, Eugene B., Martin Feeney, and Lewis Rosenberg. 2005. *Seaside Groundwater Basin: Update on Water Resource Conditions*. Available online: http://www.mpwmd.dst.ca.us/seasidebasin/webjpg/webjpg.htm. Accessed 20 February 2014.

Zeiner, D. C., W. F. Laudenslayer, Jr., and K. E. Mayer, eds. 1988. California's Wildlife. Volume 1: Amphibians and Reptiles. California Statewide Wildlife Habitat Relationships System. Sacramento, CA: California Department of Fish and Game.

Zeiner, D.C., W. F. Laudenslayer, Jr., and K. E. Mayer, eds. 1990a. California's Wildlife, Volume 2: Birds. California Statewide Wildlife Habitat Relationships System. Sacramento, CA: California Department of Fish and Game.

Zeiner, D.C., W. F. Laudenslayer, Jr., and K. E. Mayer, eds. 1990b. California's Wildlife, Volume 3: Mammals. California Statewide Wildlife Habitat Relationships System. Sacramento, CA: California Department of Fish and Game.